Fractions

How They are Assessed on Standardized Tests

Pedagogical Tips
and
Student Practice

(3rd and 4th Grades)

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Introduction and Basic Pedagogical Recommendations

This mathematics unit focuses on fractions, and the format currently being assessed on state standardized tests in third and fourth grades. The enclosed student practice sheets are designed to be implemented efficiently and effectively each day – via a warm-up or spaced repetition pedagogical technique. This resource is a self-defined "off the shelf" curricular resource, whereas a classroom teacher can implement the content - as well as the student practice sheets - in subsequent days with little to no preparation time. There is a threshold number of student practice page versions for each fraction application to ensure that students exceed the number of repetitions required to achieve long-term mastery of the content. However, the teacher must hold all students accountable to the learning objectives.

It is important to note that the curricular resource sheets can be efficiently implemented everyday regardless of the core lesson content designed for that school day. A teacher can provide a 5-minute spaced repetition or warm-up session using the enclosed resources before the onset of the core lesson. The student practice pages are divided into halves, so a teacher has the option to use the resource for a quick warm-up, transition activity, or a homework assignment and extend the number of days of daily practice with their students. Finally, use the exercises as a formative assessment tool as well. When students struggle with specific exercises, they need more guided exposure and practice to those skill areas – NOT LESS!

Section 1 (pages 2 - 23) covers the number line prerequisite for equivalent fractions applied to a number line. It is highly recommended that this section be completed first to student mastery. Thus, students will not be overwhelmed with basic fractional number-line background knowledge understanding, and the equivalent fraction application work contained in Section 2 below. This numeracy exercise should also be a prerequisite learning tool for all elementary students. ***Third and fourth grade applicable.***

Section 2 (pages 24 - 43) augments and extends the basic fractional number lines to the equivalent fraction content applied on standardized tests. This section should follow mastery of fractional number lines outlined in Section 1. It is an application of that section. The new standardized assessments require specific vocabulary and multiple responses to a single question. These testable areas will be covered in detail with student practice opportunities. ***Fourth grade applicable – Third grade teachers select applicability.***

Section 3 (pages 44 - 55) contains the more common pictorial form of equivalent fractions based on fractional area. Again, the newer standardized tests are asking students' multiple responses to a single question. ***Fourth grade applicable. (Third grade teachers should select developmental exercises for their students)***

Section 4 (pages 56 - 81) includes the other content that 3rd and 4th grade students are being assessed on fractions. These questions also contain multiple responses to a single question. ***Third and fourth grade applicable.***

Finally, there is a short pedagogical recommendation section at the beginning of Section 1 through 4 – prior to the student learning opportunities. These recommendations are intended to foment rapid professional development by a grade level team leader, math instructional coach or a campus administrator. This method ensures that **all** teachers on a grade level possess the same content and background knowledge to efficiently and effectively deliver the content to their students. It also provides the teachers to facilitate the student learning in their classrooms with respect to their own unique teaching style. I have also included salient notes in the solutions of each student exercise. It may behoove teachers to read the short notes on the answer key to better prepare for their pedagogical engagement with their students.

This unit appears to commit significant instructional time to complete due to its length. However, since the content is comprised of mostly minilessons of 5 to 7 minutes, it is estimated the entire unit would take approximately 3 hours to complete, cumulatively. However, if a teacher desires a high level of student mathematical numeracy and ability, then effective instruction and student accountability must be present as well to achieve that outcome. ***Student skill prowess and problem-solving ability will not happen accidentally. It must be an intentional and systematic process. In short, it requires consistency and a plan of action.***

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Section 1

Fractional Number Lines

(Prerequisite Skill Work)

“Connecting All Fractional Elements”

Educational Learning Maxim:

Whatever human skill – basic or advanced – is practiced with intention and threshold repetitions, will be mastered. Conversely, whatever human skill – basic or advanced – that is NOT practiced with intention and threshold repetitions, will NOT be mastered.

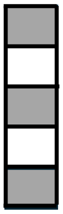
Student Practice Resource

Pedagogical Recommendations – Section 1

This section is a necessary ingredient to student understanding of fractions in all their related forms (i.e., proper fractions, improper fractions, and mixed numbers) since it connects all fractional elements together for students and dramatically increases their global understanding. Decimal numbers can be added to a fractional number line and complete a student's numeracy understanding of all fraction-decimal elements and interactions. However, decimals are **not** included in the process depicted on the fractional number line (below) since this unit is exclusively dedicated to equivalent fractions.

1.) Vocabulary Review and Clarifications (proper fraction example):

A.) Fractions – represent **two** things: **1.)** Part to whole of **EQUAL** parts. $\mathbf{\frac{3}{5}}$ ⇨



(The fraction $\frac{3}{5}$ has 3 **equal** parts of interest compared to 5 total **equal** parts.)

2.) A division problem. $\mathbf{\frac{3}{5}}$ ⇨

$$\begin{array}{r} \mathbf{0.6} \\ \mathbf{5\overline{)3.0}} \\ \mathbf{-\underline{0}\downarrow} \\ \mathbf{3\,0} \\ \mathbf{-\underline{3\,0}} \\ \mathbf{0} \end{array}$$

(The **numerator** '3' is divided by the **denominator** '5' to compute an equivalent decimal number.)

Note: An *Improper fraction* can yield a *mixed number* **or** a *decimal number* when divided.

$$\boxed{\frac{3}{5} = 0.6}$$

B.) Three (3) types of fractions $\mathbf{\frac{N}{D}}$:

1.) Proper Fractions: Fractions **less than 1 Whole** (e.g., Numerator **<** Denominator)

(Examples: $\frac{3}{5}$; $\frac{1}{7}$; $\frac{9}{10}$; $\frac{1}{2}$; etc. **D > N**

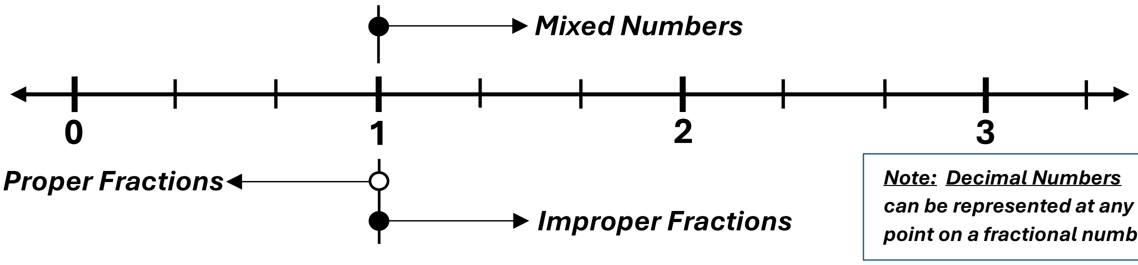
2.) Improper Fractions: Fractions **greater than or equal** to **1 Whole** (e.g., Numerator **≥** Denominator)

(Examples: $\frac{4}{4}$; $\frac{8}{3}$; $\frac{17}{16}$; $\frac{3}{2}$; etc. **N ≥ D**

3.) Mixed Numbers: Numbers that contain a **whole number** and a **proper fraction**.

(Examples: $4\frac{1}{3}$; $1\frac{3}{7}$; $9\frac{5}{10}$; $7\frac{0}{2}$; etc.

C.) Fractional Number Lines: A number line where all fractional elements (and decimal numbers can be written). Example below – fraction number line divided in **thirds**.



Note: Decimal Numbers can be represented at any point on a fractional number

Pedagogical Recommendations – Section 1 (Continued)

2.) Fractional Number Line Numeracy Development

I have placed a PowerPoint Video that describes this process on the website address located in the footer. I will describe this process below for the sake of clarity and conveniency, and salient pedagogical dialogue that standardizes the process between adjacent classrooms and schools. That way, all teachers are aware of the content and instructional aspects of the activity on an equal basis – lessening 'islands of excellence'.

This numeracy content is essential to prevent the fractional elements (i.e., proper fractions, improper fractions, mixed numbers and decimals) from 'floating' in an elementary or middle students' mental schema. This process provides the students with a 'big picture' of these elements and their connection to each other by anchoring them to a common medium – a number line, as whole numbers were taught in the primary grades.

<u>Fractional Number Lines Instruction Recommendations and Pedagogical Tips:</u>

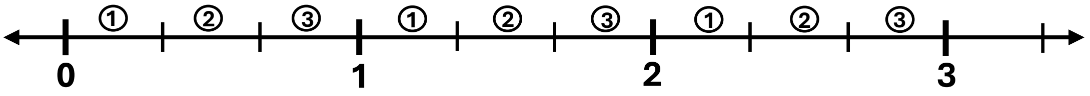
Step 1: The division of the fractional number line.

Initially, students will **<u>NOT</u>** know if the fractional number line is divided in halves, thirds, fourths, fifths, sixths, sevenths, eighths, ninths, tenths, hundredths, or thousandths.

Step 1 is the sole identification of fractional number line divisions. After only a couple repetitions, students rapidly grasp this concept. It is recommended to conduct this activity at least two to three days until all students grasp the concept in a 5-to-7-minute mini lesson spaced repetition session.

Students should be shown multiple fractional number lines. The attached number lines are intended for this instructional purpose. Students should show the teacher using their fingers (visual comprehension understanding check) if the number line is divided equally into halves, thirds, etc.

(Teacher-Student Exercise) -- Example Number Line 1: **<u>Finding the number line denominator.</u>**



<u>Teacher:</u> *"What is this fractional number line divided into? Halves, thirds, fourths, fifths, sixths, tenths? Show me with your fingers."* <u>Students will show their fingers to you!</u>

<u>Note:</u> Students will likely guess halves (2 fingers showing) because they will **<u>INCORRECTLY count the lines</u>** between two adjacent whole numbers.

<u>Teacher:</u> After students' guess showing their fingers, tell your students, *"The fractional number line is **<u>divided equally</u>** into thirds. To find the division of the fractional number line, we must count the **EQUAL SPACES** between any two (<u>adjacent</u>) whole numbers."*

The teacher should count the equal spaces showing students that between whole numbers: 0 and 1; 1 and 2; and 2 and 3 – emphasizing their finger on the equal spaces between two <u>adjacent</u> whole numbers – counting the spaces out loud, *"1, 2, 3 – the fractional number line is divided equally into **thirds**. **The denominator is 3 or thirds**."*

Provided repeated examples using **<u>different</u>** blank number lines in this section of the unit until **<u>all</u>** students grasp the concept. Each time the teacher is asking students to **<u>visually</u>** show you (the teacher) their fingers, so the teacher is confident **ALL** students have mastered fractional number line divisions. Finally, it is recommended to teach this mini lesson (quickly) for three consecutive class days prior to starting the day's normal core lesson.

Pedagogical Recommendations – Section 1 (Continued)

Step 2: Adding **Proper and Improper Fractions** to the fractional number line.

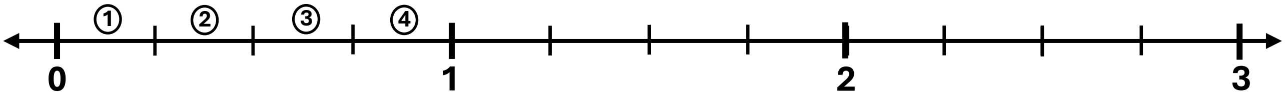
These mini lessons are quick; however, the lessons must be CONTROLLED, or it can tailspin into a hot mess on a teacher very rapidly. Thus, use the **gradual release method** of instruction…***"I do, we do, you do."***

Now, that students can discern the division of a fractional number line, let's move to Step 2.

A teacher can show a blank number line either by drawing one quickly on the white board or using the enclosed number lines in this unit on a document camera.

"Count the equal spaces and label the lines."

(Teacher-Student Exercise) -- Example Number Line 2:

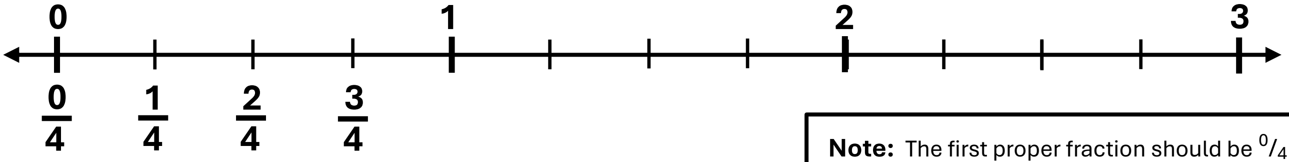


Teacher: *"What is this fractional number line divided into? Halves, thirds, fourths, fifths, sixths, tenths? Show me with your fingers."* Students will show 4 fingers to you!

Teacher: *"Correct! The fractional number line is divided equally into fourths. There are 4 equal spaces between every adjacent whole number."* ***We are determining the NL denominator.***

Teacher: *"Today, let's add in proper fractions and improper fractions. Proper fractions are less than 1 whole and improper fractions are greater than equal to 1 whole."* The definitions of these fractional elements are important – teach via engagement – students doing it with definitional understanding.

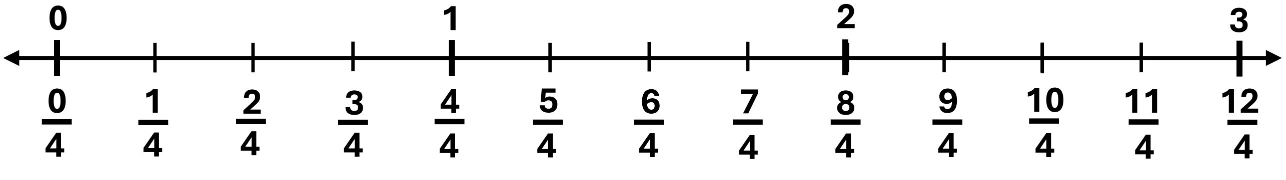
Teacher: *"I will add to our fractional number line ONLY the **proper fractions**."*



Note: The first proper fraction should be $^0/_4$. There is a reason for this format - when the number line does not begin with zero (0), it is easy to compute an **equivalent improper fraction** from, for example, 12 $^0/_4$ = $^{48}/_4$.

Teacher: *"As we can see, **proper fractions** are less than 1."*

Teacher: *"Let's add the **improper fractions** to the fractional number line."*



Teacher: *"As we can see, the **improper fractions** are all equal to 1 or greater starting at $^4/_4$ = 1.*

Salient Points to Stress: How do we know our fractional number line is correct? Answer: The whole numbers 1 = $^4/_4$, 2 = $^8/_4$, and 3 = $^{12}/_4$. Also, the fractional number line is **always** divided in **fourths** until infinity.

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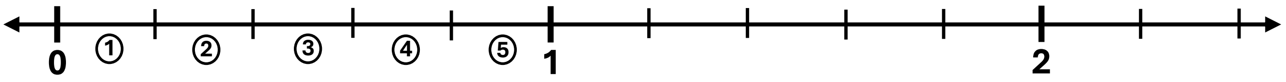
Pedagogical Recommendations – Section 1 (Continued)

Step 3: Adding **<u>Proper and Improper Fractions</u>** to the fractional number line (**<u>WE DO</u>**).

I recommend using the enclosed number lines, so students have the practice opportunity at their desk. That way the teacher knows all students have the same version of fractional number lines.

(Teacher-Student Exercise) -- Example Number Line 3:

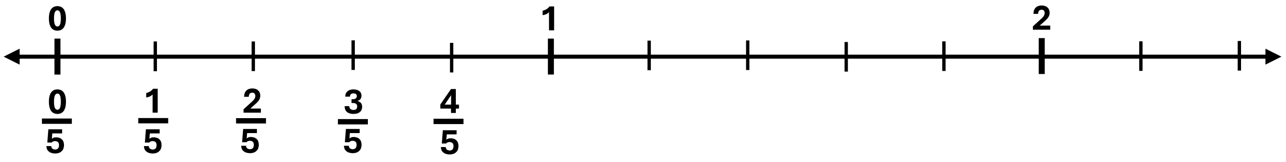
"Count the equal spaces and label the lines."



<u>Teacher:</u> *"What is this fractional number line divided into? Halves, thirds, fourths, fifths, sixths, tenths? Show me with your fingers."* <u>Students will show 5 fingers to you!</u>

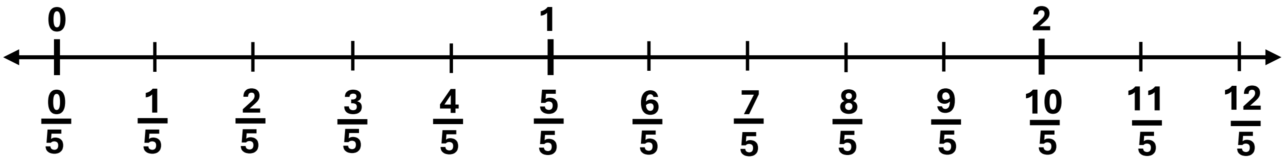
<u>Teacher:</u> *"Correct! The fractional number line is divided equally into fifths. There are 5 equal spaces between every whole number."* ***Note: We are determining the NL <u>denominator</u>.***

<u>Teacher:</u> *"Today, **<u>WE ARE</u>** adding in proper fractions and improper fractions. Proper fractions are less than 1 whole and improper fractions are greater than or equal to 1 whole."* **AGAIN**, the definitions of these fractional elements are important – teach via engagement – students doing it to acquire definitional understanding.



<u>Teacher:</u> *"Let's add to our fractional number line <u>ONLY</u> the **<u>proper fractions</u>**. "As we can tell, **<u>proper fractions</u>** are less than 1."*

<u>Teacher:</u> *"Let's add the **<u>improper fractions</u>** to the fractional number line."*



<u>Teacher:</u> *"As we can see, the **improper fractions** are all equal to 1 or greater (starting at $^{5}/_{5} = 1$).*

<u>Salient Points to Stress</u>: How do we know our fractional number line is correct? Answer: The whole numbers $1 = {}^{5}/_{5}$ and $2 = {}^{10}/_{5}$. Meaning via division: $1 = {}^{5}/_{5}$ $5 \div 5 = 1$ $2 = {}^{10}/_{5}$ $10 \div 5 = 2$ $\begin{array}{r} 2 \\ 5\overline{)10} \end{array}$

Finally, the fractional number line is **<u>always</u>** divided in **<u>fifths</u>** at every location until infinity.

Work these fractional number lines quickly every day until ALL students have mastered this aspect of the process. It is recommended two to three number line examples each day prior to the core lesson.

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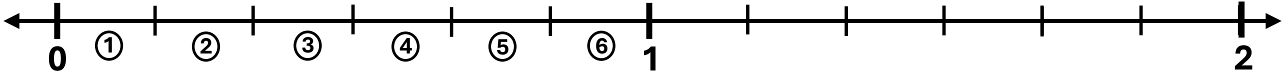
Pedagogical Recommendations – Section 1 (Continued)

Step 4: Adding **<u>Mixed Numbers</u>** to the fractional number line (**<u>WE DO</u>**).

At this stage, we have been conducting mini lessons for 6 to 9 days. It is recommended that since students have mastered divisions of fractional number lines and both proper and improper fractions to immediately work jointly with the teacher implementing mixed numbers to their fractional work.

(Teacher-Student Exercise) -- Example Number Line 4:

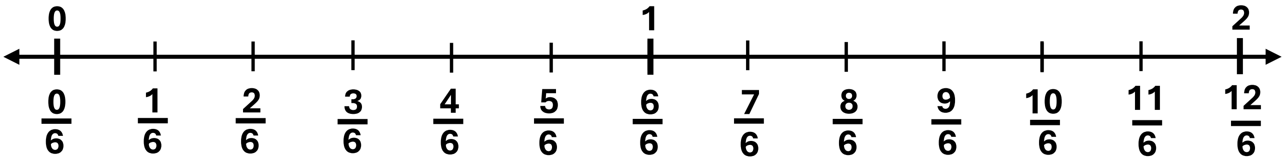
"Count the equal spaces and label the lines."



<u>Teacher:</u> *"What is this fractional number line divided in? Show me with your fingers."* <u>Students will show 6 fingers to you!</u>

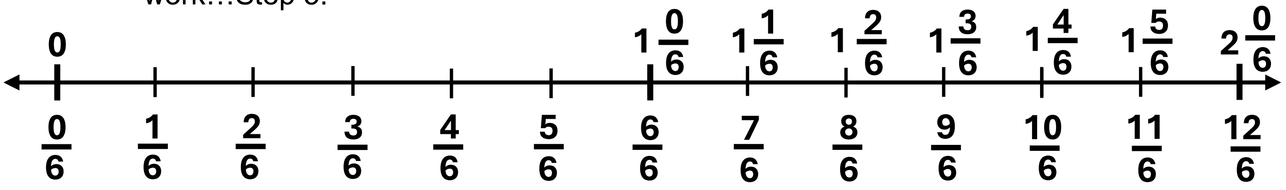
<u>Teacher:</u> *"Correct! The fractional number line is divided equally into sixths. There are 6 equal spaces between every whole number.*

<u>Teacher:</u> *"Today, **<u>WE ARE</u>** adding in mixed. **Mixed Numbers** are greater than or equal to 1 whole."*



<u>Teacher:</u> *"Let's add to our fractional number line **<u>proper fractions</u>** and **<u>improper fractions.</u>***

<u>Teacher:</u> *"Now, Let's add the **<u>mixed numbers</u>** to the fractional number line."* Usually, I would work one quick example with mixed numbers. Students at this stage of the fractional work – over a week of this type of work consistently every day in mini lessons – catch-on to the process. I work several days of examples, until students are prepared for independent work…Step 5.



<u>Teacher:</u> *"As we can see, the **improper fractions** are all equal to 1 or greater starting at $^5/_5$ = 1.*

<u>Salient Points to Stress</u>: How do we know our fractional number line is correct? Answer: The whole numbers 1 = $^6/_6$ and 2 = $^{12}/_6$. Meaning via division: 1 = $^6/_6$ 6 ÷ 6 = 1 2 = $^{12}/_6$ 12 ÷ 6 = 2 $6\overline{)12}$ with quotient 2

Finally, the fractional number line is **<u>always</u>** divided in **<u>sixths</u>** until infinity at every location.

Work these fractional number lines quickly each day until ALL students have mastered this aspect of the process. It is recommended two to three number line examples each day prior to the core lesson.

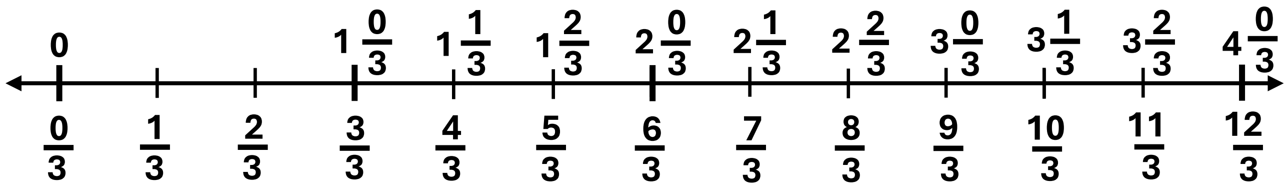
Decimals can be added in, if desired. Simply divide a proper fraction ($^1/_6$) and write decimal multiples.

Pedagogical Recommendations – Section 1 (Continued)

Step 5: Students add all elements to the fractional number line (**<u>YOU DO</u>**) – Independent (Monitored Work).

It's time for independent work, and for the teacher to facilitate and monitor students' work. I strongly recommend moving in small steps. Ask students the number line division (e.g., halves, thirds, etc.). Then, they write only the proper fractions, check! Then, students write the improper fractions. Check their work! Finally, students add it the mixed numbers. Check! Finally, there is one more equality aspect below that is important. It connects basic fraction pictorial models to their fractional number line.

(Teacher-Student Exercise) -- Example Number Line 5:



<u>Teacher:</u> *"What is this fractional number line divided into? Show me with your fingers."* <u>Students will show 3 fingers to you!</u>

<u>Teacher:</u> *"Write the **<u>proper fractions</u>** (Check student work) and **<u>improper fractions</u>** (Check student work***.***

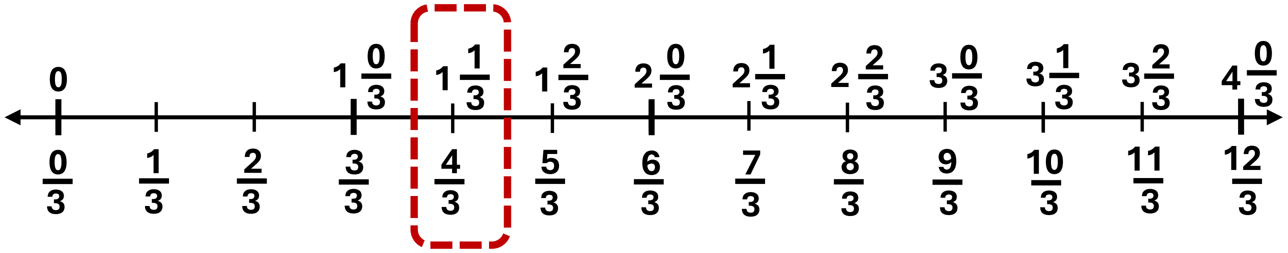
<u>Teacher:</u> *"Write the **Mixed Numbers**."* (After students have shown their proper/improper fraction work.)

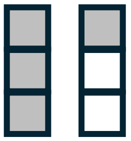
<u>Salient Points to Stress</u>: How do we know our fractional number line is correct? Answer: The whole numbers 1 = $^3/_3$ and 2 = $^6/_3$. Meaning via division: 1 = $^3/_3$ 3 ÷ 3 = 1 2 = $^6/_3$ 6 ÷ 3 = 2 $\begin{array}{r}2\\3\overline{)6}\end{array}$

Finally, the fractional number line is **<u>always</u>** divided in **<u>thirds</u>** until infinity at every location.

Select a point on the fractional number line. Show students, and then follow-up on later iterations for them to clearly demonstrate understanding of the **<u>equality</u>** between mixed numbers and improper fractions (decimal numbers as well, if they are included in the fractional number line work.).

(Teacher-Student Exercise) -- Example Number Line 6: **Draw a fraction diagram showing equality.**





$\frac{4}{3}$ or $1\frac{1}{3}$ **Therefore,** $\boxed{\frac{4}{3} = 1\frac{1}{3}}$

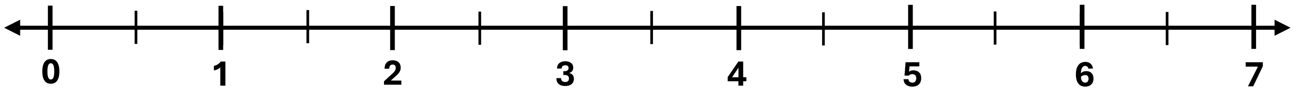
The improper fraction and mixed number occupy the *<u>same point</u>* on the fractional number line.

Work as many examples as needed using mini lessons or spaced repetition until all students have mastered the intended work product. If taught correctly and systematically, all students achieve mastery at the same time.

Fractional Number Line (***Division***) Practice – V1

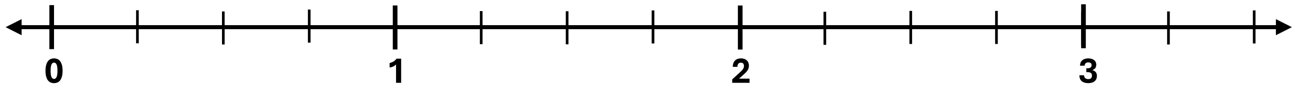
Directions: "What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

1.)



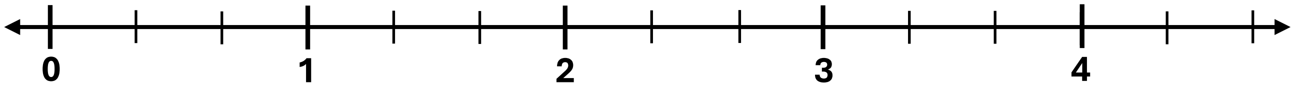
The number line is divided in ________________

2.)



The number line is divided in ________________

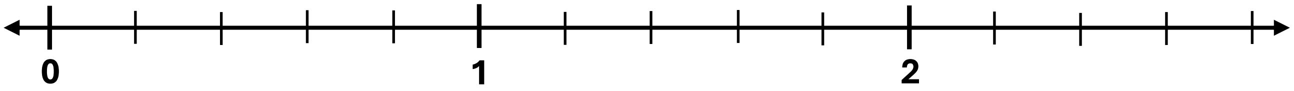
3.)



The number line is divided in ________________

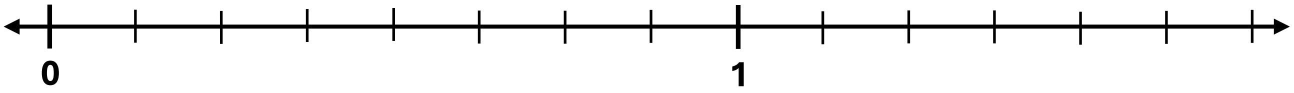
Directions: What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

1.)



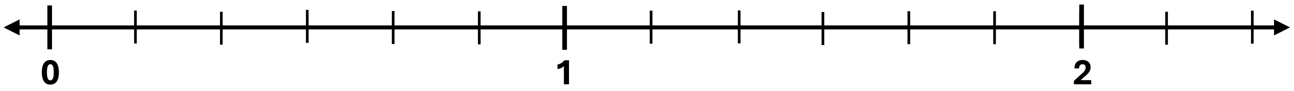
The number line is divided in ________________

2.)



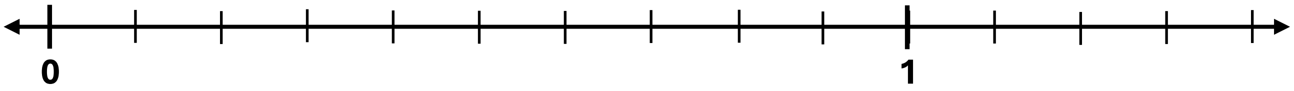
The number line is divided in ________________

3.)



The number line is divided in ________________

4.)



The number line is divided in ________________

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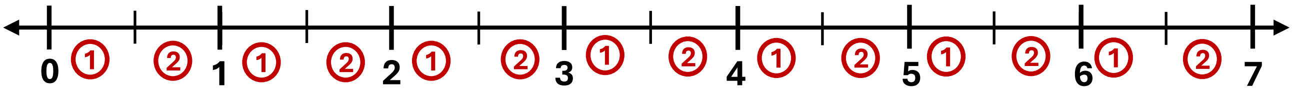
Fractional Number Line (***Division***) Practice – V1

Directions: "What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

ANSWER KEY

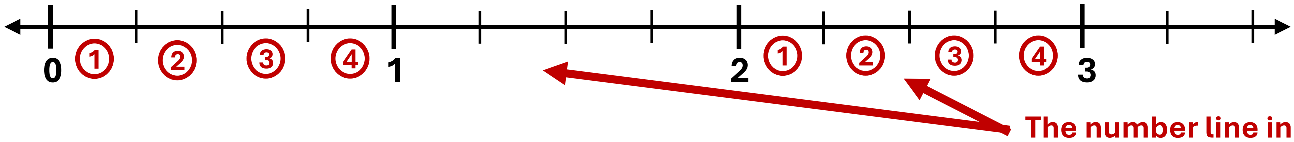
1.)



Count the <u>EQUAL</u> spaces between <u>any</u> <u>two</u> <u>adjacent</u> whole numbers.

The number line is divided in halves

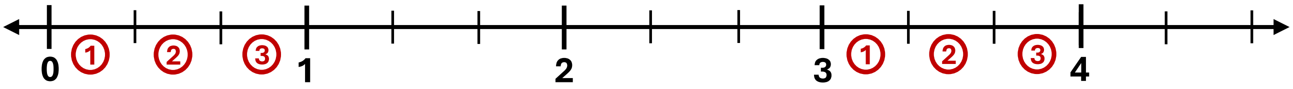
2.)



The number line in fourths is ALWAYS in fourths until infinity!

The number line is divided in fourths

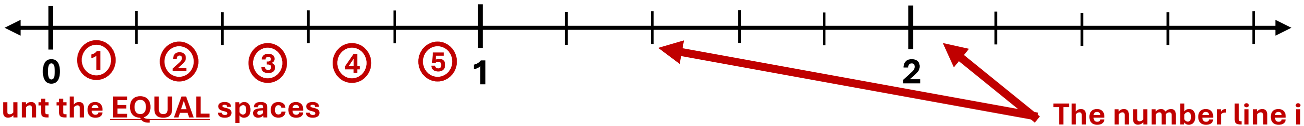
3.)



The number line is divided in thirds

Directions: What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

1.)

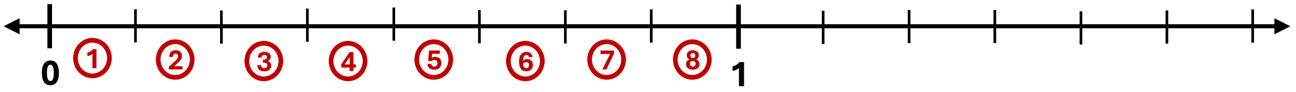


Count the <u>EQUAL</u> spaces between <u>any</u> <u>two</u> <u>adjacent</u> whole numbers.

The number line is divided in fifths

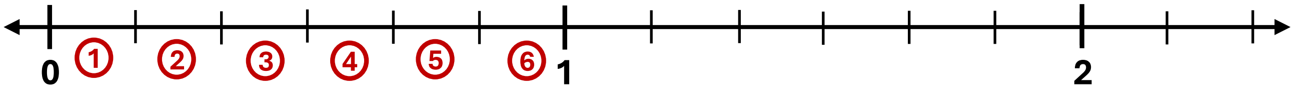
The number line in fifths is ALWAYS in fifths until infinity!

2.)



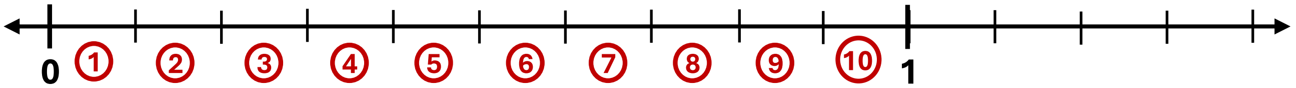
The number line is divided in eighths

3.)



The number line is divided in sixths

4.)



The number line is divided in tenths

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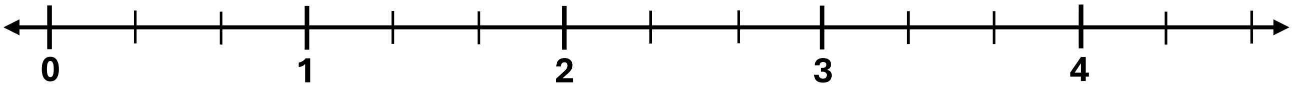
Fractional Number Line (***Division***) Practice – V2

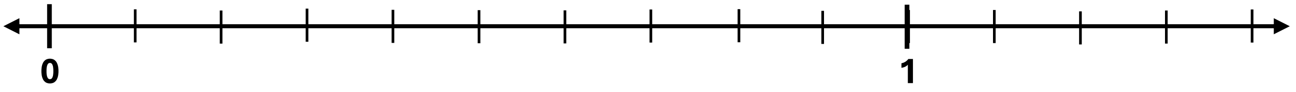
Directions: "What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

1.)



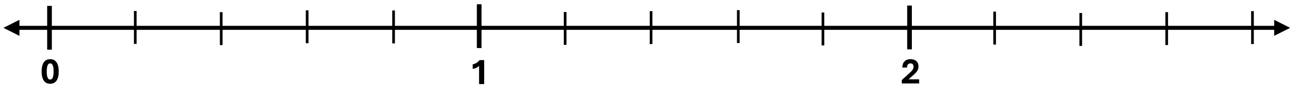
The number line is divided in _______________

2.)



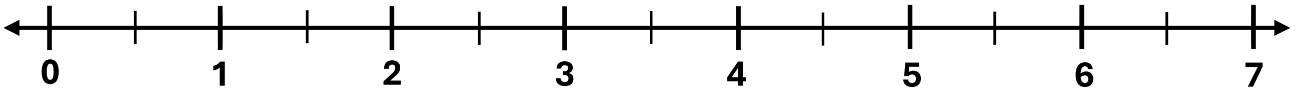
The number line is divided in _______________

3.)



The number line is divided in _______________

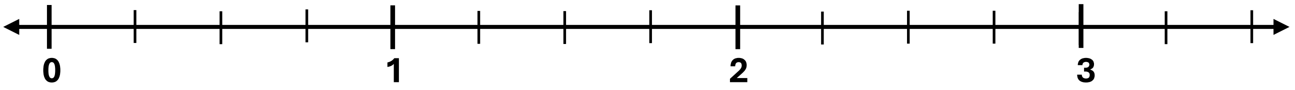
4.)



The number line is divided in _______________

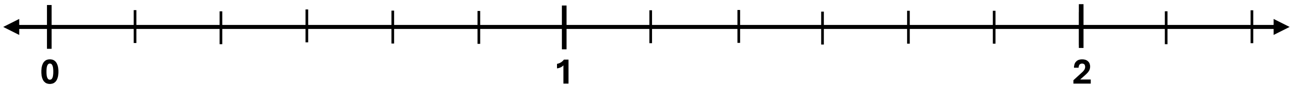
Directions: What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

1.)



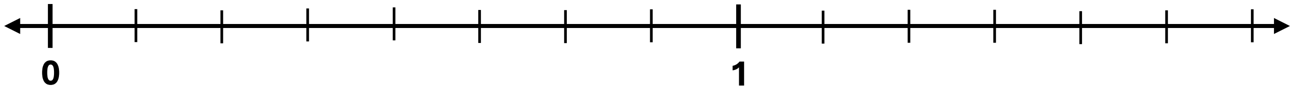
The number line is divided in _______________

2.)



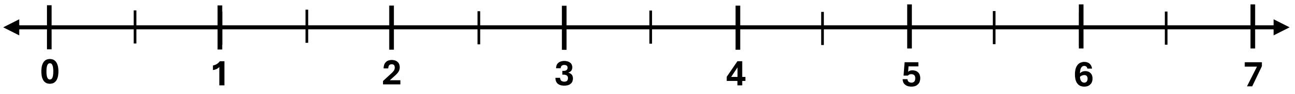
The number line is divided in _______________

3.)



The number line is divided in _______________

4.)



The number line is divided in _______________

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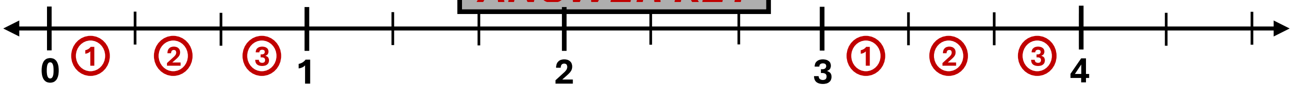
Fractional Number Line (***Division***) Practice – V2

Directions: "What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

ANSWER KEY

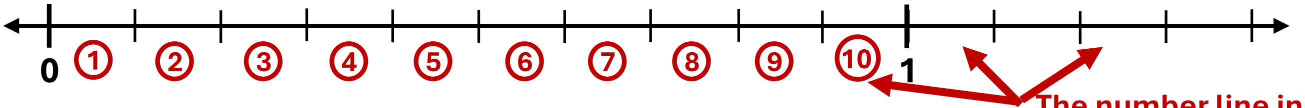
1.)



Count the EQUAL spaces between any two adjacent whole numbers.

The number line is divided in __**thirds**__

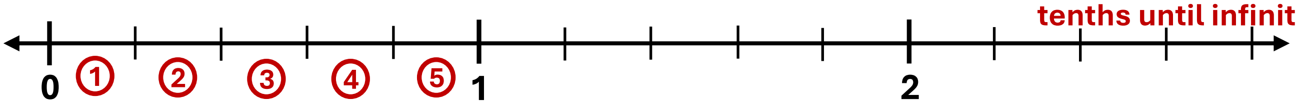
2.)



The number line is divided in __**tenths**__

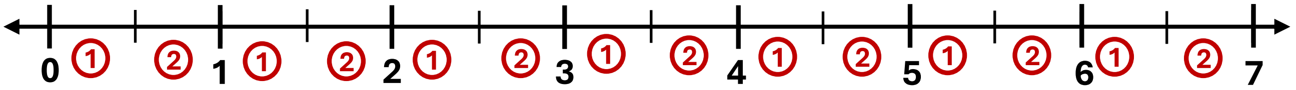
The number line in tenths is ALWAYS in tenths until infinity!

3.)



The number line is divided in __**fifths**__

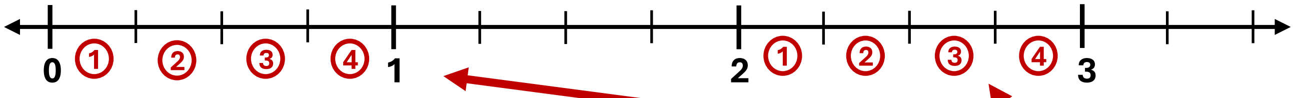
4.)



The number line is divided in __**halves**__

Directions: What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

1.)

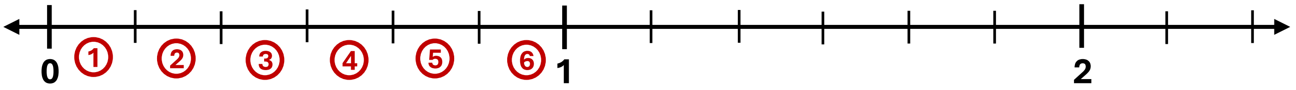


Count the EQUAL spaces between any two adjacent whole numbers.

The number line is divided in __**fourths**__

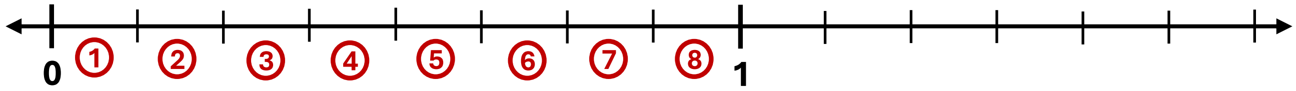
The number line in fourths is ALWAYS in fourths until infinity!

2.)



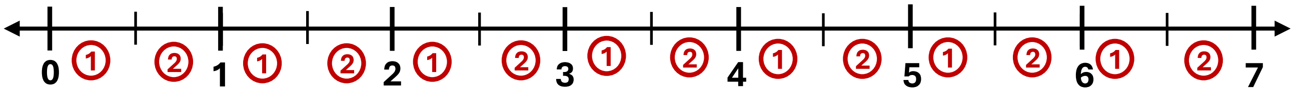
The number line is divided in __**sixths**__

3.)



The number line is divided in __**eighths**__

4.)



The number line is divided in __**halves**__

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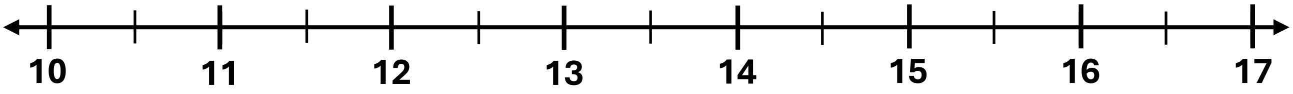
Fractional Number Line (*Division*) Practice – V3

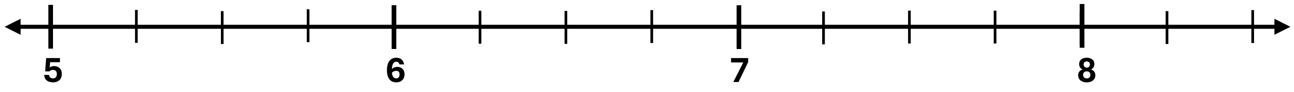
Directions: "What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

1.)



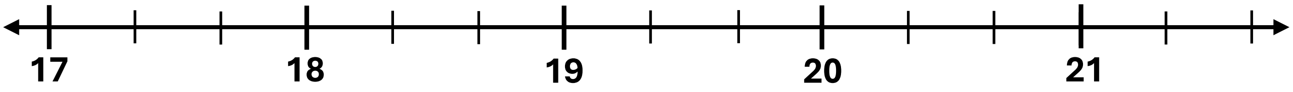
The number line is divided in ________________

2.)



The number line is divided in ________________

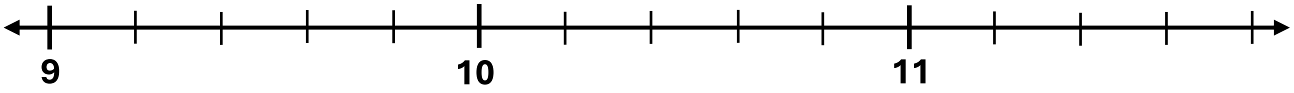
3.)



The number line is divided in ________________

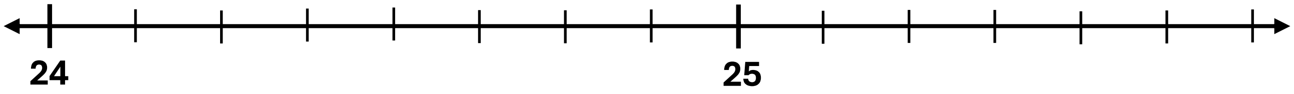
Directions: What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

1.)



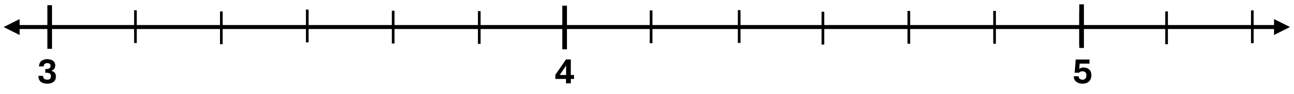
The number line is divided in ________________

2.)



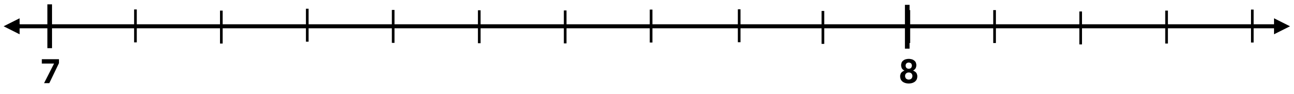
The number line is divided in ________________

3.)



The number line is divided in ________________

4.)



The number line is divided in ________________

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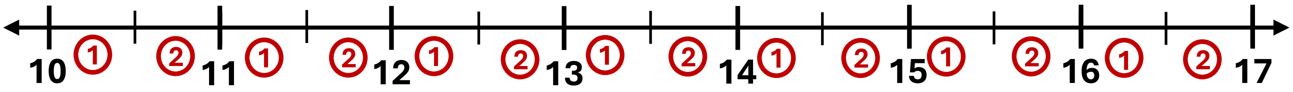
Fractional Number Line (***Division***) Practice – V3

Directions: "What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

ANSWER KEY

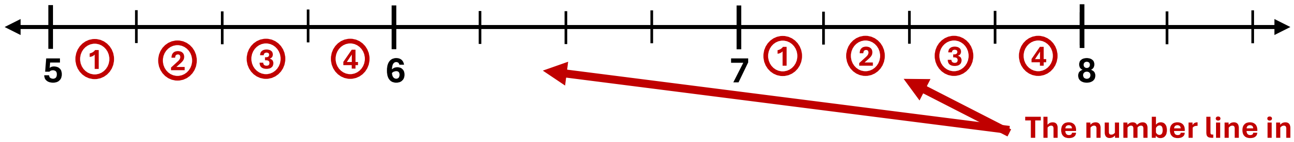
1.)



Count the EQUAL spaces between any two adjacent whole numbers.

The number line is divided in halves

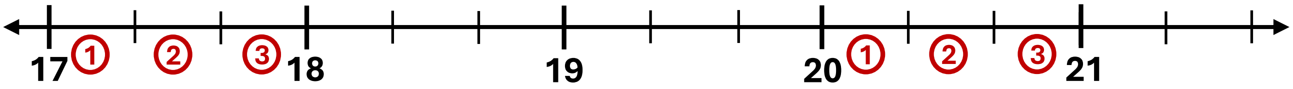
2.)



The number line in fourths is ALWAYS in fourths until infinity!

The number line is divided in fourths

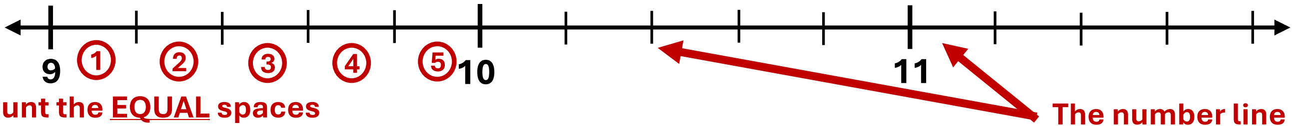
3.)



The number line is divided in thirds

Directions: What is the number line divided in?" Wait for your teacher, and per his or her instructions, answer (or write on the line) if the number line is in halves, thirds, fourths, fifths, etc., etc.

1.)

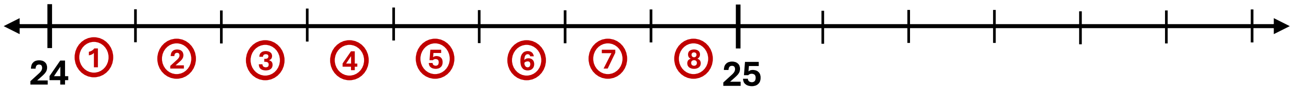


Count the EQUAL spaces between any two adjacent whole numbers.

The number line is divided in fifths

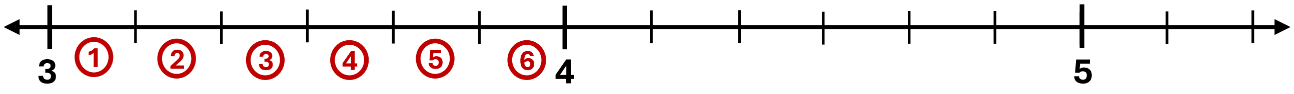
The number line in fifths is ALWAYS in fifths until infinity!

2.)



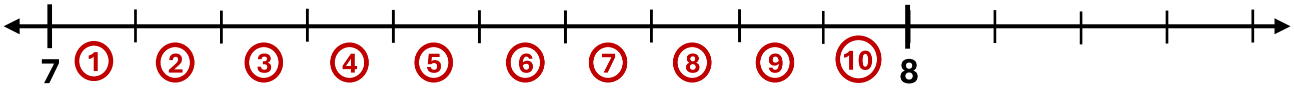
The number line is divided in eighths

3.)



The number line is divided in sixths

4.)



The number line is divided in tenths

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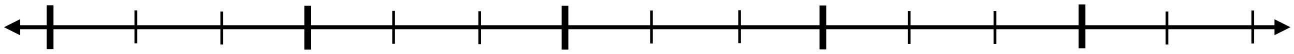
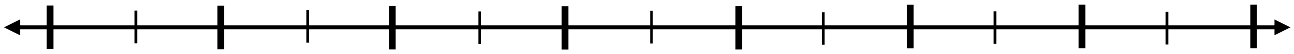
Blank Fractional Number Lines – V4

Directions: Wait for your teacher’s instructions.

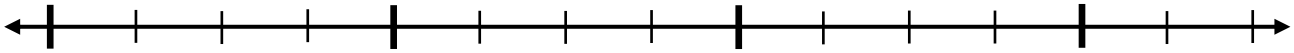
1.)



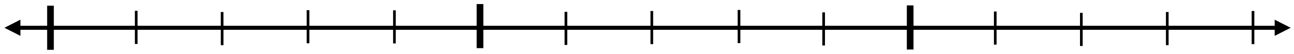
2.)



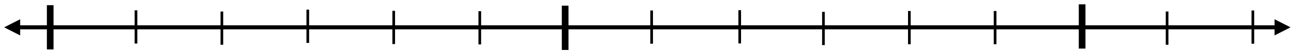
3.)



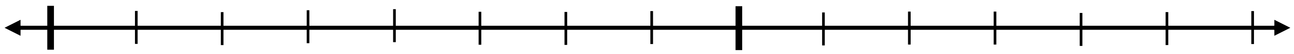
4.)



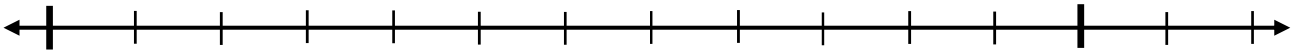
5.)



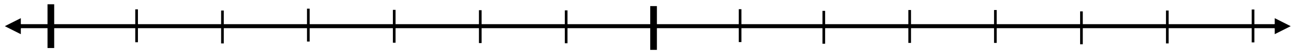
6.)



7.)



8.)



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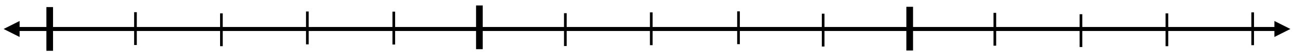
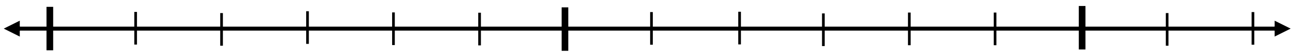
Blank Fractional Number Lines – V5

Directions: Wait for your teacher's instructions.

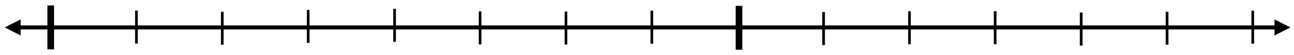
1.)



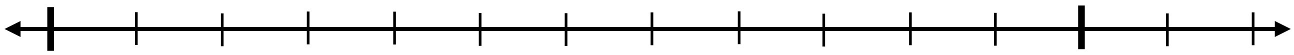
2.)



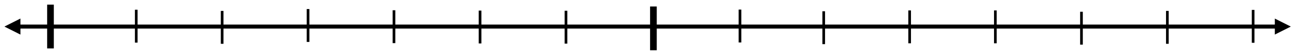
3.)



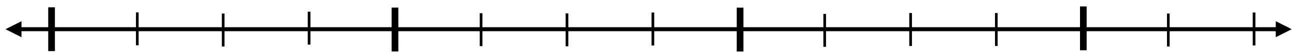
4.)



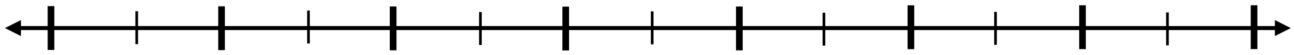
5.)



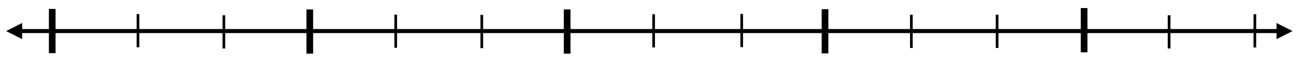
6.)



7.)



8.)



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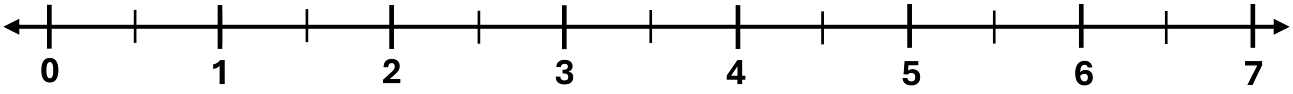
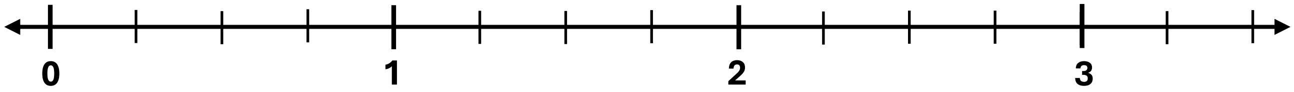
Fractional Number Line Practice – V6

Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

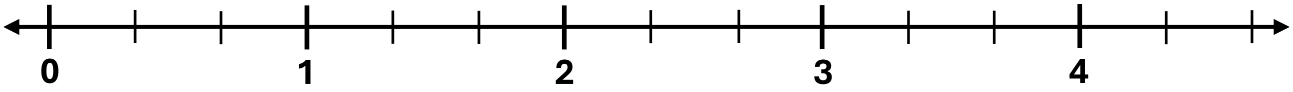
1.)



2.)

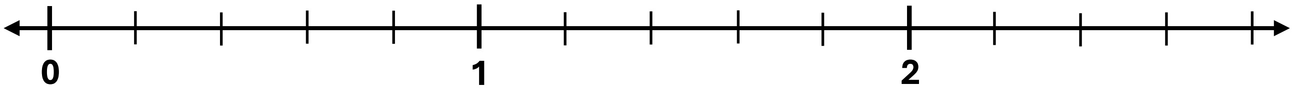


3.)

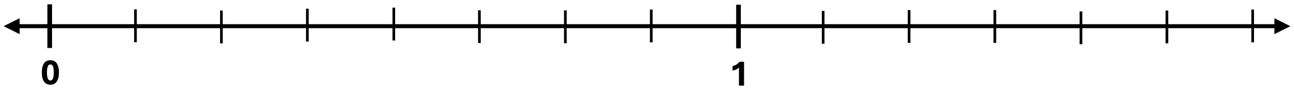


Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

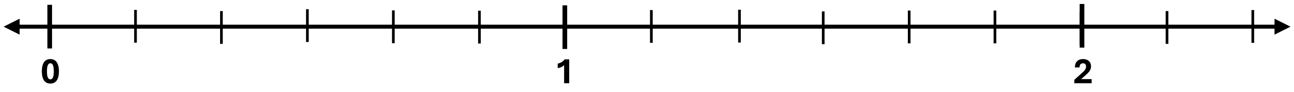
1.)



2.)



3.)



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ANSWER KEY

Fractional Number Line Practice – V6

Directions: **<u>Complete</u>** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

1.) **Halves**

$\frac{0}{2}$	$\frac{1}{2}$	$\frac{2}{2}$	$\frac{3}{2}$	$\frac{4}{2}$	$\frac{5}{2}$	$\frac{6}{2}$	$\frac{7}{2}$	$\frac{8}{2}$	$\frac{9}{2}$	$\frac{10}{2}$	$\frac{11}{2}$	$\frac{12}{2}$	$\frac{13}{2}$	$\frac{14}{2}$
0		$1\frac{0}{2}$	$1\frac{1}{2}$	$2\frac{0}{2}$	$2\frac{1}{2}$	$3\frac{0}{2}$	$3\frac{1}{2}$	$4\frac{0}{2}$	$4\frac{1}{2}$	$5\frac{0}{2}$	$5\frac{1}{2}$	$6\frac{0}{2}$	$6\frac{1}{2}$	$7\frac{0}{2}$

$\boxed{\frac{2}{2} = 1}$ ✓

$\frac{9}{2}$ and $4\frac{1}{2}$ =

They are equal and occupy the same point on the fractional number line.

2.) **Fourths**

$\frac{0}{4}$	$\frac{1}{4}$	$\frac{2}{4}$	$\frac{3}{4}$	$\frac{4}{4}$	$\frac{5}{4}$	$\frac{6}{4}$	$\frac{7}{4}$	$\frac{8}{4}$	$\frac{9}{4}$	$\frac{10}{4}$	$\frac{11}{4}$	$\frac{12}{4}$	$\frac{13}{4}$	$\frac{14}{4}$
0				$1\frac{0}{4}$	$1\frac{1}{4}$	$1\frac{2}{4}$	$1\frac{3}{4}$	$2\frac{0}{4}$	$2\frac{1}{4}$	$2\frac{2}{4}$	$2\frac{3}{4}$	$3\frac{0}{4}$	$3\frac{1}{4}$	$3\frac{2}{4}$

$\boxed{\frac{8}{4} = 2}$ ✓

3.) **Thirds**

$\frac{0}{3}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{3}{3}$	$\frac{4}{3}$	$\frac{5}{3}$	$\frac{6}{3}$	$\frac{7}{3}$	$\frac{8}{3}$	$\frac{9}{3}$	$\frac{10}{3}$	$\frac{11}{3}$	$\frac{12}{3}$	$\frac{13}{3}$	$\frac{14}{3}$
0			$1\frac{0}{3}$	$1\frac{1}{3}$	$1\frac{2}{3}$	$2\frac{0}{3}$	$2\frac{1}{3}$	$2\frac{2}{3}$	$3\frac{0}{3}$	$3\frac{1}{3}$	$3\frac{2}{3}$	$4\frac{0}{3}$	$4\frac{1}{3}$	$4\frac{2}{3}$

$\boxed{\frac{9}{3} = 3}$ ✓

Directions: **<u>Complete</u>** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

1.) **Fifths**

$\frac{0}{5}$	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$	$\frac{5}{5}$	$\frac{6}{5}$	$\frac{7}{5}$	$\frac{8}{5}$	$\frac{9}{5}$	$\frac{10}{5}$	$\frac{11}{5}$	$\frac{12}{5}$	$\frac{13}{5}$	$\frac{14}{5}$
0					$1\frac{0}{5}$	$1\frac{1}{5}$	$1\frac{2}{5}$	$1\frac{3}{5}$	$1\frac{4}{5}$	$2\frac{0}{5}$	$2\frac{1}{5}$	$2\frac{2}{5}$	$2\frac{3}{5}$	$2\frac{4}{5}$

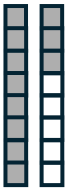
$\boxed{\frac{10}{5} = 2}$ ✓

2.) **Eighths**

$\frac{0}{8}$	$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$	$\frac{5}{8}$	$\frac{6}{8}$	$\frac{7}{8}$	$\frac{8}{8}$	$\frac{9}{8}$	$\frac{10}{8}$	$\frac{11}{8}$	$\frac{12}{8}$	$\frac{13}{8}$	$\frac{14}{8}$
0								$1\frac{0}{8}$	$1\frac{1}{8}$	$1\frac{2}{8}$	$1\frac{3}{8}$	$1\frac{4}{8}$	$1\frac{5}{8}$	$1\frac{6}{8}$

$\boxed{\frac{8}{8} = 1}$ ✓

$\frac{11}{8}$ and $1\frac{3}{8}$ =



They are equal and occupy the same point on the fractional number line.

3.) **Sixths**

$\frac{0}{6}$	$\frac{1}{6}$	$\frac{2}{6}$	$\frac{3}{6}$	$\frac{4}{6}$	$\frac{5}{6}$	$\frac{6}{6}$	$\frac{7}{6}$	$\frac{8}{6}$	$\frac{9}{6}$	$\frac{10}{6}$	$\frac{11}{6}$	$\frac{12}{6}$	$\frac{13}{6}$	$\frac{14}{6}$
0						$1\frac{0}{6}$	$1\frac{1}{6}$	$1\frac{2}{6}$	$1\frac{3}{6}$	$1\frac{4}{6}$	$1\frac{5}{6}$	$2\frac{0}{6}$	$2\frac{1}{6}$	$2\frac{2}{6}$

$\boxed{\frac{6}{6} = 1}$ ✓

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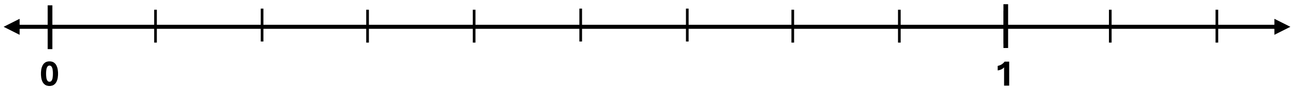
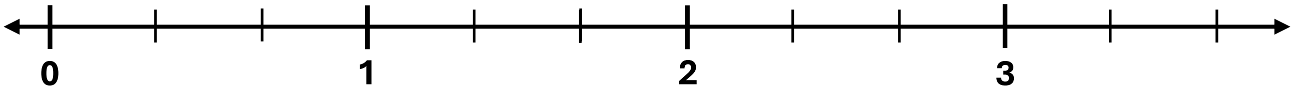
Fractional Number Line Practice – V7

Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

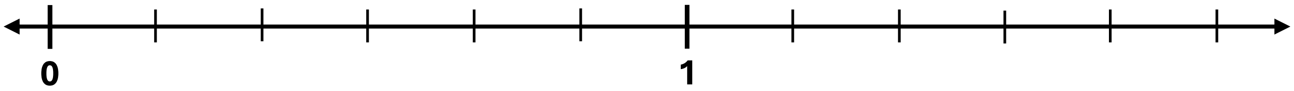
1.)



2.)

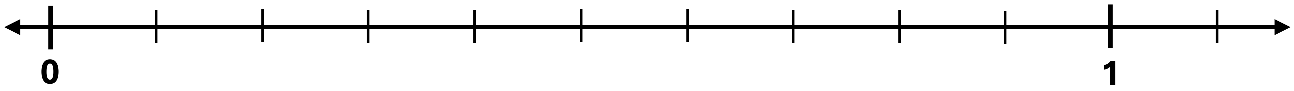


3.)

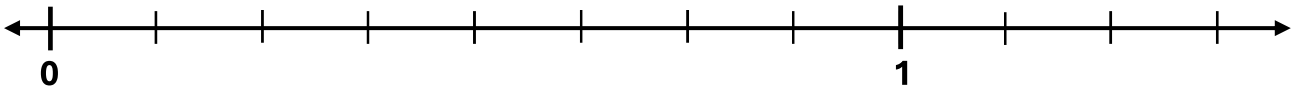


Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

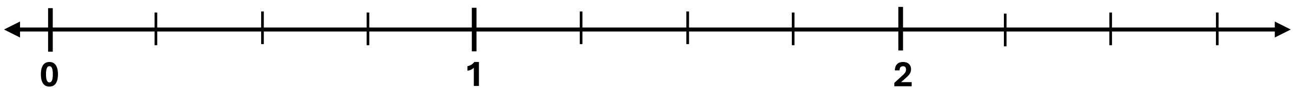
1.)



2.)



3.)



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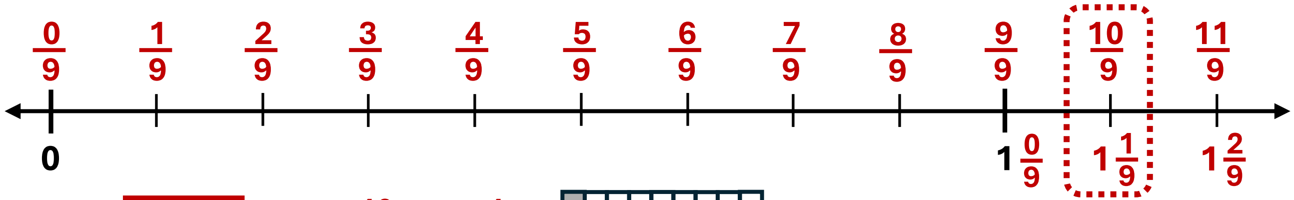
ANSWER KEY Fractional Number Line Practice – V7

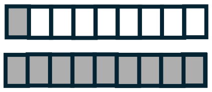
Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

1.)



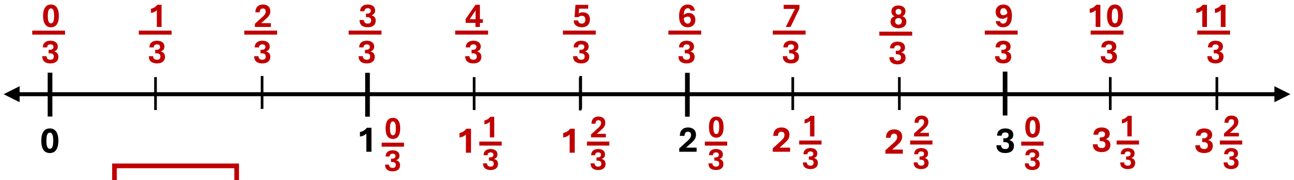
Nineths $\boxed{\frac{9}{9} = 1}$ ✓

$\frac{10}{9}$ and $1\frac{1}{9}$ =



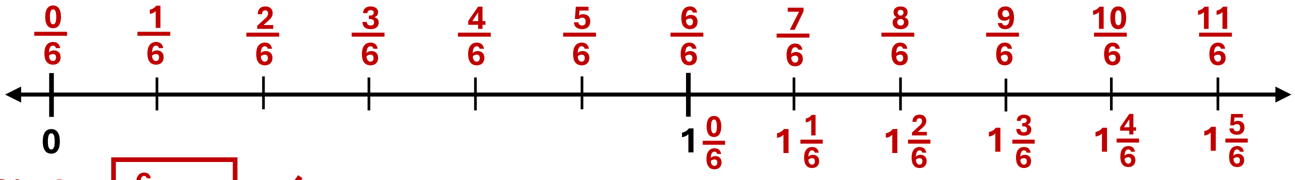
They are equal and occupy the same point on the fractional number line.

2.)



Thirds $\boxed{\frac{6}{3} = 2}$ ✓

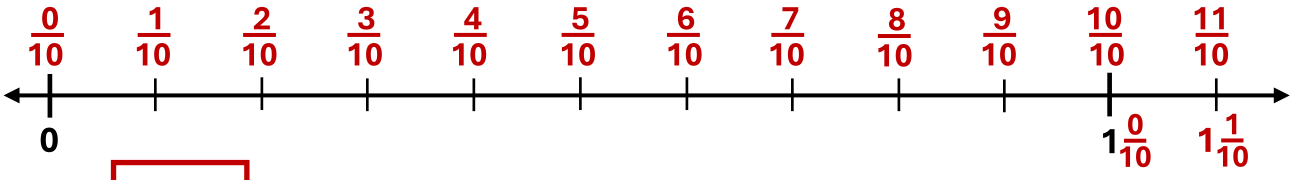
3.)



Sixths $\boxed{\frac{6}{6} = 1}$ ✓

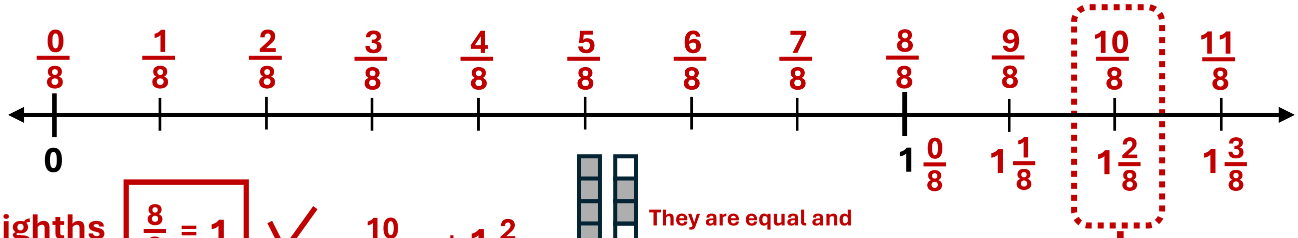
Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

1.)



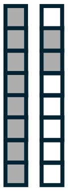
Tenths $\boxed{\frac{10}{10} = 1}$ ✓

2.)



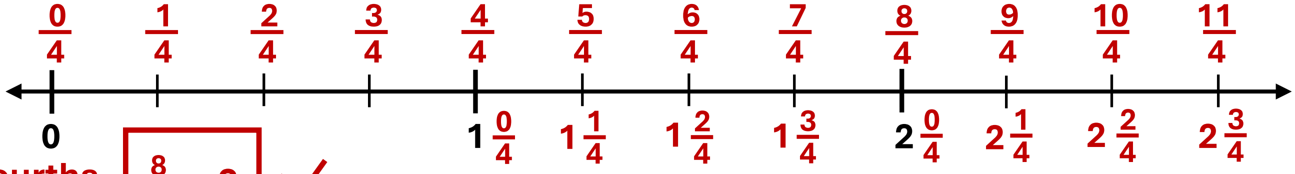
Eighths $\boxed{\frac{8}{8} = 1}$ ✓

$\frac{10}{8}$ and $1\frac{2}{8}$ =



They are equal and occupy the same point on the fractional number line.

3.)



Fourths $\boxed{\frac{8}{4} = 2}$ ✓

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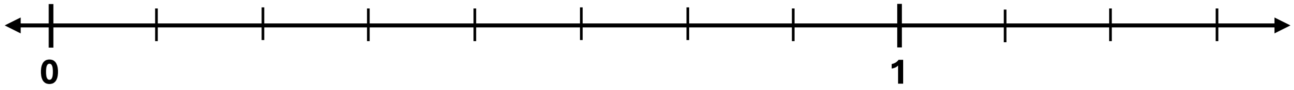
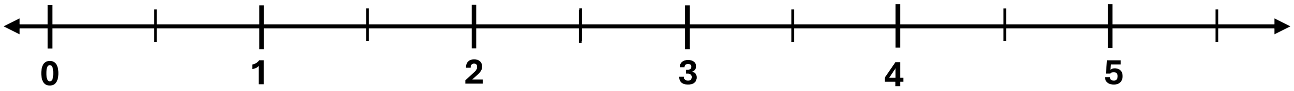
Fractional Number Line Practice – V8

Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

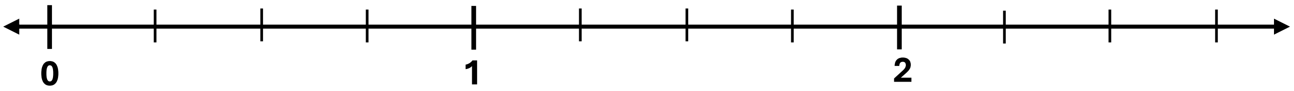
1.)



2.)

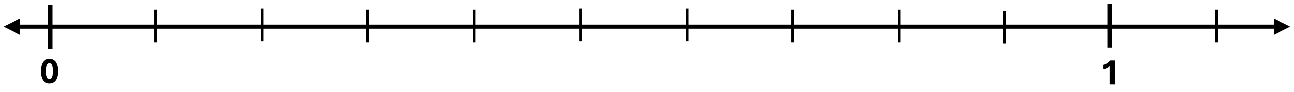


3.)

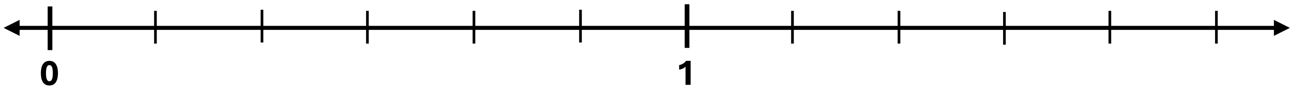


Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

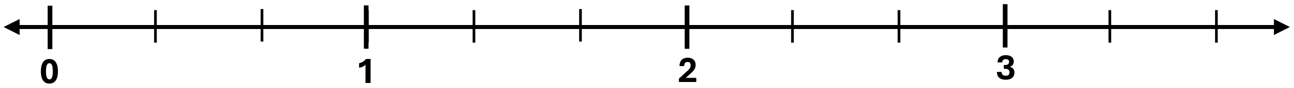
1.)



2.)



3.)



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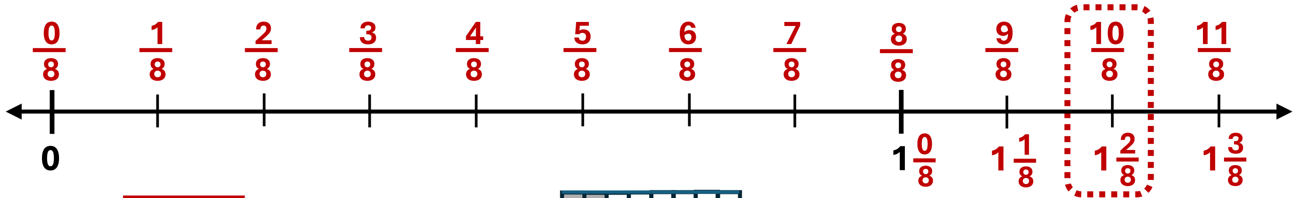
ANSWER KEY Fractional Number Line Practice – V8

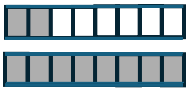
Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

1.)



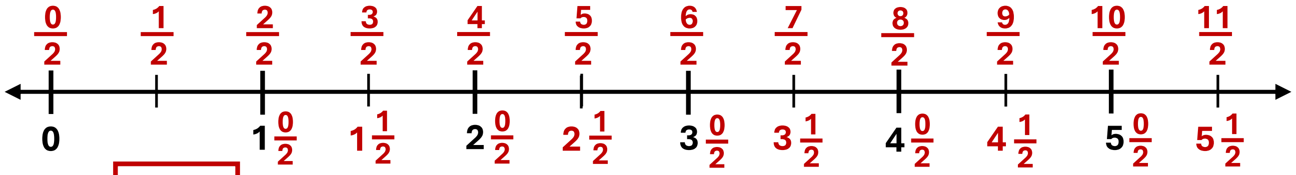
Eighths $\boxed{\frac{8}{8} = 1}$ ✓

$\frac{10}{8}$ and $1\frac{2}{8}$ =



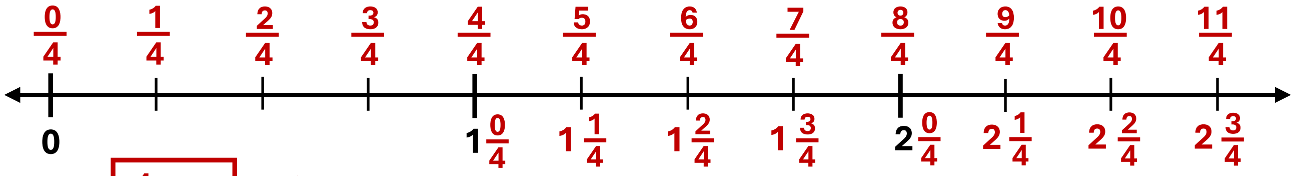
They are equal and occupy the same point on the fractional number line.

2.)



Halves $\boxed{\frac{4}{2} = 2}$ ✓

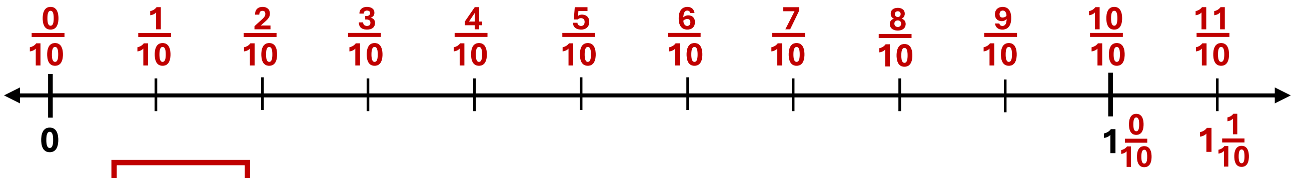
3.)



Fourths $\boxed{\frac{4}{4} = 1}$ ✓

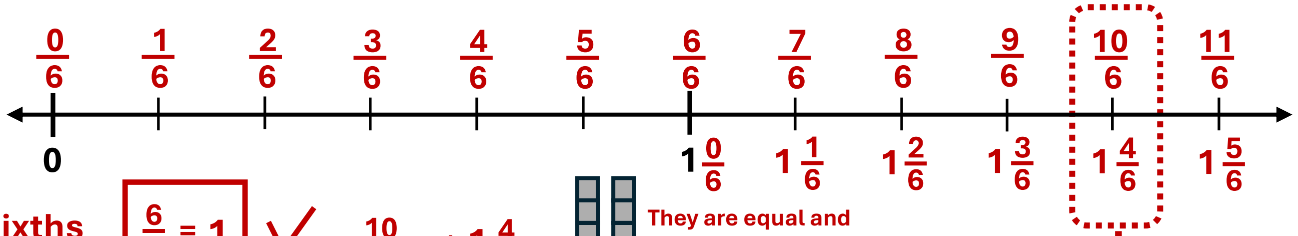
Directions: **Complete** each fractional number line by writing the proper fractions, improper fractions, and mixed numbers per your teacher's instructions.

1.)



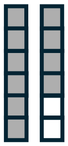
Tenths $\boxed{\frac{10}{10} = 1}$ ✓

2.)



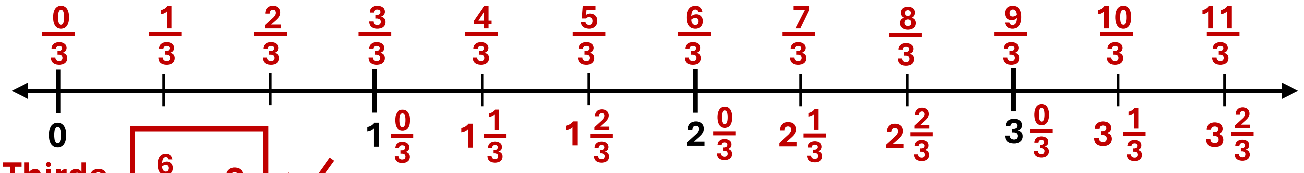
Sixths $\boxed{\frac{6}{6} = 1}$ ✓

$\frac{10}{6}$ and $1\frac{4}{6}$ =



They are equal and occupy the same point on the fractional number line.

3.)



Thirds $\boxed{\frac{6}{3} = 2}$ ✓

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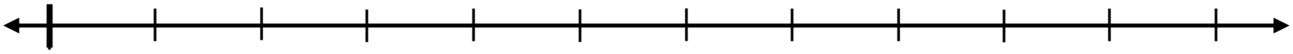
Fractional Number (Blank) Line Practice – V9

Directions: **Complete** each fractional number line as per your teacher's instructions.

1.)

2.)



3.)

Directions: **Complete** each fractional number line as per your teacher's instructions.

1.)

2.)

3.)

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Section 2

Equivalent Fractions
using
Fractional Number Lines

AND…

other fractional concepts that are currently assessed with number lines applications

Educational Learning Maxim:

Whatever human skill – basic or advanced – is practiced with intention and threshold repetitions, will be mastered. Conversely, whatever human skill – basic or advanced – that is NOT practiced with intention and threshold repetitions, will NOT be mastered.

Student Practice Resource

Pedagogical Recommendations – Section 2

This section focuses on the specific applications of fractional number lines that are commonly used on standardized tests, as of this writing in 2024. Equivalent fractions via fractional number lines are a new means to assess this concept, and students **must** be adept at the fractional number line content covered in Section 1 (e.g., a prerequisite skill). If not, many students will be cognitively overwhelmed by fractional number line applications. Furthermore, the vast majority of students will not be able to master this content using spring preparatory exercises or in real time on the day of the standardized assessment. *This content must be taught during Tier 1 classroom instruction*. However, there is good news. Once children have mastered the fractional number line concepts in Section 1, these fractional number line applications are not only a reasonable expectation for both third and fourth grade students, but they are relatively easy for them to understand and master in a short amount of time.

1.) Equivalent Fraction Review:

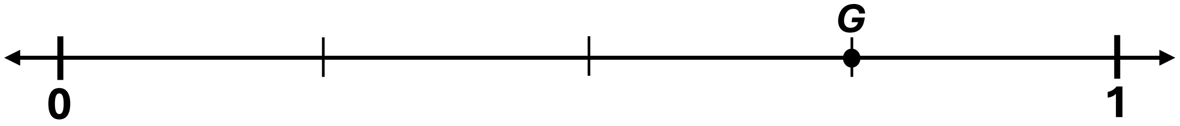
Historically, equivalent fractions are usually presented in two forms. First, the equal area model (Section 3 of this unit), or second, the numeric mathematic form that is also included in this section to provide students basic exposure to that important format. The numeric form is the most common equivalent fraction form that students will use from fifth grade into middle and high school and eventually, university. Specifically, the numeric method is commonly used to compute equivalent fractions when adding or subtracting fractions with unlike denominators or reducing a proper fraction to its simplest form (i.e., lowest terms).

Assessing equivalent fractions using fractional number lines is a relatively unique means to gauge students' understanding of the concept, but it is not unreasonable. It can easily be handled with these exercises and the preparatory skill work from Section 1 of this unit.

Usually, students on the assessment are provided a fractional number line, and they must label and complete the fractional number line as was shown in Section 1. After that work, they must create a second fractional number line to find an equivalent fraction overlay on the original number line. Moreover, students may be asked multiple questions via dropdown boxes on a digital medium. This type of assessment requirement is new. On a digital testing medium, it requires students to recreate the fractional number line on 'scratch' paper – exactly as it is shown on the computer screen – and overlay the original number line with a second fractional number line to determine the equivalent fractions at all locations on the two number lines.

The fractional number line below is presented as an example to illustrate the process that students must be able to complete on a standardized assessment.

Point ***G*** is shown on the number line below.



What two fractions can point ***G*** represent?

Ⓐ $\frac{2}{3}$ **and** $\frac{4}{6}$

Ⓑ $\frac{3}{4}$ **and** $\frac{4}{8}$

Ⓒ $\frac{3}{4}$ **and** $\frac{4}{8}$

Ⓓ $\frac{2}{3}$ **and** $\frac{3}{4}$

At first glance, this math problem may seem unreasonable, but it is **NOT**. It is quite simple, but it requires students demonstrate conceptual numeracy to adeptly solve it.

The solution to this example is provided in step-by-step detail on the next page.

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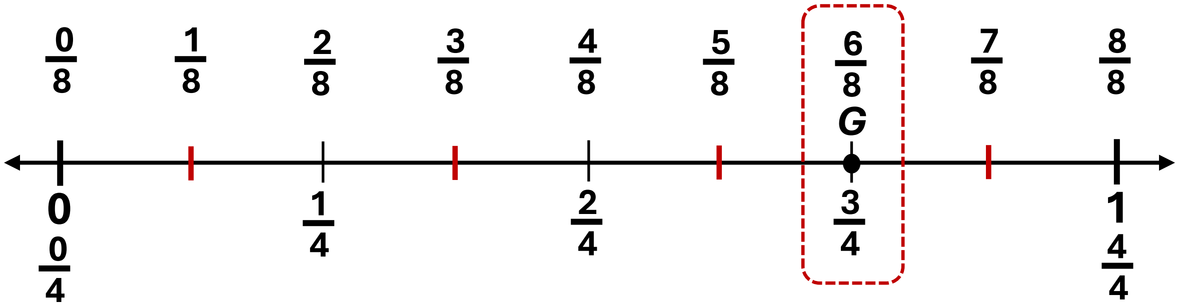
Pedagogical Recommendations – Section 2 (Continued)

Point ***G*** is shown on the number line below.



What two fractions can point ***G*** represent?

Ⓐ $\frac{2}{3}$ **and** $\frac{4}{6}$

Ⓒ $\frac{3}{4}$ **and** $\frac{4}{8}$

$$\boxed{\frac{3}{4} = \frac{6}{8}}$$

Ⓑ $\frac{3}{4}$ **and** $\frac{6}{8}$ ◀

Ⓓ $\frac{2}{3}$ **and** $\frac{3}{4}$

Answer B

First, the student must label each point on the (original - displayed) fractional number line. The number line is divided into fourths (i.e., there are four equal spaces between 0 and 1). ***"Count the equal spaces and label the lines!"*** ~ mantra for students to recall the process.

Label the fractional number line beginning with the following: $^{0}/_{4}$, $^{1}/_{4}$, $^{2}/_{4}$, $^{3}/_{4}$, and $^{4}/_{4}$.

Note that **1** whole equals $^{4}/_{4}$. Thus, the number line is correctly labeled in fourths (i.e., $^{4}/_{4}$ = 1)

Second, create a second fractional number line overlaying the first. This work is also easy. Divide each equal space ($^{1}/_{4}$) into TWO EQUAL SPACES $^{1}/_{8}$ each. Same process (eight equal spaces) – NL is in eighths.

Label the new number line beginning with the following: $^{0}/_{8}$, $^{1}/_{8}$, $^{2}/_{8}$, $^{3}/_{8}$, $^{4}/_{8}$, $^{5}/_{8}$, $^{6}/_{8}$, $^{7}/_{8}$, and $^{8}/_{8}$.

Note that **1** whole equals $^{8}/_{8}$. Thus, the new number line is also correctly labeled in eighths (i.e., $^{8}/_{8}$ = 1)

Third, now, it is easy for students to visualize that at point G, the two proper fractions are equal since they occupy the same point on the number line. Answer Choice B is the correct selection in this example.

Note: There are several questions that can be asked in a process like this one using fractional number lines. For example, proper fractions greater than or less compared to a specific fraction (e.g., $^{1}/_{2}$). Students can also be asked which fractions are greater (or less than) than the midpoint on the number line **(students need to know the definition of 'midpoint').** They can also be asked how the student knows that the $^{4}/_{8}$ is equivalent to $^{2}/_{4}$ based on the relationship between the denominator and the numerator – meaning the numerator is half of the denominator in each proper fraction.

Note: Students should be repeatedly taught the importance of quarter points, halves and that the improper fraction $^{2}/_{2}$ = $^{3}/_{3}$ = $^{4}/_{4}$ (etc.) = 1 = 1 whole

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Pedagogical Recommendations – Section 2 (Continued)

2.) Fraction analysis via comparing (less than greater than or the equality) of two fractions.

Third and fourth grade students are required via state standards to compare fractions or determine their equality. Usually, students at this age use an aesthetic evaluation using the numerators or denominators to directly compare the two fractions.

A.) Compare the fractions (<, > or =) ~ **aesthetic evaluation of fractions**.

$$\frac{3}{8} \; \textcircled{<} \; \frac{6}{8}$$

Since the denominators (i.e., 8) are the same for both fractions, the numerators can be directly compared to determine the inequality.

$$\frac{3}{4} \; \textcircled{>} \; \frac{3}{6}$$

Since the numerators (i.e., 3) are the same for both fractions, the denominators can be directly compared. The denominator indicates the equal size of their individual parts. ***The smaller the denominator, the bigger the portion.*** **NOTE:** This concept is initially difficult for many elementary students – use equal sized fraction diagrams or pictures so students can mentally visualize the fraction pieces (i.e., denominator) based solely on the numerical size of the denominator.

$$\frac{8}{10} \; \textcircled{>} \; \frac{3}{5}$$

or

$$\frac{4}{5} \; \textcircled{>} \; \frac{3}{5}$$

When the fractions possess different numbers in all numerators and denominators, the fraction can be evaluated by using a halving technique. In this case, the denominator 10 can be halved to 5 (as well as its numerator from 8 to 4). Thus, the student can compare $^4/_5$ and $^3/_5$. An easy comparison in the fraction's relative size to one another.

B.) Compare the fractions (<, > or =) ~ **mathematical numeric evaluation of fractions**.

This process is purely mathematical, and it usually is taught in the spring semester in fourth grade; however, its success is highly dependent upon students possessing mastery of their multiplication and division math facts. In short, the concept is based on the Identity Principle of Multiplication (and Division) – *"Any number multiplied by 1 will remain the same, meaning the product will be the original number itself."*

$$\mathbf{9 \times \underline{1} = 9 \quad \text{but, since } \underline{1} = \frac{2}{2} = \frac{3}{3} = \frac{4}{4} = \frac{5}{5} \text{ etc.}}$$

This mathematical statement is true: $9 \times \underline{1} = 9$ **or** $9 \times \frac{2}{2} = 9$

The example above is pointless for whole numbers, but it is **<u>not</u>** for fractions. We can choose any improper fraction equal to 1 whole and convert fractions to any denominator we desire.

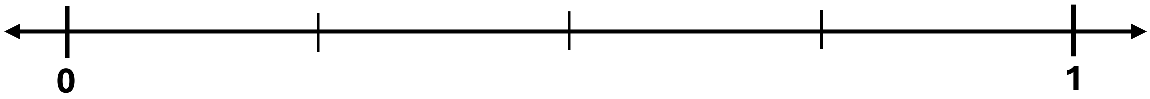
$$\frac{3}{4}\,\frac{\times 5}{\times 5} = \frac{15}{20} \quad \text{or} \quad \boxed{\frac{3}{4} = \frac{15}{20}} \qquad \frac{5}{5} = 1$$

Therefore, the two fractions $^3/_4$ and $^{15}/_{20}$ are equal because $^3/_4$ is actually multiplied by 1 ~ disguised as $^5/_5$.

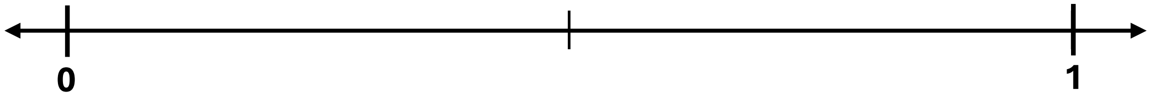
Creating Equivalent Fractional Number Line Overlays – V1

Follow your teacher’s instructions on the fractional number lines below.

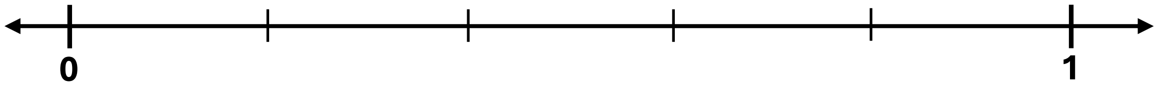
1.)



2.)

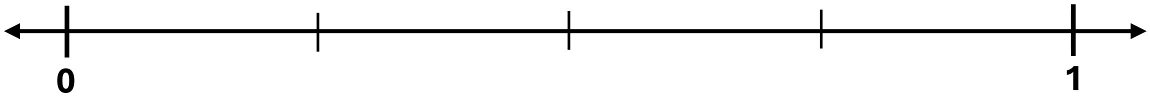


3.)

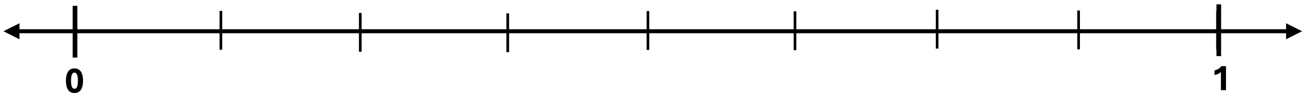


Follow your teacher’s instructions on the fractional number lines below.

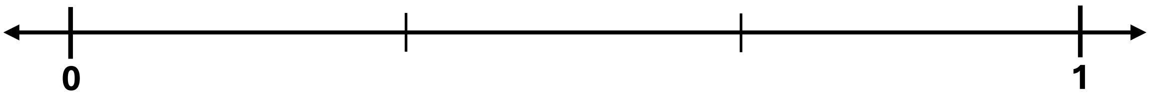
1.)



2.)



3.)



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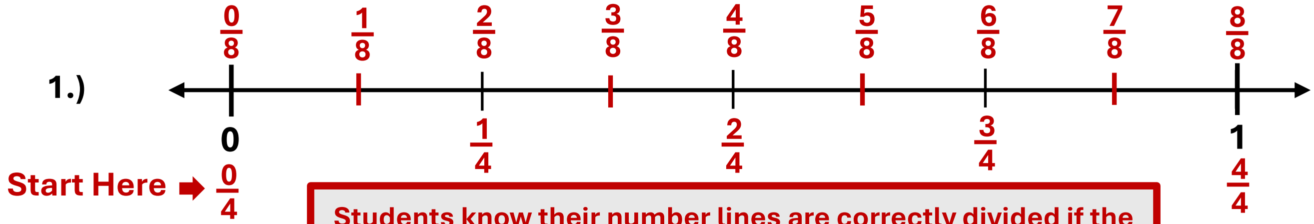
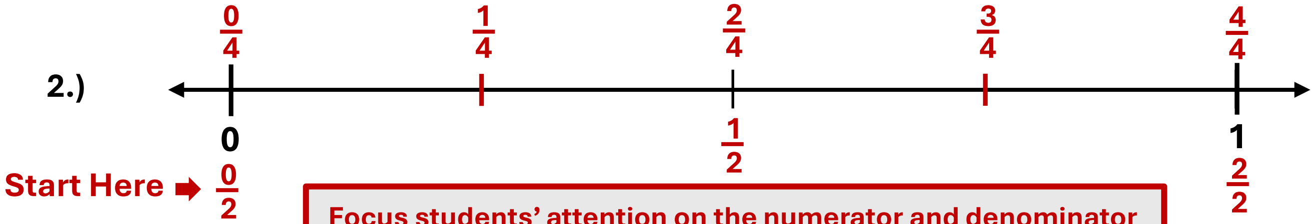
Creating Equivalent Fractional Number Line Overlays – V1

ANSWER KEY

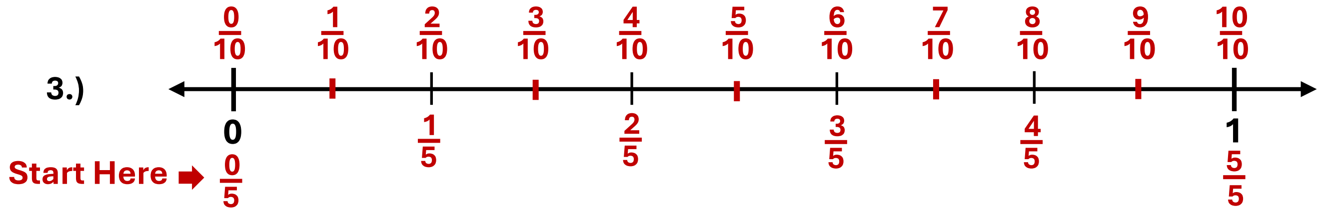
Follow your teacher's instructions on the fractional number lines below.



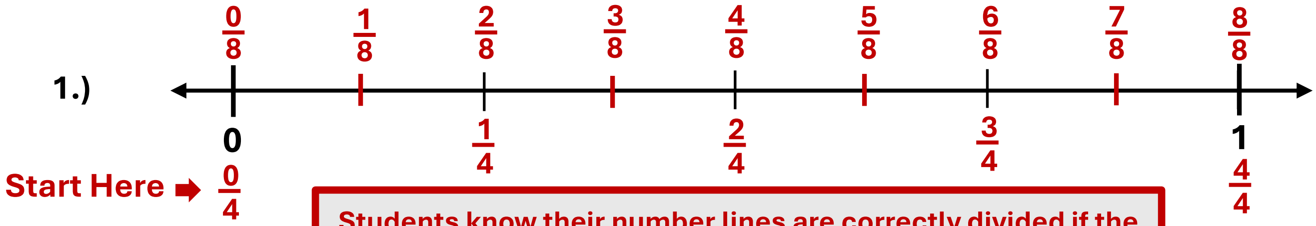
Students know their number lines are correctly divided if the improper fractions $^2/_2$, $^3/_3$, $^4/_4$, etc. are all equal to 1 whole.



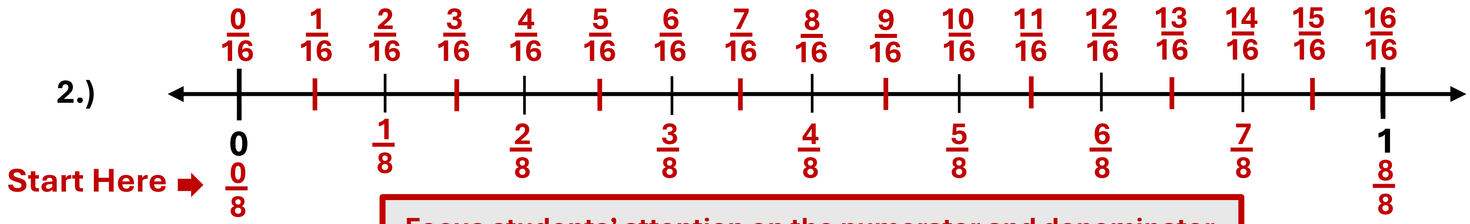
Focus students' attention on the numerator and denominator of one-half (the numerator is *always* half the denominator).



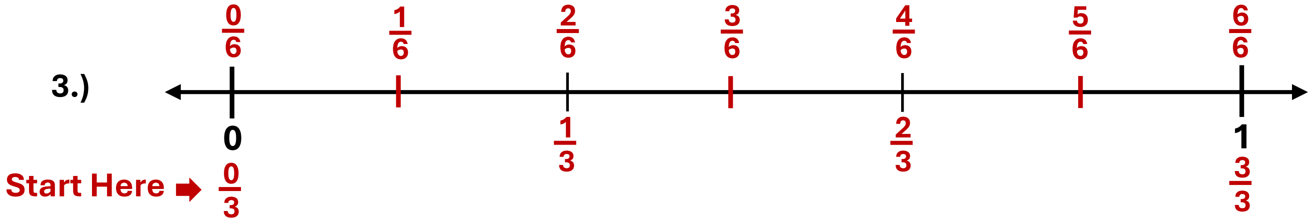
Follow your teacher's instructions on the fractional number lines below.



Students know their number lines are correctly divided if the improper fractions $^2/_2$, $^3/_3$, $^4/_4$, etc. are all equal to 1 whole.



Focus students' attention on the numerator and denominator of one-half (the numerator is *always* half the denominator).



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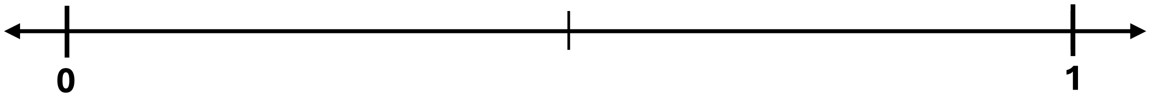
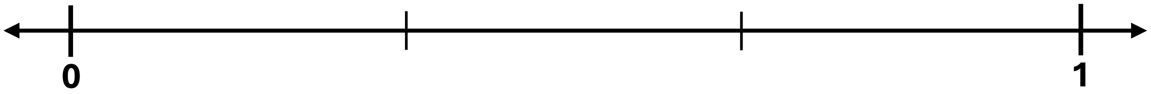
Creating Equivalent Fractional Number Line Overlays – V2

Follow your teacher's instructions on the fractional number lines below.

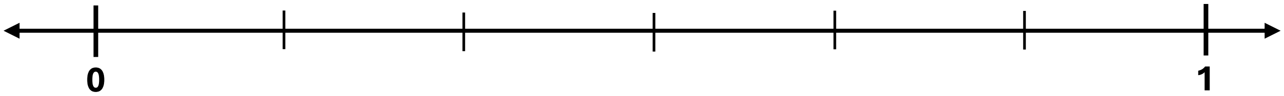
1.)



2.)

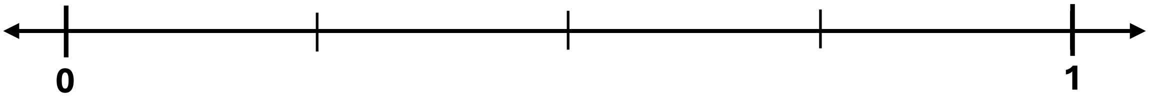


3.)



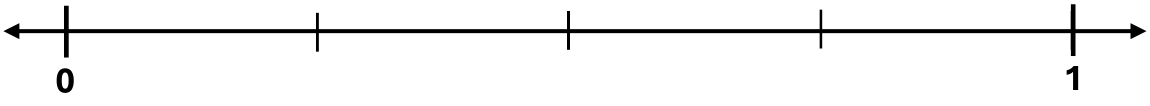
Follow your teacher's instructions on the fractional number lines below.

1.)



2.)

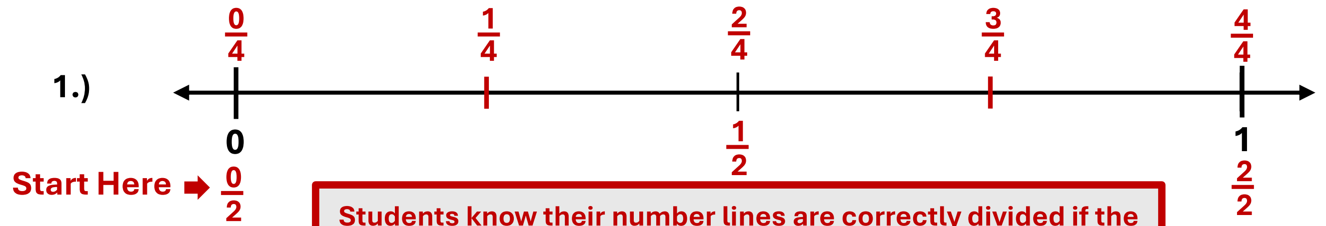
3.)



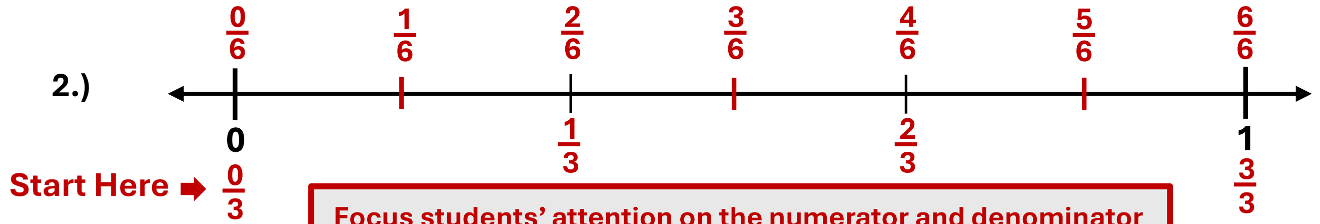
Creating Equivalent Fractional Number Line Overlays – V2

ANSWER KEY

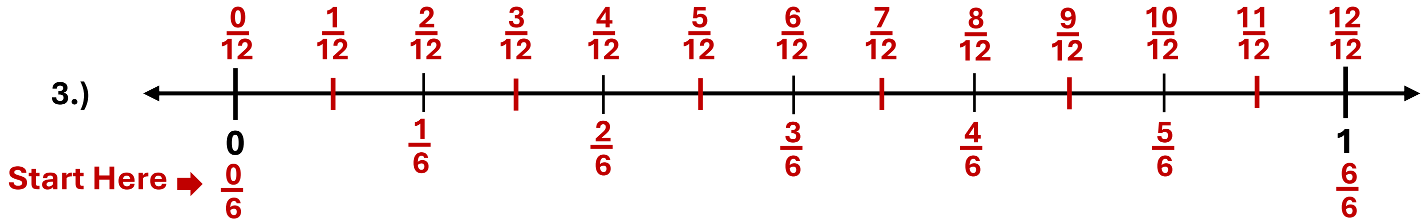
Follow your teacher's instructions on the fractional number lines below.



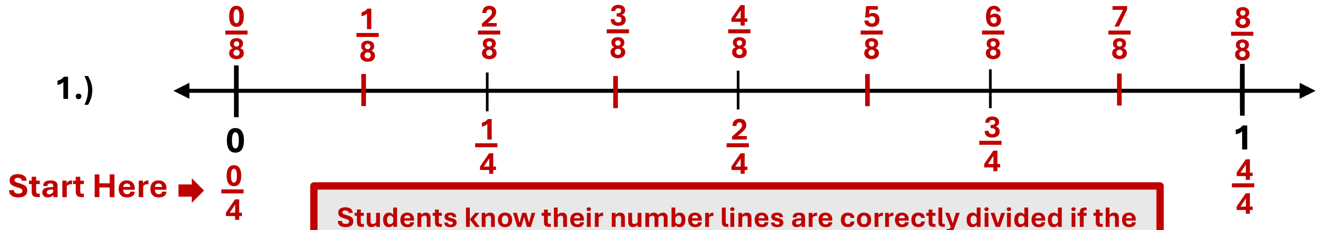
Students know their number lines are correctly divided if the improper fractions $^2/_2$, $^3/_3$, $^4/_4$, etc. are all equal to 1 whole.



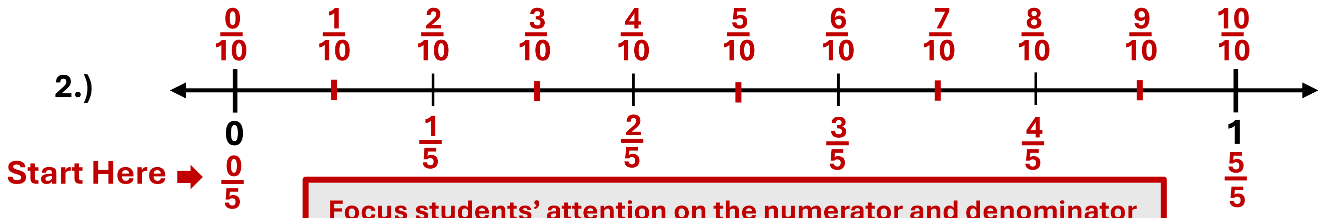
Focus students' attention on the numerator and denominator of one-half (the numerator is *always* half the denominator).



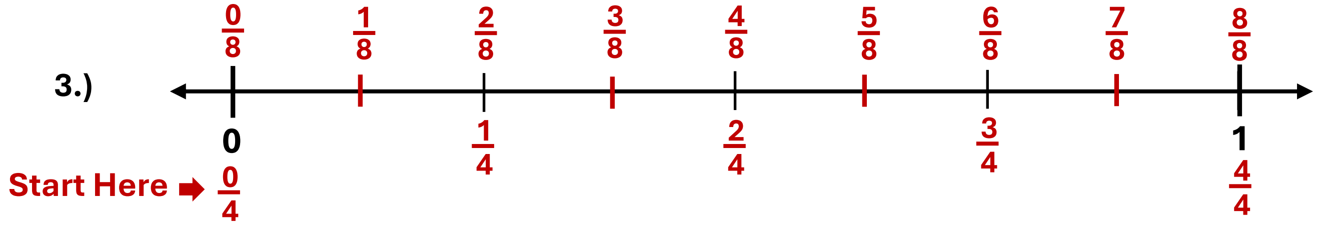
Follow your teacher's instructions on the fractional number lines below.



Students know their number lines are correctly divided if the improper fractions $^2/_2$, $^3/_3$, $^4/_4$, etc. are all equal to 1 whole.



Focus students' attention on the numerator and denominator of one-half (the numerator is *always* half the denominator).



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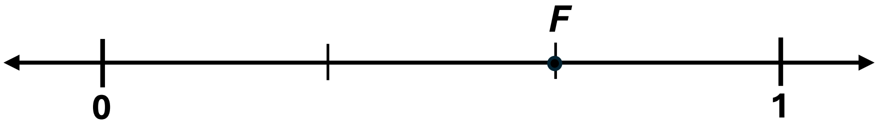
Fractional Number Line Practice – V3

Point ***F*** is shown on the number line.



- What two (2) fractions does point ***F*** represent?

Ⓐ $\frac{1}{3}$ **and** $\frac{2}{6}$ Ⓒ $\frac{2}{3}$ **and** $\frac{4}{8}$

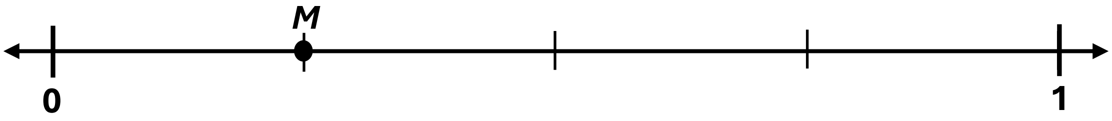
Ⓑ $\frac{3}{4}$ **and** $\frac{6}{8}$ Ⓓ $\frac{2}{3}$ **and** $\frac{4}{6}$

- What fraction is less than the midpoint on the number line?

Ⓐ $\frac{1}{3}$ Ⓒ $\frac{1}{2}$

Ⓑ $\frac{3}{4}$ Ⓓ $\frac{2}{3}$

Point ***M*** is shown on the number line.



- Which two (2) fractions does point ***M*** represent?

Ⓐ $\frac{1}{5}$ **and** $\frac{2}{10}$ Ⓒ $\frac{2}{8}$ **and** $\frac{1}{4}$

Ⓑ $\frac{1}{4}$ **and** $\frac{2}{6}$ Ⓓ $\frac{1}{4}$ **and** $\frac{3}{8}$

- What fraction **<u>on the number line</u>** is greater than $\frac{1}{2}$?

Ⓐ $\frac{4}{5}$ Ⓒ $\frac{3}{8}$

Ⓑ $\frac{3}{4}$ Ⓓ $\frac{1}{2}$

- I know that $\frac{2}{4}$ is equal to one-half because the _______________ is half of the _______________.

(Circle two answers.)

numerator   numerator

denominator   denominator

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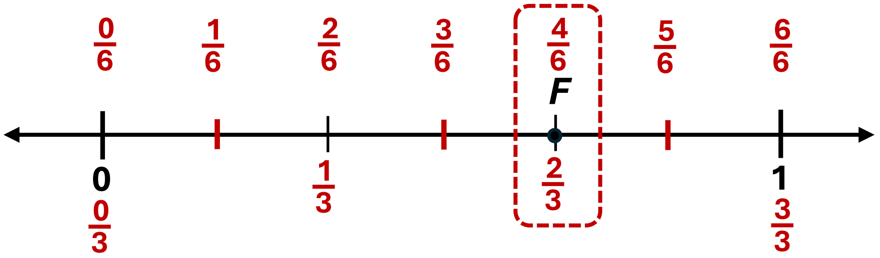
ANSWER KEY Fractional Number Line Practice – V3

Point ***F*** is shown on the number line.



- What two (2) fractions does point ***F*** represent?

$\boxed{\frac{2}{3} = \frac{4}{6}}$

Ⓐ $\frac{1}{3}$ and $\frac{2}{6}$ Ⓒ $\frac{2}{3}$ and $\frac{4}{8}$

Ⓑ $\frac{3}{4}$ and $\frac{6}{8}$ ● $\frac{2}{3}$ and $\frac{4}{6}$ ◀

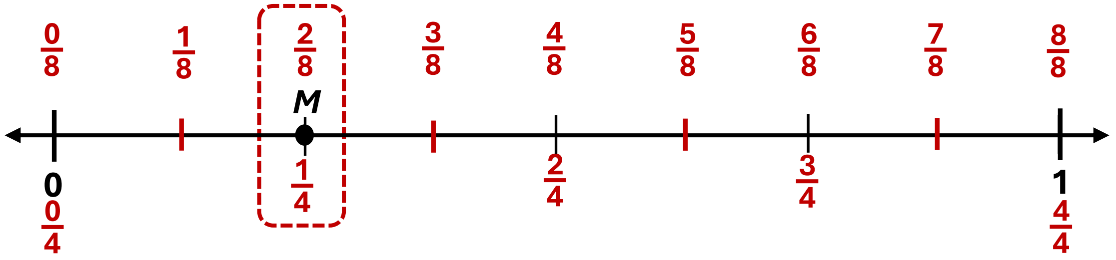
- What fraction is less than the midpoint on the number line?

<u>**Less**</u> than the midpoint – **½** <u>**is**</u> the midpoint.

● $\frac{1}{3}$ ◀   Ⓒ $\frac{1}{2}$

Ⓑ $\frac{3}{4}$ Ⓓ $\frac{2}{3}$

Point ***M*** is shown on the number line.



- Which two (2) fractions does point ***M*** represent?

Ⓐ $\frac{1}{5}$ and $\frac{2}{10}$ ● $\frac{2}{8}$ and $\frac{1}{4}$ ◀

Ⓑ $\frac{1}{4}$ and $\frac{2}{6}$ Ⓓ $\frac{1}{4}$ and $\frac{3}{8}$

- What fraction **<u>on the number line</u>** is greater than $\frac{1}{2}$?

Ⓐ $\frac{4}{5}$ Ⓒ $\frac{3}{8}$

● $\frac{3}{4}$ ◀   Ⓓ $\frac{1}{2}$

- I know that $\frac{2}{4}$ is equal to one-half because the ______________ is half of the ______________.

(Circle two answers.)   [✓ numerator] denominator   numerator [✓ denominator]

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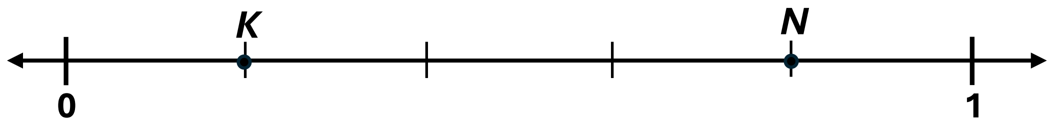
Fractional Number Line Practice – V4

Point ***K*** and ***N*** are shown on the number line.



- Which two (2) fractions does point ***K*** represent?

Ⓐ $\frac{1}{5}$ and $\frac{8}{10}$

Ⓑ $\frac{3}{10}$ and $\frac{2}{5}$

Ⓒ $\frac{2}{10}$ and $\frac{1}{5}$

Ⓓ $\frac{8}{10}$ and $\frac{4}{5}$

- Complete: $\frac{5}{5} = \boxed{}$ and $\frac{4}{5} = \frac{\boxed{}}{10}$

- What two fractions are greater than the midpoint on the number line?

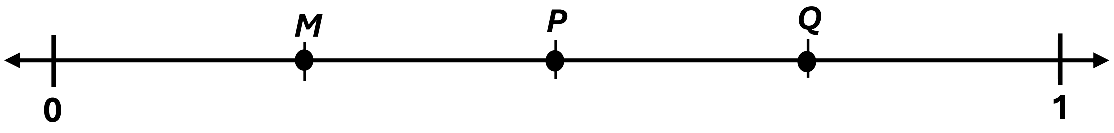
Ⓐ $\frac{2}{5}$ and $\frac{3}{5}$

Ⓑ $\frac{3}{5}$ and $\frac{4}{5}$

Ⓒ $\frac{4}{10}$ and $\frac{4}{5}$

Ⓓ $\frac{7}{10}$ and $\frac{2}{5}$

Point ***M, P*** and **Q** are shown on the number line.



- Which two (2) fractions does point ***Q*** represent?

Ⓐ $\frac{3}{4}$ and $\frac{6}{8}$

Ⓑ $\frac{1}{4}$ and $\frac{2}{8}$

Ⓒ $\frac{2}{8}$ and $\frac{3}{4}$

Ⓓ $\frac{4}{8}$ and $\frac{2}{4}$

- What fraction **<u>on the number line</u>** is between points ***M*** and ***Q***?

Ⓐ $\frac{1}{2}$

Ⓑ $\frac{1}{4}$

Ⓒ $\frac{7}{8}$

Ⓓ $\frac{3}{4}$

- I know that $\frac{4}{8}$ is equal to one-half because the ______________ is half of the ______________.

(Circle two answers.)

numerator
denominator

numerator
denominator

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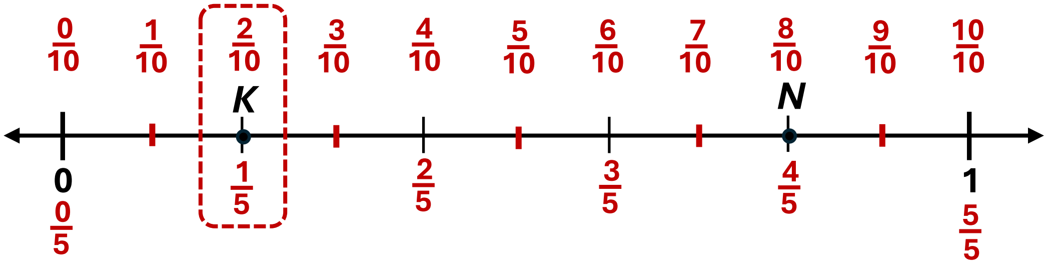
ANSWER KEY Fractional Number Line Practice – V4

Point ***K*** and ***N*** are shown on the number line.



- Which two (2) fractions does point ***K*** represent?

Ⓐ $\frac{1}{5}$ and $\frac{8}{10}$

▶ ● $\frac{2}{10}$ and $\frac{1}{5}$

Ⓑ $\frac{3}{10}$ and $\frac{2}{5}$

Ⓓ $\frac{8}{10}$ and $\frac{4}{5}$

- Complete: $\frac{5}{5} = \boxed{1}$ and $\frac{4}{5} = \frac{\boxed{8}}{10}$

- What two fractions are greater than the midpoint on the number line?

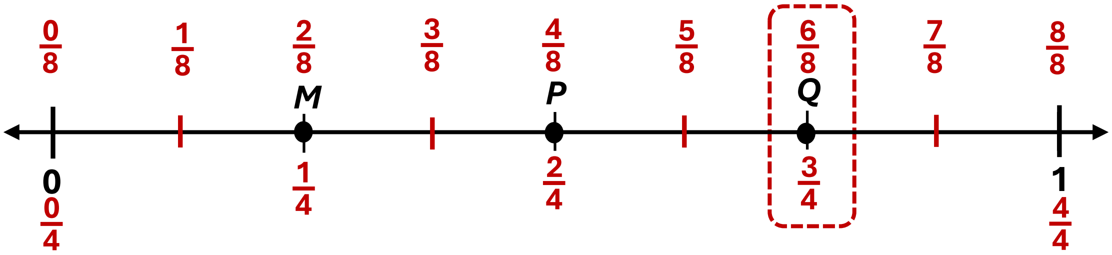
Ⓐ $\frac{2}{5}$ and $\frac{3}{5}$

Ⓒ $\frac{4}{10}$ and $\frac{4}{5}$

● $\frac{3}{5}$ and $\frac{4}{5}$ ◀

Ⓓ $\frac{7}{10}$ and $\frac{2}{5}$

Point ***M, P*** and **Q** are shown on the number line.



- Which two (2) fractions does point ***Q*** represent?

● $\frac{3}{4}$ and $\frac{6}{8}$ ◀

Ⓒ $\frac{2}{8}$ and $\frac{3}{4}$

Ⓑ $\frac{1}{4}$ and $\frac{2}{8}$

Ⓓ $\frac{4}{8}$ and $\frac{2}{4}$

- What fraction **<u>on the number line</u>** is between points ***M*** and ***Q***?

● $\frac{1}{2}$ ◀

Ⓒ $\frac{7}{8}$

Ⓑ $\frac{1}{4}$

Ⓓ $\frac{3}{4}$

- I know that $\frac{4}{8}$ is equal to one-half because the ______________ is half of the ______________.

(Circle two answers.)

[✓ numerator] denominator

numerator [✓ denominator]

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Fractional Number Line Practice – V5

Points ***S*** and ***T*** are shown on the number line.

- What two (2) fractions does point ***S*** represent?

Ⓐ $\frac{1}{3}$ and $\frac{2}{6}$ Ⓒ $\frac{2}{3}$ and $\frac{4}{8}$

Ⓑ $\frac{3}{4}$ and $\frac{6}{8}$ Ⓓ $\frac{2}{3}$ and $\frac{4}{6}$

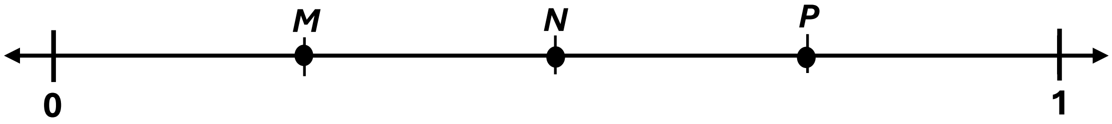
- Complete: $\frac{2}{3} = \frac{\boxed{}}{6}$ and $\frac{6}{6} = \boxed{}$

- What fraction is greater than the midpoint on the number line?

Ⓐ $\frac{1}{3}$ Ⓒ $\frac{1}{2}$

Ⓑ $\frac{2}{6}$ Ⓓ $\frac{2}{3}$

Point ***M***, ***N*** and ***P*** are shown on the number line.



- Which two (2) fractions does point ***P*** represent?

Ⓐ $\frac{1}{5}$ and $\frac{2}{10}$ Ⓒ $\frac{2}{8}$ and $\frac{1}{4}$

Ⓑ $\frac{3}{4}$ and $\frac{6}{8}$ Ⓓ $\frac{1}{4}$ and $\frac{3}{8}$

- What fraction **<u>on the number line</u>** is located at the midpoint?

Ⓐ $\frac{5}{8}$ Ⓒ $\frac{3}{8}$

Ⓑ $\frac{3}{4}$ Ⓓ $\frac{1}{2}$

- I know that $\frac{1}{4}$ is **equal** to $\frac{2}{8}$ because the numerator and denominator of $\frac{1}{4}$ are both multiplied by $\boxed{}$. $\frac{2}{2}$ is actually equal to $\boxed{}$. $\boxed{\frac{1}{4} = \frac{2}{8}}$ *or* $\boxed{\frac{1 \times 2}{4 \times 2} = \frac{2}{8}}$

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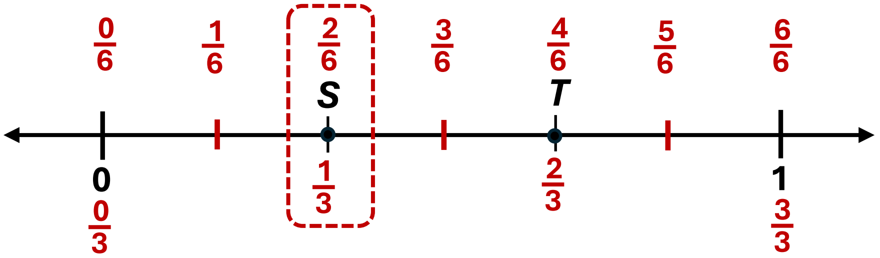
ANSWER KEY Fractional Number Line Practice – V5

Points ***S*** and ***T*** are shown on the number line.



$\frac{2}{6} = \frac{1}{3}$

- What two (2) fractions does point ***S*** represent?

● $\frac{1}{3}$ and $\frac{2}{6}$ ◄

Ⓒ $\frac{2}{3}$ and $\frac{4}{8}$

Ⓑ $\frac{3}{4}$ and $\frac{6}{8}$

Ⓓ $\frac{2}{3}$ and $\frac{4}{6}$

- Complete: $\frac{2}{3} = \frac{\boxed{4}}{6}$ and $\frac{6}{6} = \boxed{1}$

- What fraction is greater than the midpoint on the number line?

Ⓐ $\frac{1}{3}$

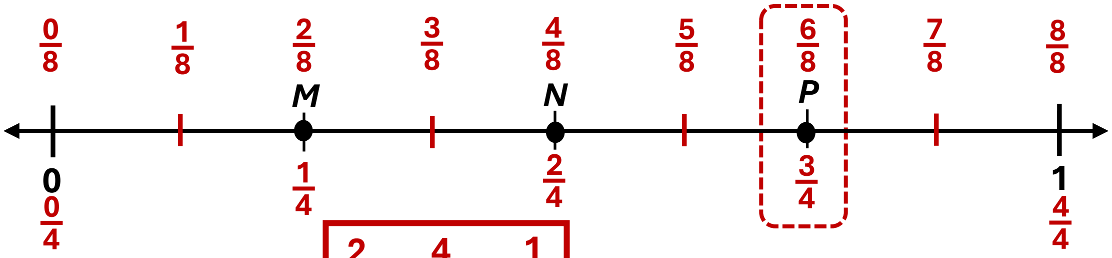
Ⓒ $\frac{1}{2}$

Ⓑ $\frac{2}{6}$

● $\frac{2}{3}$ ◄

greater than the midpoint – ½ **is** the midpoint.

Point ***M***, ***N*** and ***P*** are shown on the number line.



$\frac{2}{4} = \frac{4}{8} = \frac{1}{2}$

- Which two (2) fractions does point ***P*** represent?

Ⓐ $\frac{1}{5}$ and $\frac{2}{10}$

Ⓒ $\frac{2}{8}$ and $\frac{1}{4}$

● $\frac{3}{4}$ and $\frac{6}{8}$ ◄

Ⓓ $\frac{1}{4}$ and $\frac{3}{8}$

- What fraction **on the number line** is located at the midpoint?

Ⓐ $\frac{5}{8}$

Ⓒ $\frac{3}{8}$

Ⓑ $\frac{3}{4}$

● $\frac{1}{2}$ ◄

- I know that $\frac{1}{4}$ is **equal** to $\frac{2}{8}$ because the numerator and denominator of $\frac{1}{4}$ are both multiplied by $\boxed{2}$. $\frac{2}{2}$ is actually equal to $\boxed{1}$.

$\frac{1}{4} = \frac{2}{8}$ *or* $\frac{1 \times 2}{4 \times 2} = \frac{2}{8}$

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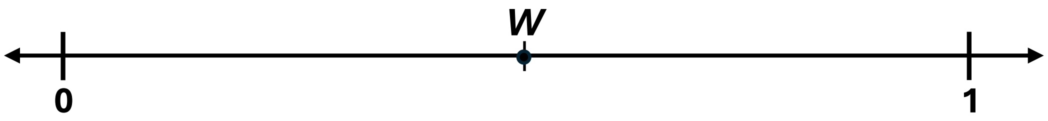
Fractional Number Line Practice – V6

Point ***W*** is shown on the number line. ***Hint:*** *Create an equivalent number line in fourths.*



- Which two (2) fractions does point ***W*** represent?

  Select two answers.

  Ⓐ $\frac{1}{4}$ Ⓒ $\frac{1}{2}$ Ⓕ $\frac{2}{3}$

  Ⓑ $\frac{2}{2}$ Ⓓ $\frac{3}{4}$ Ⓖ $\frac{2}{4}$

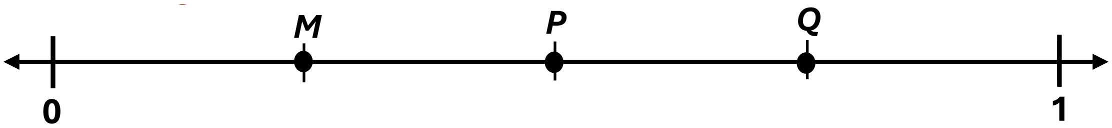
- Complete: $\frac{4}{4} = \square$ and $\frac{\square}{2} = \frac{2}{4}$

- How do I know that fractions that are half-way between 0 and 1 are equal to ½ ? ➡

  <u>Answer the question</u>. Fill in the two blanks:

  Because the _______________ is exactly half the value of the fraction's ________________.

Point ***M, P*** and ***Q*** are shown on the number line.



- Which two fractions are greater than Point ***M***?

  Select two answers.

  Ⓐ $\frac{1}{4}$ Ⓒ $\frac{2}{8}$ Ⓕ $\frac{2}{9}$

  Ⓑ $\frac{1}{8}$ Ⓓ $\frac{3}{4}$ Ⓖ $\frac{2}{4}$

- Complete: $\square = \frac{8}{8}$ and $\frac{\square}{8} = \frac{2}{4}$ and $\frac{\square}{8} > \frac{6}{8}$ and $\frac{\square}{4} < \frac{2}{4}$

- What fraction **<u>on the number line</u>** is between points ***M*** and ***Q***?

  Ⓐ $\frac{2}{4}$ Ⓒ $\frac{2}{8}$

  Ⓑ $\frac{1}{4}$ Ⓓ $\frac{3}{4}$

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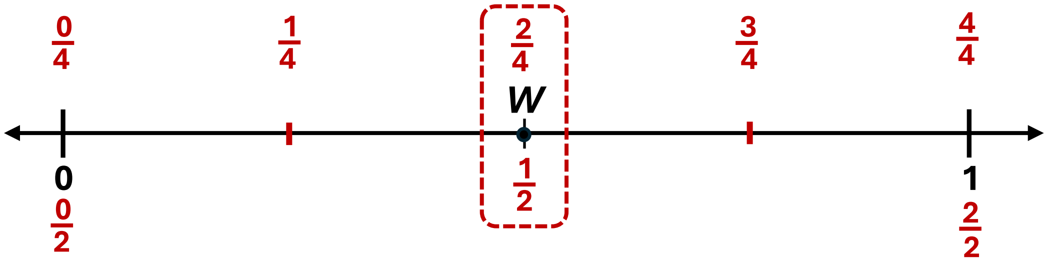
ANSWER KEY Fractional Number Line Practice – V6

Point ***W*** is shown on the number line. ***Hint:*** *Create an equivalent number line in fourths.*



- Which two (2) fractions does point ***W*** represent?

Select two answers.

Ⓐ $\frac{1}{4}$ ● $\frac{1}{2}$ ◀ Ⓕ $\frac{2}{3}$

Ⓑ $\frac{2}{2}$ Ⓓ $\frac{3}{4}$ ● $\frac{2}{4}$ ◀

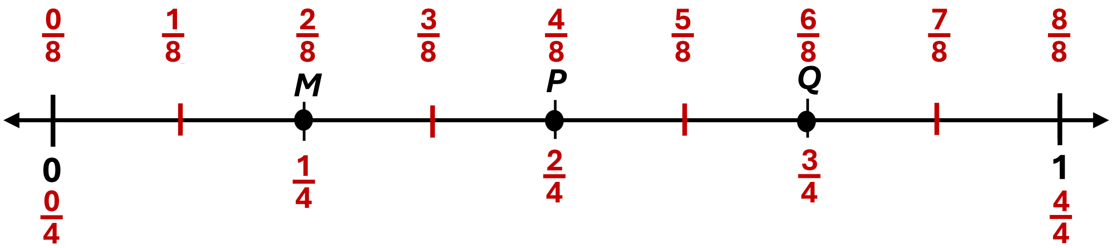
- Complete: $\frac{4}{4} = \boxed{1}$ and $\frac{\boxed{1}}{2} = \frac{2}{4}$

- How do I know that fractions that are half-way between 0 and 1 are equal to ½ ? ➡

Answer the question. Fill in the two blanks:

Because the ***Numerator*** is exactly half the value of the fraction's ***Denominator*** .

Point ***M, P*** and ***Q*** are shown on the number line.



- Which two fractions are greater than Point ***M***?

Select two answers.

● $\frac{1}{4}$ ◀ ● $\frac{2}{8}$ ◀ Ⓕ $\frac{2}{9}$

Ⓑ $\frac{1}{8}$ Ⓓ $\frac{3}{4}$ Ⓖ $\frac{2}{4}$

- Complete: $\boxed{1} = \frac{8}{8}$ and $\frac{\boxed{4}}{8} = \frac{2}{4}$ and $\frac{\boxed{}}{8} > \frac{6}{8}$ 7 or 8 and $\frac{\boxed{}}{4} < \frac{2}{4}$ 0 or 1

- What fraction **on the number line** is between points ***M*** and ***Q***?

● $\frac{2}{4}$ ◀ Ⓒ $\frac{2}{8}$

Ⓑ $\frac{1}{4}$ Ⓓ $\frac{3}{4}$

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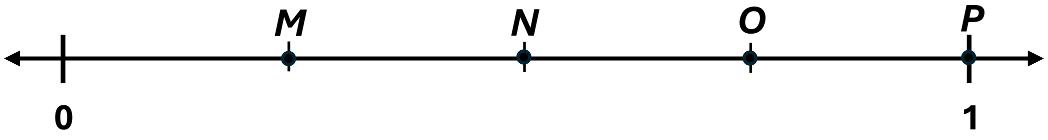
Fractional Number Line Practice – V7

Point ***N, M, O,*** *and* ***P*** are shown on the number line. Answer the questions below.

Hint: *Create an equivalent number line in eighths.*



- The fractions located at point ***M*** / ***N*** / ***O*** / ***P*** are equal to these **two** fractions $\frac{6}{8}$ / $\frac{4}{8}$ / $\frac{3}{4}$ / $\frac{1}{4}$.

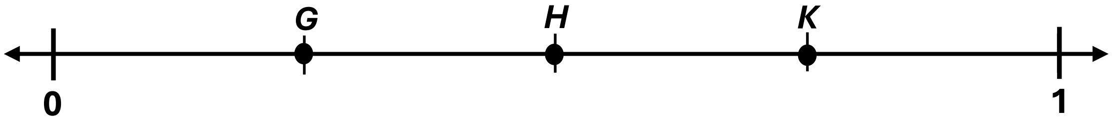
Circle the correct answer.

Circle the correct two answers.

- What point on the number line represents the half-way *or* the midpoint on the number line above? ***Point*** _____

(Write your answer on the line provided to the right.)

Point ***G, H*** and ***K*** are shown on the number line. Use the number line to answer the questions.



- Which three fractions are greater than Point ***G***?

Hint: *Create an equivalent number line in eighths.*

Ⓐ $\frac{1}{4}$ Ⓒ $\frac{3}{8}$ Ⓕ $\frac{1}{8}$

Ⓑ $\frac{7}{8}$ Ⓓ $\frac{2}{8}$ Ⓖ $\frac{5}{8}$

- Complete: $\square = \frac{8}{8}$ and $\frac{\square}{4} = \frac{4}{8}$ and $\frac{\square}{4} > \frac{1}{4}$ and $\frac{\square}{4} < \frac{2}{4}$

- What fraction **on the number line** is between points ***G*** and ***K***?

Ⓐ $\frac{3}{4}$ Ⓒ $\frac{2}{8}$

Ⓑ $\frac{1}{4}$ Ⓓ $\frac{2}{4}$

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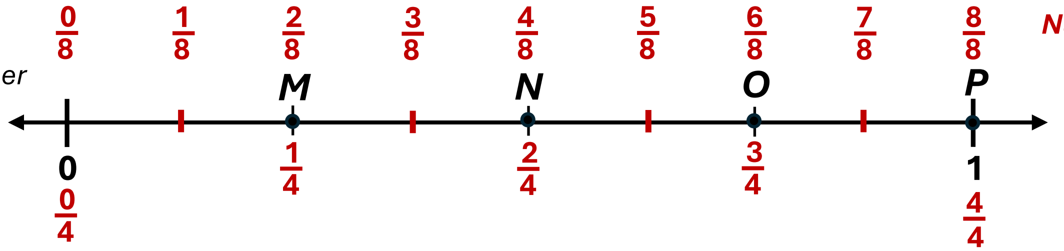
ANSWER KEY Fractional Number Line Practice – V7

Point ***N, M, O,*** *and* ***P*** are shown on the number line. Answer the questions below.

Hint: *Create an equivalent number line in eighths.*



Number lines are correct, since:

$^{4}/_{4} = {}^{8}/_{8}$

- The fractions located at point

M

N

[✓ O] ◀

P

Circle the correct answer.

are equal to these **two** fractions

[✓ $\frac{6}{8}$] . ◀

$\frac{4}{8}$

[✓ $\frac{3}{4}$] ◀

$\frac{1}{4}$

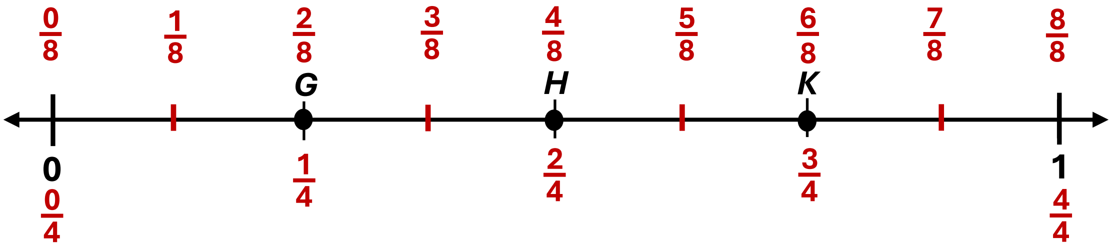
Circle the correct two answers.

- What point on the number line represents the half-way *or* the midpoint on the number line above?

  (Write your answer on the line provided to the right.)

  Point **N**

Point ***G, H*** and ***K*** are shown on the number line. Use the number line to answer the questions.



- Which three fractions are greater than Point ***G***?

  Hint: *Create an equivalent number line in eighths.*

Ⓐ $\frac{1}{4}$ ● $\frac{3}{8}$ ◀ Ⓕ $\frac{1}{8}$

● $\frac{7}{8}$ ◀ Ⓓ $\frac{2}{8}$ ● $\frac{5}{8}$ ◀

- Complete: $\boxed{1} = \frac{8}{8}$ and $\frac{\boxed{2}}{4} = \frac{4}{8}$ and $\frac{\boxed{}}{4} > \frac{1}{4}$ **2, 3 or 4** and $\frac{\boxed{}}{4} < \frac{2}{4}$ **0 or 1**

- What fraction **<u>on the number line</u>** is between points ***G*** and ***K***?

Ⓐ $\frac{3}{4}$ Ⓒ $\frac{2}{8}$

Ⓑ $\frac{1}{4}$ ● $\frac{2}{4}$ ◀

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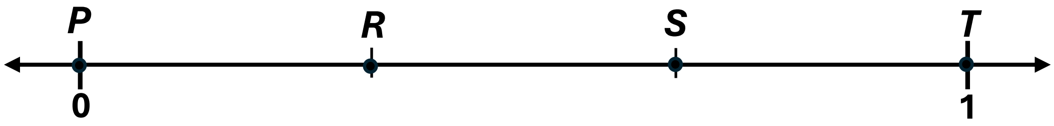
Fractional Number Line Practice – V8

Point ***P, R, S,*** *and* ***T*** are shown on the number line. Answer the questions below.



Hint: *Create an equivalent number line in sixths.*

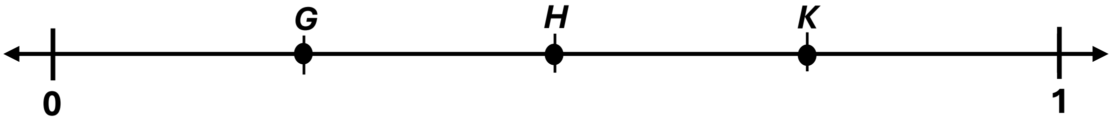
- The fractions located at point **P** / **R** / **S** / **T** are equal to these **two** fractions $\frac{4}{6}$ / $\frac{2}{6}$ / $\frac{5}{6}$ / $\frac{1}{3}$.

  Circle the correct answer. *Circle the correct two answers.*

- What is the fraction in ***sixths*** that represents the half-way *or* the midpoint on the number line above? ***Fraction*** _____

  (Write your answer on the line provided to the right.)

Point ***G, H*** and ***K*** are shown on the number line. Use the number line to answer the questions.



- Which three fractions are greater than Point ***K***?

  Hint: *Create an equivalent number line in eighths.*

  Ⓐ $\frac{4}{4}$ Ⓒ $\frac{7}{8}$ Ⓕ $\frac{1}{8}$

  Ⓑ $\frac{6}{8}$ Ⓓ $\frac{2}{8}$ Ⓖ $\frac{8}{8}$

- Complete: $\square = \frac{8}{8}$ and $\frac{\square}{4} = 1$ and $\frac{\square}{8} = \frac{2}{4}$ $\frac{\square}{8} < \frac{2}{8}$

- What two fractions are located at point ***K***?

  Ⓐ $\frac{3}{4}$ Ⓒ $\frac{6}{8}$

  Ⓑ $\frac{1}{4}$ Ⓓ $\frac{2}{8}$

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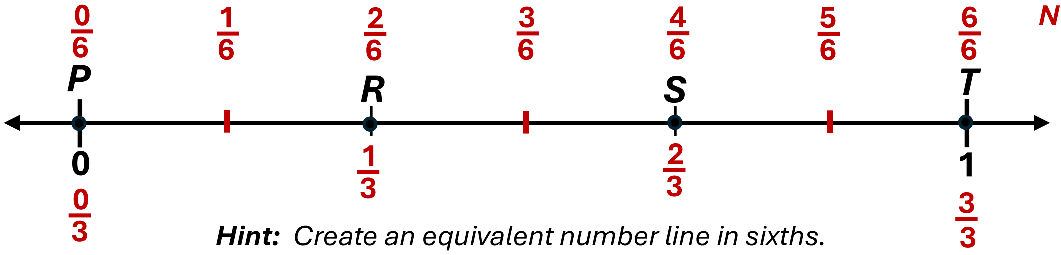
ANSWER KEY Fractional Number Line Practice – V8

Point ***P, R, S, and T*** are shown on the number line. Answer the questions below.



Hint: *Create an equivalent number line in sixths.*

Number lines are correct, since:

$^{3}/_{3} = {}^{6}/_{6}$

- The fractions located at point P [✓ R] S T are equal to these **two** fractions 4/6 [✓ 2/6] 5/6 [✓ 1/3] .

Circle the correct answer. ◀

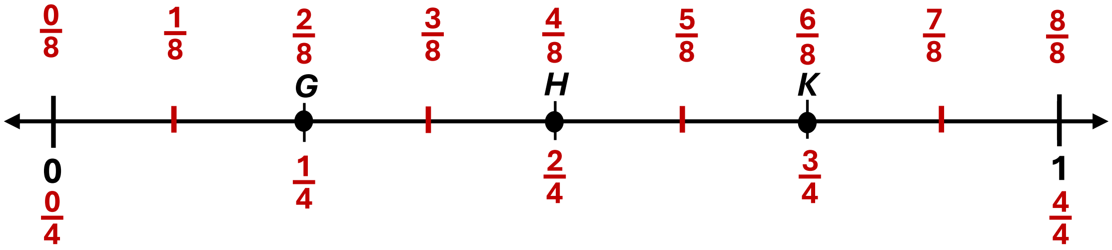
Circle the correct two answers. ◀ ◀

- What is the fraction in ***sixths*** that represents the half-way *or* the midpoint on the number line above?

(Write your answer on the line provided to the right.)

Fraction $\frac{3}{6}$

Point ***G, H*** and ***K*** are shown on the number line. Use the number line to answer the questions.



- Which three fractions are greater than Point ***K***?

Hint: *Create an equivalent number line in eighths.*

● $\frac{4}{4}$ ◀ ● $\frac{7}{8}$ ◀ Ⓕ $\frac{1}{8}$

Ⓑ $\frac{6}{8}$ Ⓓ $\frac{2}{8}$ ● $\frac{8}{8}$ ◀

- Complete: $\boxed{1} = \frac{8}{8}$ and $\frac{\boxed{4}}{4} = 1$ and $\frac{\boxed{4}}{8} = \frac{2}{4}$ and $\frac{\boxed{}}{8} < \frac{2}{8}$ **0 or 1**

- What two fractions are located at point ***K***?

● $\frac{3}{4}$ ◀ ● $\frac{6}{8}$ ◀

Ⓑ $\frac{1}{4}$ Ⓓ $\frac{2}{8}$

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Section 3

Equivalent Fractions
using
Area Models

Educational Learning Maxim:

Whatever human skill – basic or advanced – is practiced with intention and threshold repetitions, will be mastered. Conversely, whatever human skill – basic or advanced – that is NOT practiced with intention and threshold repetitions, will NOT be mastered.

Student Practice Resource

Pedagogical Recommendations – Section 3

This section addresses equivalent fractions **via equal areas**. Outside of the basic understanding of fractions, there are no prerequisites. The fundamental aspect of fractions must be student mastered though. For instance, a fraction is comprised of a numerator and a denominator. The numerator is the “top” number of the fraction, and it is generally the number of equal pieces that (a person) is interested in. In comparison, the denominator (i.e., the bottom number) consists of the TOTAL number of equal pieces of the fraction. ***The key here is EQUAL pieces.*** **Note:** Students must know the working definition of the word, ‘congruent.’

It is strongly recommended pedagogically to stress the definitional aspect of a fraction through actual student practice and not by memorizing discrete definitions, and that the distinct pieces of a fraction are always of equal size. Finally, math terms and vocabulary are **not** contextually presented to students in typical math word problems as are words in reading comprehension passages. Consequently, students must not only hear the word, denominator – for example, they must be able to recognize its correct spelling in print form on a standardized assessment. Finally, it is also recommended that students practice to mastery the spelling of key math vocabulary words and not only visually learning math vocabulary words from the math word wall typically found in most elementary classrooms.

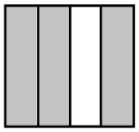
Equivalent Fraction Review by Area:

Usually, learning and mastering the concepts of equivalent fractions by area is (generally) not difficult for most students since they can view the possible fraction choices visually. It is only a matter of rotating a fraction or carefully sorting out the correct answer from a series of choices. The only new glitch in assessing students is that the new digital medium used with standardized testing requires multiple responses in the same question. Of course, as expected, students must practice this process, or they will be attempting to adapt in real time while sitting for the actual assessment.

A typical equivalent fraction via area is presented as an example below.

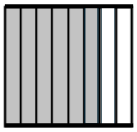
Four fraction models are shown below.

Model R

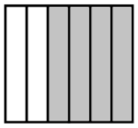


Model S

Model T



Model U



Which two (2) models are shaded to show equivalent fractions?

Ⓐ Models **S** and **R**

Ⓒ Models **S** and **U** ◀ ***Correct*** – Areas of fractions are equal.

Ⓑ Models **R** and **U**

Ⓓ Models **R** and **T** ◀ ***Correct*** – Areas of fractions are equal.

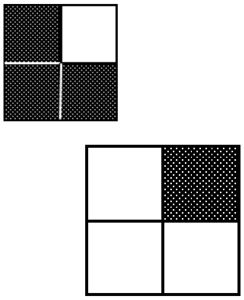
It is important to note that there is a variation to the above example when students are asked to name fractions that are equivalent by fraction quantities (e.g., ¼ or ½) – ***and not via their areas***. There are examples that illustrate this type of problem in the student practice pages. They are not difficult problems if students is proficient with fractions in their common numerator/denominator form. Finally, students must be adept at separating **the fraction model** into its equivalent parts (e.g., $^{1}/_{2} = ^{2}/_{4}$). Practice is all that is required.

Equivalent Fraction Area Practice – V1

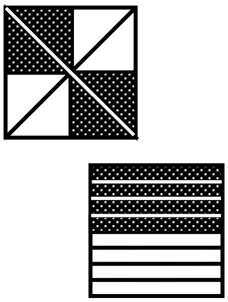
1.) Betty drew two congruent figures. She shaded an equal area of each figure.

Which figure below could be the figure that Betty drew?

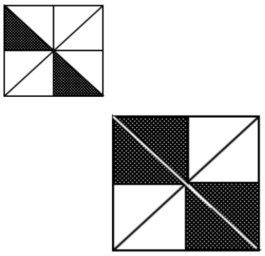
Ⓐ



Ⓑ



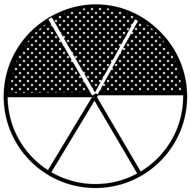
Ⓒ



Ⓓ None of the choices are are congruent or equivalent.

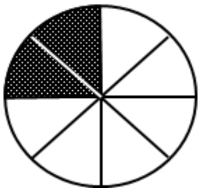
2.) Which diagram below has the correct matching fraction equivalency?

Ⓙ



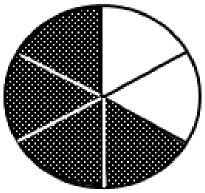
$\frac{1}{2} = \frac{3}{6}$

Ⓚ



$\frac{1}{4} = \frac{2}{8}$

Ⓛ



$\frac{4}{6} = \frac{2}{3}$

Ⓜ All of the choices are equivalent.

1.) Draw to the best of your ability – **<u>congruent</u>** shapes to figure 1 and 2 in the boxes provided.

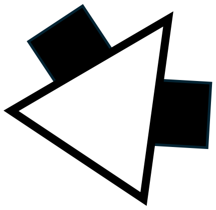


Figure 1

Congruent

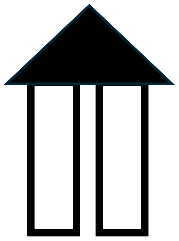
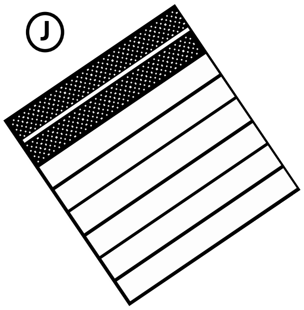


Figure 2

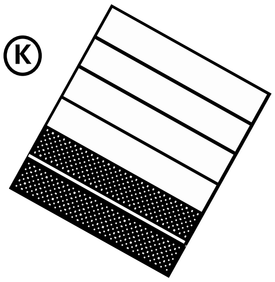
Congruent

2.) Which two fraction diagrams below equal one-fourth? Choose two answers.

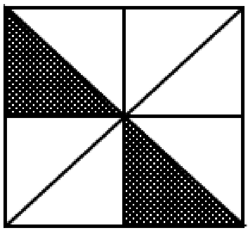
Ⓙ



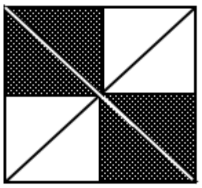
Ⓚ



Ⓛ



Ⓜ



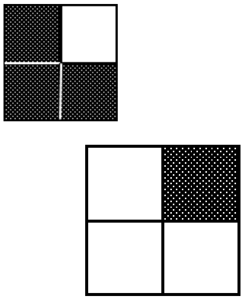
ANSWER KEY Equivalent Fraction Area Practice – V1

1.) Betty drew two congruent figures. She shaded an equal area of each figure.

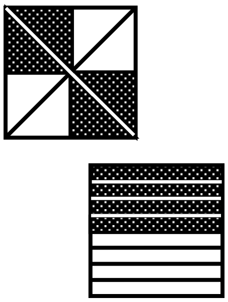
Which figure below could be the figure that Betty drew?

Congruent and equal to ½.

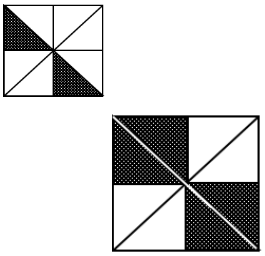
Ⓐ



▶ ●



Ⓒ

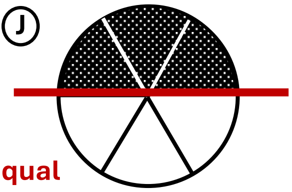


Ⓓ None of the choices are are congruent or equivalent.

Congruent = same size, same shape.

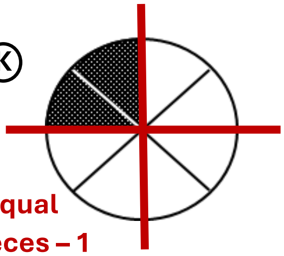
2.) Which diagram below has the correct matching fraction equivalency?

Ⓙ



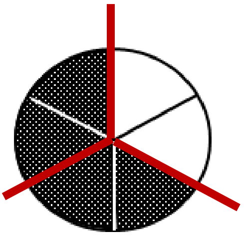
2 equal pieces – 1 shaded. $\frac{1}{2} = \frac{3}{6}$

Ⓚ



4 equal pieces – 1 shaded. $\frac{1}{4} = \frac{2}{8}$

Ⓛ



3 equal pieces – 2 shaded. $\frac{4}{6} = \frac{2}{3}$

● ◀ All of the choices are equivalent.

Practice with students breaking fractional shapes into equivalent pieces as shown above.

1.) Draw to the best of your ability – **congruent** shapes to figure 1 and 2 in the boxes provided.

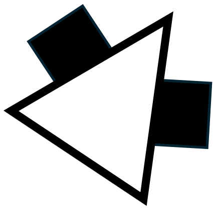
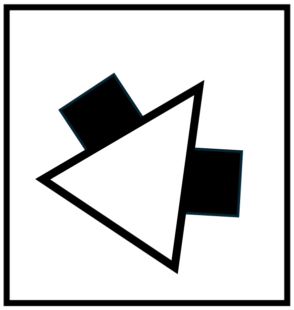


Figure 1



Congruent

Congruent = same size, same shape.

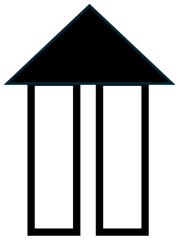
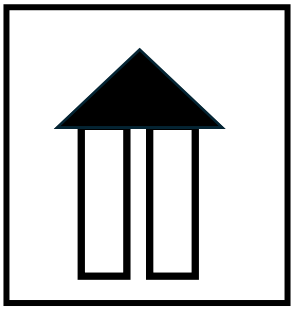


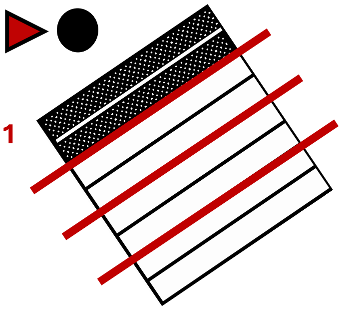
Figure 2



Congruent

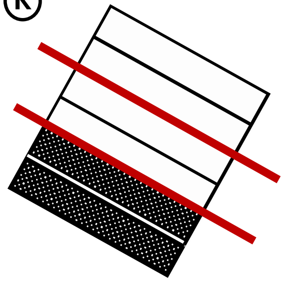
2.) Which two fraction diagrams below equal one-fourth? Choose two answers.

▶ ●



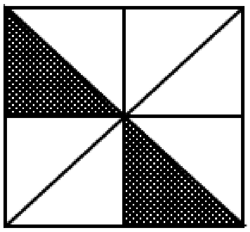
4 equal pieces – 1 shaded.

Ⓚ



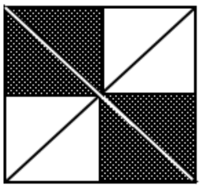
Sixths or thirds ($^1/_3$ or $^2/_6$).

▶ ●



Move and rotate one triangle to make ¼.

Ⓜ

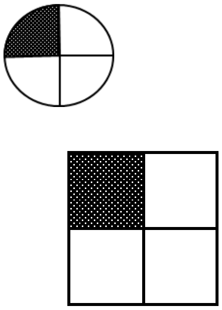


Equal to ½.

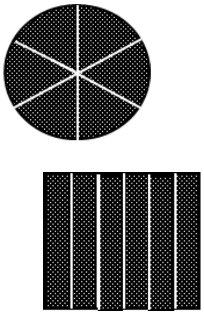
Equivalent Fraction Area Practice – V2

1.) Which figures below are congruent?

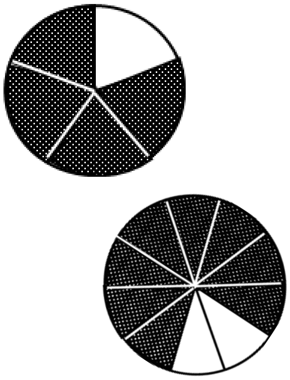
Ⓐ



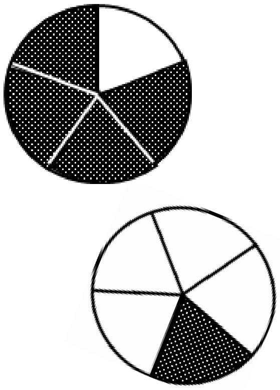
Ⓑ



Ⓒ

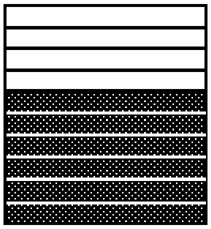


Ⓓ



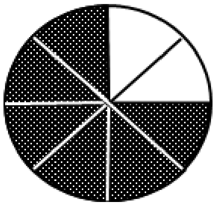
2.) Which diagram below has the correct matching fraction equivalency?

Ⓙ



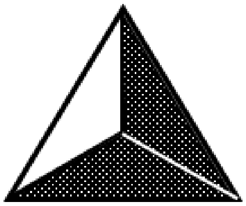
$\frac{6}{10} = \frac{3}{5}$

Ⓚ



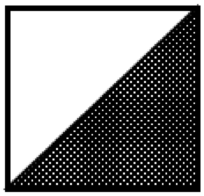
$\frac{2}{4} = \frac{6}{8}$

Ⓛ



$\frac{2}{6} = \frac{2}{3}$

Ⓜ



$\frac{1}{2} = \frac{4}{6}$

1.) Draw to the best of your ability – **congruent** shapes to figure 1 and 2 in the boxes provided.

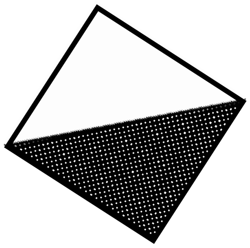


Figure 1

Congruent

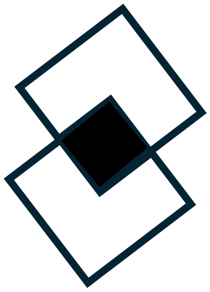
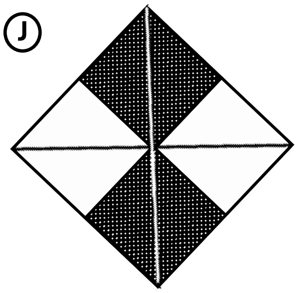


Figure 2

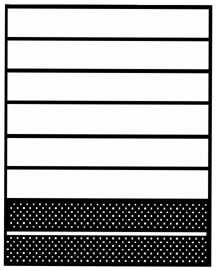
Congruent

2.) Which two fraction diagrams below equal one-half? Choose two answers.

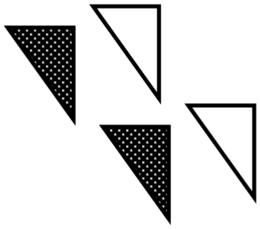
Ⓙ



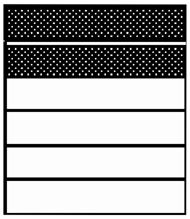
Ⓚ



Ⓛ



Ⓜ



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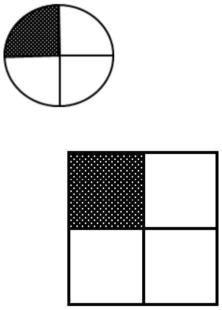
ANSWER KEY Equivalent Fraction Area Practice – V2

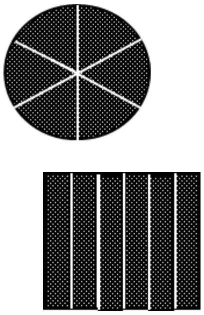
1.) Which figures below are congruent?

Congruent = same size, same shape.

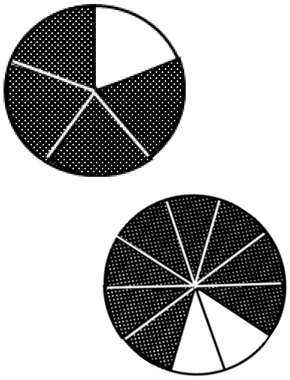
Ⓐ



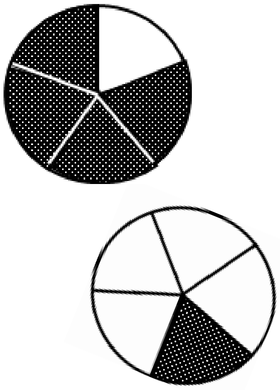
Ⓑ



▶ ●

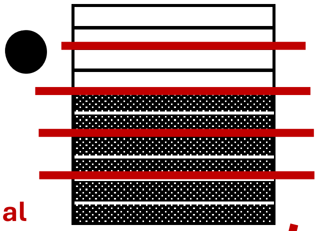


Ⓓ



2.) Which diagram below has the correct matching fraction equivalency?

▶ ●



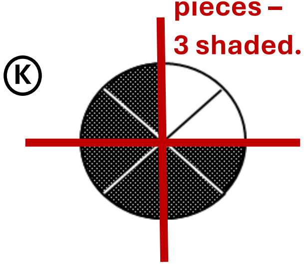
5 equal pieces – 3 shaded.

$\frac{6}{10} = \frac{3}{5}$ ✓

Equal.

Ⓚ

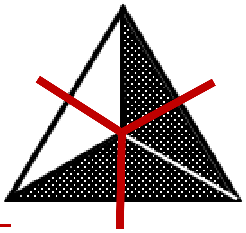
4 equal pieces – 3 shaded.



$\frac{2}{4} = \frac{6}{8}$

Not Equal.

Ⓛ

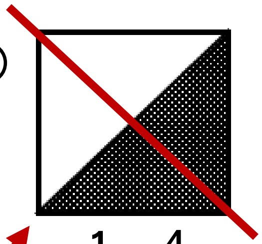


6 equal pieces – 4 shaded.

$\frac{2}{6} = \frac{2}{3}$

Not Equal.

Ⓜ



4 equal pieces – 2 shaded.

$\frac{1}{2} = \frac{4}{6}$

Not Equal.

1.) Draw to the best of your ability – **congruent** shapes to figure 1 and 2 in the boxes provided.

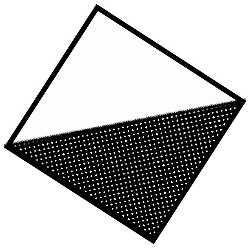
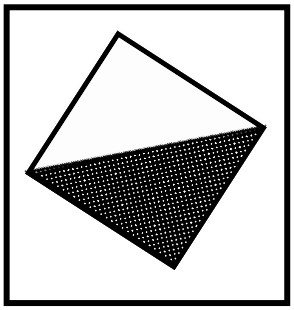


Figure 1



Congruent

Congruent = same size, same shape.

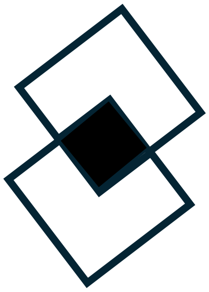
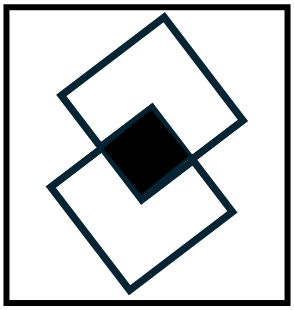


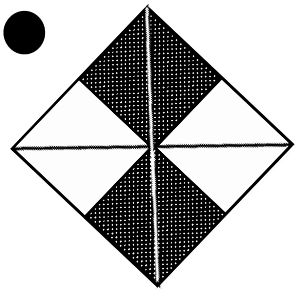
Figure 2



Congruent

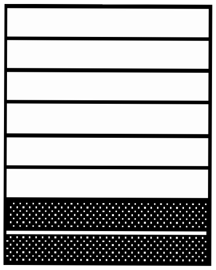
2.) Which two fraction diagrams below equal one-half? Choose two answers.

▶ ●



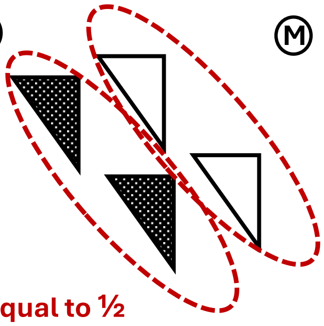
Equal to ½

Ⓚ



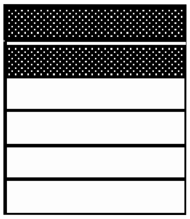
Equal to ¼

▶ ●



Equal to ½

Ⓜ



Equal to $^{2}/_{6}$

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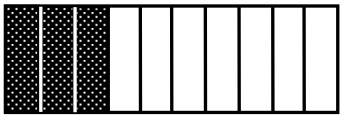
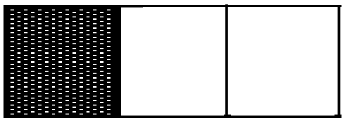
Equivalent Fraction Area Practice – V3

1.) Four models are shown below. Which two models show equivalent fractions?

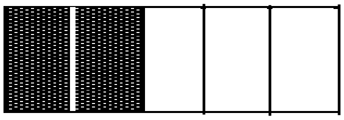
Model M



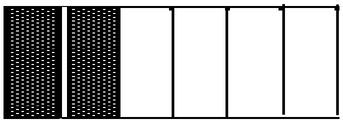
Model N



Model O



Model P



Ⓐ Models M and N

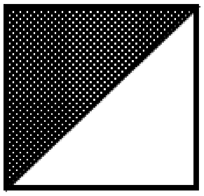
Ⓑ Models O and P

Ⓒ Models N and O

Ⓓ Models N and P

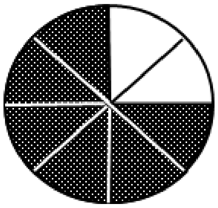
2.) Which diagram below has the correct matching fraction equivalency?

Ⓙ



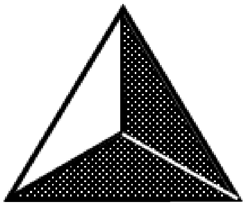
$\frac{1}{2} = \frac{2}{4}$

Ⓚ



$\frac{3}{4} = \frac{6}{8}$

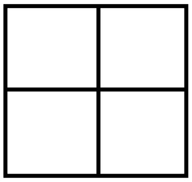
Ⓛ



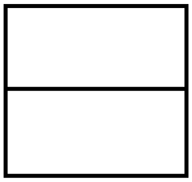
$\frac{4}{6} = \frac{2}{3}$

Ⓜ All choices are equivalent fractions.

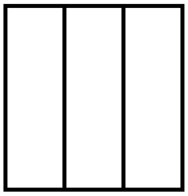
1.) Shade the fractions so they are equal because their **areas are the same**.



=



$\frac{2}{4} = \frac{1}{2}$



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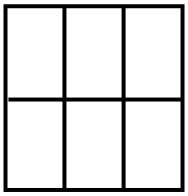
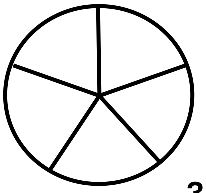


$\frac{2}{3} = \frac{4}{6}$



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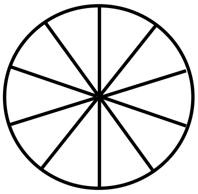
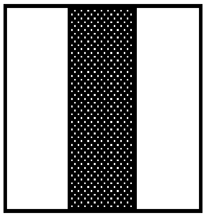


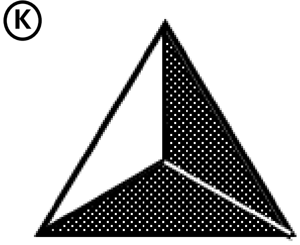
$\frac{3}{5} = \frac{6}{10}$

2.) Which two fraction diagrams below equal two-thirds? Choose two answers.

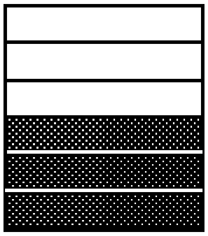
Ⓙ



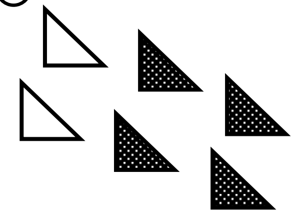
Ⓚ



Ⓛ



Ⓜ



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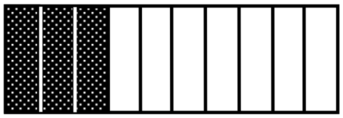
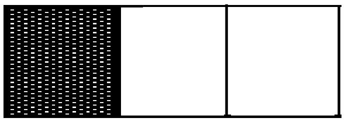
ANSWER KEY Equivalent Fraction Area Practice – V3

1.) Four models are shown below. Which two models show equivalent fractions?

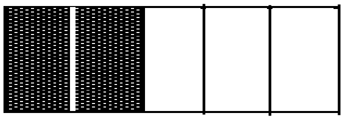
Model M



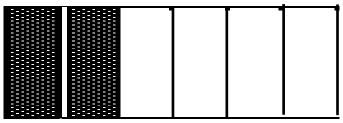
$\frac{1}{3}$ **Model N**



Model O



$\frac{2}{6}$ **Model P**



Ⓐ Models M and N

Ⓑ Models O and P

Ⓒ Models N and O

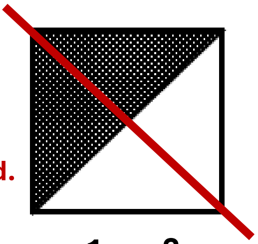
▶ ● Models N and P

Dividing equal parts like fractional number lines in Section 2.

2.) Which diagram below has the correct matching fraction equivalency?

Ⓙ

4 equal pieces – 2 shaded.

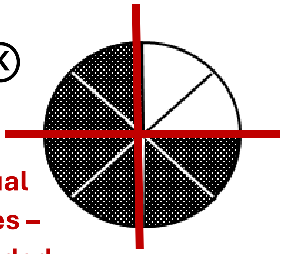


$\frac{1}{2} = \frac{2}{4}$

Equal.

Ⓚ

4 equal pieces – 3 shaded.

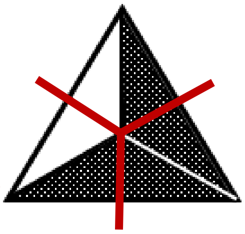


$\frac{3}{4} = \frac{6}{8}$

Equal.

Ⓛ

6 equal pieces – 4 shaded.

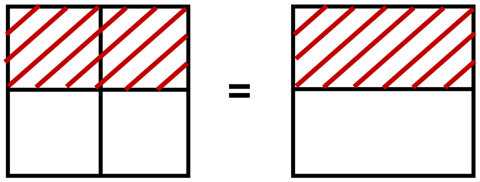


$\frac{4}{6} = \frac{2}{3}$

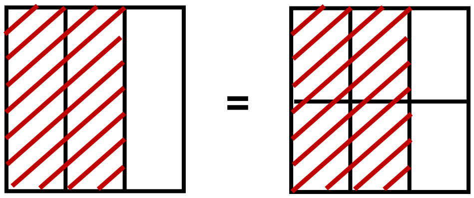
Equal.

▶ ● All choices are equivalent fractions.

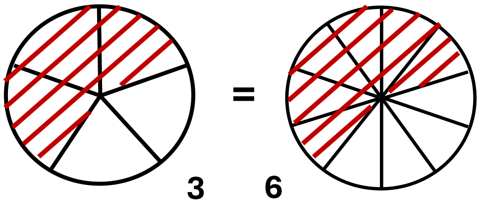
1.) Shade the fractions so they are equal because their **areas are the same.**



$\frac{2}{4} = \frac{1}{2}$



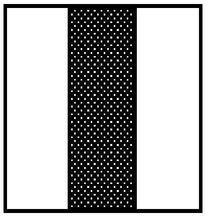
$\frac{2}{3} = \frac{4}{6}$



$\frac{3}{5} = \frac{6}{10}$

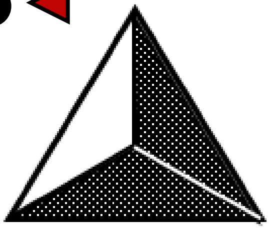
2.) Which two fraction diagrams below equal two-thirds? Choose two answers.

Ⓙ



Equal to $^{1}/_{3}$

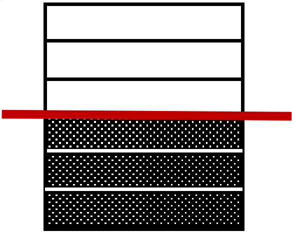
● ◀



Equal to $^{2}/_{3}$

Ⓛ

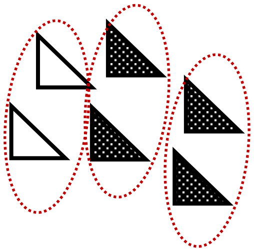
2 equal pieces – 3 shaded for ½ of diagram.



Equal to ½ or $^{3}/_{6}$

● ◀

3 equal groups – 2 shaded.



Equal to $^{2}/_{3}$

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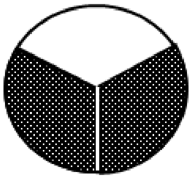
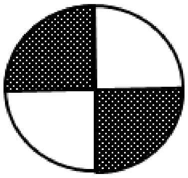
Equivalent Fraction Area Practice – V4

Five fraction models are shown below. Answer the questions under the models.

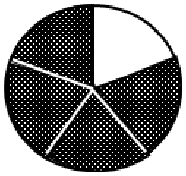
Model **M**



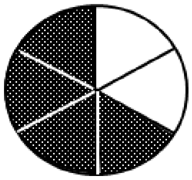
Model **N**



Model **O**



Model **P**



Model **Q**

- Which two (2) models are shaded to show equivalent fractions? *(Select two answer choices)*

Ⓐ Models **M** and **O**

Ⓒ Models **N** and **Q**

Ⓑ Models **P** and **M**

Ⓓ Models **P** and **Q**

- Models ____ and ____ are equal because both fractions have ______________________ .

M	**M**
N	**N**
O	**O**
P	**P**

(Circle the correct answers.)

the same answer.
the same denominators.
equal areas.
the same numerators.

Five fraction diagrams **1**, **2**, **3**, **4**, and **5** are shown below.

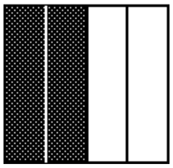


*Diagram **1***

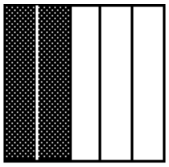


*Diagram **2***

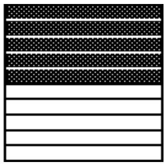


*Diagram **3***

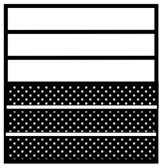


*Diagram **4***

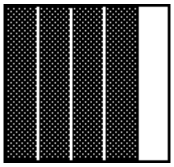


*Diagram **5***

- Diagrams ____ and ____ and ____are all equal because all the fractions ______________________ .

1	**1**	**1**
2	**2**	**2**
3	**3**	**3**
4	**4**	**4**
5	**5**	**5**

(Circle the correct diagram number.)

are equal to ½ .
are greater than ¼.
are less than ¾ .
have equal areas.

(Circle two correct answers.)

- Which diagrams shaded above show equivalent fractions? *(Select two answer choices)*

Ⓐ Diagrams **2** and **5**

Ⓒ Diagrams **3** and **4**

Ⓑ Diagrams **1** and **4**

Ⓓ Diagrams **1** and **5**

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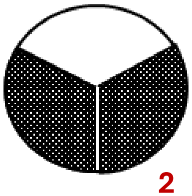
ANSWER KEY Equivalent Fraction Area Practice – V4

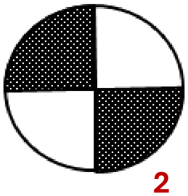
Five fraction models are shown below. Answer the questions under the models.

Model **M**



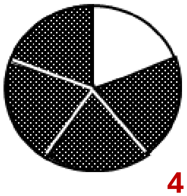
$\frac{2}{3}$

Model **N**



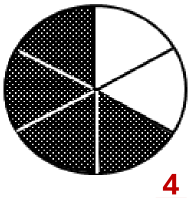
$\frac{2}{4}$

Model **O**



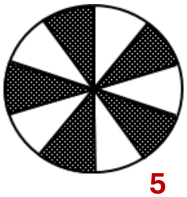
$\frac{4}{5}$

Model **P**



$\frac{4}{6}$

Model **Q**



$\frac{5}{10}$

- Which two (2) models are shaded to show equivalent fractions? *(Select two answer choices)*

Ⓐ Models **M** and **O**

● Models **N** and **Q**

● Models **P** and **M**

Ⓓ Models **P** and **Q**

$\frac{2}{4} = \frac{5}{10} = \frac{1}{2}$

$\frac{2}{3} = \frac{4}{6}$

- Models ____ and ____ are equal because both fractions have ________________ .

P and M can be reversed. FYI.

[✓ M]
N
O
P

M
N
O
[✓ P]

(Circle the correct answers.)

the same answer.
the same denominators.
[✓ equal areas.]
the same numerators.

Five fraction diagrams **1**, **2**, **3**, **4**, and **5** are shown below.

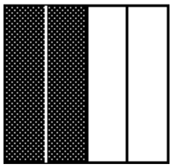


*Diagram **1***

$\frac{2}{4} = \frac{1}{2}$

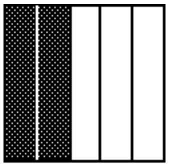


*Diagram **2***

$\frac{2}{5}$

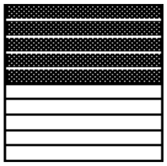


*Diagram **3***

$\frac{5}{10} = \frac{1}{2}$

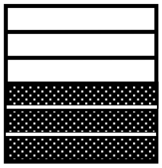


*Diagram **4***

$\frac{3}{6} = \frac{1}{2}$

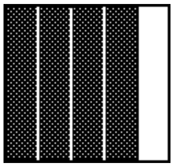


*Diagram **5***

$\frac{4}{5}$

- Diagrams ____ and ____ and ____are all equal because all the fractions ________________ .

Numbers can be interchanged. FYI.

[✓ 1]
2
3
4
5

1
2
[✓ 3]
4
5

1
2
3
[✓ 4]
5

(Circle the correct diagram number.)

[✓ are equal to ½ .]
are greater than ¼.
are less than ¾ .
[✓ have equal areas.]

(Circle two correct answers.)

- Which diagrams shaded above show equivalent fractions? *(Select two answer choices)*

Ⓐ Diagrams **2** and **5**

● Diagrams **3** and **4**

● Diagrams **1** and **4**

Ⓓ Diagrams **1** and **5**

Important: Students should write the fraction next to each model or diagram. Then, they should check to see if a fraction is equal to ½ on all models/diagrams.

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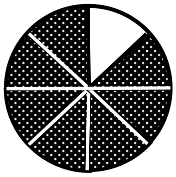
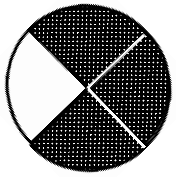
Equivalent Fraction Area Practice – V5

Five fraction models are shown below. Answer the questions under the models.

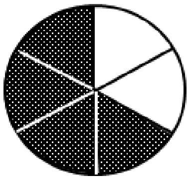
Model **K**



Model **L**

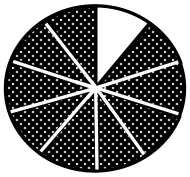


Model **N**



Model **O**

Model **P**



- Which models are shaded to show equivalent fractions?

Ⓐ Models **K** and **O**

Ⓑ Models **L** and **P**

Ⓒ Models **L** and **O**

Ⓓ Models **N** and **L**

- Models ____ and ____ are equal because these the fractions ________ and _______have the same area.

K
L
N
O

K
L
N
O

(Circle the correct model.)

$^4/_6$
$^7/_8$
$^3/_4$
$^6/_8$

(Circle two correct answers.)

Five fraction diagrams **1**, **2**, **3**, **4**, and **5** are shown below.

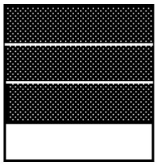


*Diagram **1***

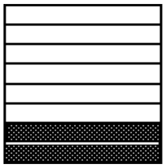


*Diagram **2***

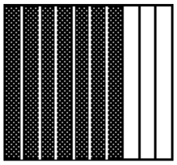


*Diagram **3***

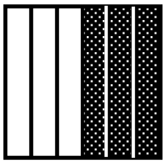


*Diagram **4***

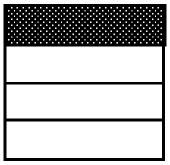


*Diagram **5***

- Diagrams ____ and ____ are equal because both of the fractions ______________________ .

1
2
3
4
5

1
2
3
4
5

(Circle the correct diagram number.)

are equal to ½.
are equal to ¼.
are equal to ¾.
have equal areas.

(Circle two correct answers.)

- Which diagrams shaded above show equivalent fractions? *(Select two answer choices)*

Ⓐ Diagrams **2** and **5**

Ⓑ Diagrams **2** and **4**

Ⓒ Diagrams **3** and **4**

Ⓓ Diagrams **1** and **5**

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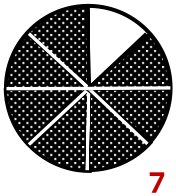
ANSWER KEY Equivalent Fraction Area Practice – V5

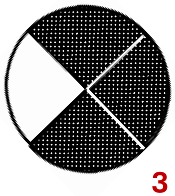
Five fraction models are shown below. Answer the questions under the models.

Model **K**



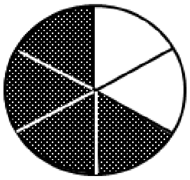
$\frac{7}{8}$

Model **L**



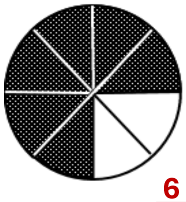
$\frac{3}{4}$

Model **N**



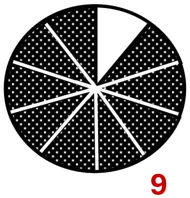
$\frac{4}{6}$

Model **O**



$\frac{6}{8}$

Model **P**



$\frac{9}{10}$

- Which models are shaded to show equivalent fractions?

Ⓐ Models **K** and **O**

● Models **L** and **O** ◀

Ⓑ Models **L** and **P**

Ⓓ Models **N** and **L**

$\boxed{\frac{3}{4} = \frac{6}{8}}$

- Models ____ and ____ are equal because these the fractions ________ and _______have the same area.

L and O can be reversed. FYI.

K
[✓ L] ◀
N
O

K
L
N
[✓ O] ◀

(Circle the correct model.)

$^4/_6$
$^7/_8$
▶ [✓ $^3/_4$]
▶ [✓ $^6/_8$]

(Circle two correct answers.)

Five fraction diagrams **1**, **2**, **3**, **4**, and **5** are shown below.

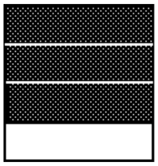


*Diagram **1***

$\frac{3}{4}$

Divide into fourths

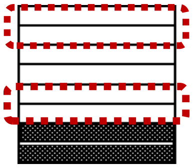


*Diagram **2***

$\frac{2}{8} = \frac{1}{4}$

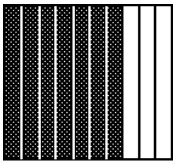


*Diagram **3***

$\frac{7}{10}$

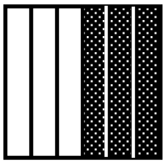


*Diagram **4***

$\frac{3}{6} = \frac{1}{2}$

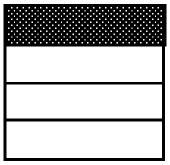


*Diagram **5***

$\frac{1}{4}$

- Diagrams ____ and ____ are equal because both of the fractions ______________________ .

Numbers can be interchanged. FYI.

1
[✓ 2] ◀
3
4
5

1
2
3
4
[✓ 5] ◀

(Circle the correct diagram number.)

are equal to ½.
▶ [✓ are equal to ¼.]
are equal to ¾.
▶ [✓ have equal areas.]

(Circle two correct answers.)

- Which diagrams shaded above show equivalent fractions? *(Select two answer choices)*

● Diagrams **2** and **5** ◀

Ⓒ Diagrams **3** and **4**

Ⓑ Diagrams **2** and **4**

Ⓓ Diagrams **1** and **5**

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Section 4

General Fraction Content – Assessed

(Miscellaneous Skills)

Educational Learning Maxim:

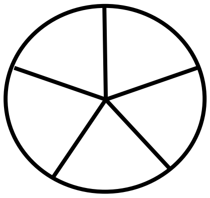
Whatever human skill – basic or advanced – is practiced with intention and threshold repetitions, will be mastered. Conversely, whatever human skill – basic or advanced – that is NOT practiced with intention and threshold repetitions, will NOT be mastered.

Student Practice Resource

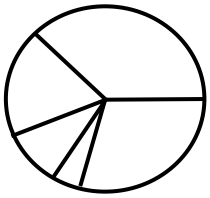
Pedagogical Recommendations – Section 4

This section addresses assessed fractions on standardized tests, in general. There are problem types from section 3 and 4 included in this section, so a teacher can assess if those content areas must be reviewed and enforced. It is paramount to understand that standardized test makers/designers in third and fourth grades are conceptually driven as well expect numerical proficiency (i.e., math fact automaticity). In short, students must conceptionally comprehend fractions at the most rudimentary level – **equally** divided figures. If the figure is not separated into equal parts, then it is not a fraction. It is a picture that represents nothing regarding an arithmetic perspective.

For example: The circle to the **right** is divided into equal sectors (fifths). It is a fraction.



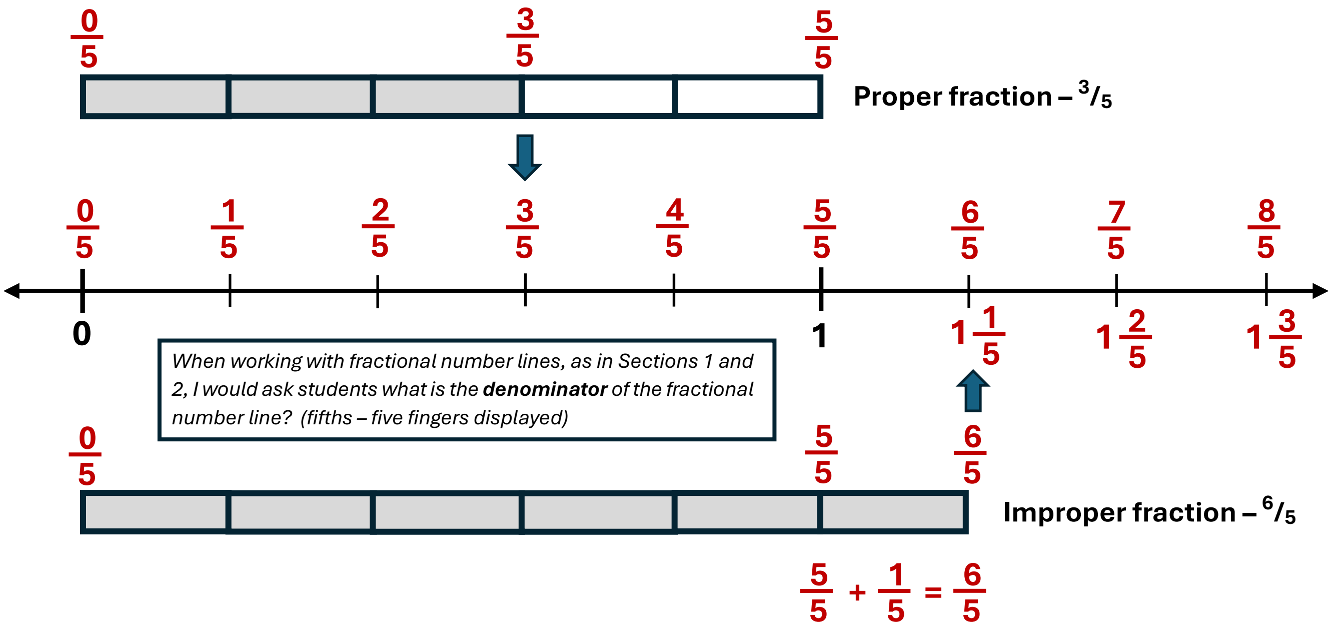
The circle **below** is **not** divided into equal sectors. It is NOT a fraction.



Assessment creators will test/check children's understanding of the most **rudimentary** math concepts learned in their **elementary** school years.

A fractional number line and a discrete fractional model represent the exact same concept and physical mathematical entity. However, young children frequently do not recognize this empirical fact. Moreover, it will not be learned by discovery. A teacher must guide students and facilitate this level of thinking. Once this concept is understood, fractions can be viewed in the framework of one universal understanding.

For instance, let's peruse a **fractional number line** (fifths) and a proper and improper fraction (divided in fifths) – both shown as typical **fraction bars** to illustrate this concept.



*When working with fractional number lines, as in Sections 1 and 2, I would ask students what is the **denominator** of the fractional number line? (fifths – five fingers displayed)*

$$\frac{5}{5} + \frac{1}{5} = \frac{6}{5}$$

The **denominator** of the fraction bars and the fractional number line above are both divided equally into fifths. In fact, fraction bars represent a sequential (fractional) number line, but only a segment of it. Thus, a fraction bar and a fractional number line are the same fractional entity; however, elementary students will NOT view the two models in a similar manner unless they are specifically shown their equivalent physical reality. Remind students that fractions may be in circular, square or triangular form, but they all are the same concept – the basic concept of a fraction (i.e., part to whole). Moreover, all fractions – regardless of shape – can be shown to represent a continuity of equal parts connected end to end or side to side, as shown above with a typical fraction bar.

Fraction Practice – V1 (Halves Mastery)

Compute HALF of each number.

Example: *Half of 10 is 5* ***or*** *10 → 5.*

6 → _____ 4 → _____ 8 → _____ 2 → _____ 12 → _____

8 → _____ 10 → _____ 6 → _____ 12 → _____ 14 → _____

18 → _____ 20 → _____ 16 → _____ 10 → _____ 2 → _____

14 → _____ 12 → _____ 8 → _____ 22 → _____ 40 → _____

24 → _____ 18 → _____ 6 → _____ 10 → _____ 30 → _____

50 → _____ 100 → _____ 30 → _____ 8 → _____ 60 → _____

Compute HALF of each number.

Example: *Half of 8 is 4* ***or*** *8 → 4.*

4 → _____ 6 → _____ 2 → _____ 8 → _____ 10 → _____

20 → _____ 12 → _____ 4 → _____ 14 → _____ 12 → _____

16 → _____ 20 → _____ 18 → _____ 10 → _____ 2 → _____

22 → _____ 24 → _____ 60 → _____ 30 → _____ 20 → _____

40 → _____ 20 → _____ 8 → _____ 10 → _____ 60 → _____

50 → _____ 100 → _____ 90 → _____ 70 → _____ 80 → _____

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ANSWER KEY Fraction Practice – V1 (Halves Mastery)

Compute HALF of each number.
Example: *Half of 10 is 5 **or** 10 → 5.*

Recommend timed *after practice*: 1 minute
Important numeracy skill plus halving denominators.

6 → 3   4 → 2   8 → 4   2 → 1   12 → 6

8 → 4   10 → 5   6 → 3   12 → 6   14 → 7

Practice every day – Quick 1-to-2-minute minilessons until ALL students have mastered skill.

18 → 9   20 → 10   16 → 8   10 → 5   2 → 1

Use this student practice sheet as formative assessment mastery check.

14 → 7   12 → 6   8 → 4   22 → 11   40 → 20

It is NOT recommended to give these assessment checks without student practice.

24 → 12   18 → 9   6 → 3   10 → 5   30 → 15

50 → 25   100 → 50   30 → 15   8 → 4   60 → 30

Compute HALF of each number.
Example: *Half of 8 is 4 **or** 8 → 4.*

Recommend timed *after practice*: 1 minute
Important numeracy skill plus halving denominators.

4 → 2   6 → 3   2 → 1   8 → 4   10 → 5

20 → 10   12 → 6   4 → 2   14 → 7   12 → 6

16 → 8   20 → 10   18 → 9   10 → 5   2 → 1

22 → 11   24 → 12   60 → 30   30 → 15   20 → 10

40 → 20   20 → 10   8 → 4   10 → 5   60 → 30

50 → 25   100 → 50   90 → 45   70 → 35   80 → 40

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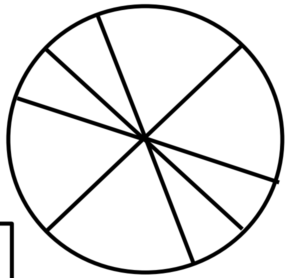
Fraction Practice – V2



1.) Mark sketched the figure shown to the right. Select one answer from each drop-down box that makes the sentence true.

Mark's sketch is

- is a fraction
- is not a fraction
- is congruent
- is a denominator

because it's

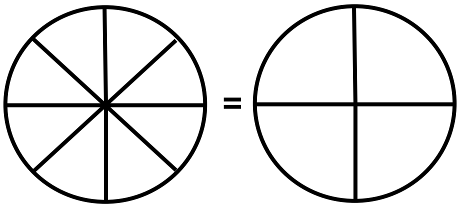
- divided in parts.
- a numerator, too.
- a symmetrical drawing.
- not divided in equal parts.

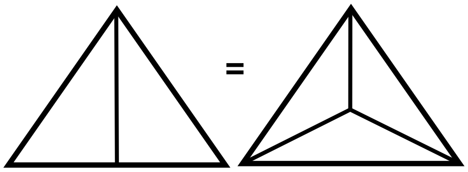
2.) **Complete** the fractions by shading the parts. **Write** the correct number in the box so the equality is true.

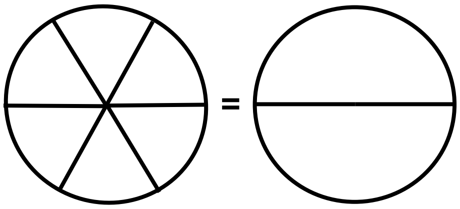
$\frac{\boxed{}}{8} = \frac{2}{4}$

$\frac{\boxed{}}{2} = \frac{3}{3}$

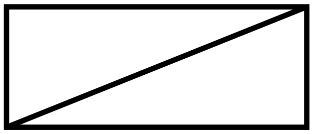
$\frac{3}{6} = \frac{\boxed{}}{2}$







1.) Blaine sketched the figure shown to the right. Select one answer in each drop-down box that makes the sentence true.



Blaine's sketch is

- is not congruent
- is not a fraction
- is congruent
- is a fraction

because it's

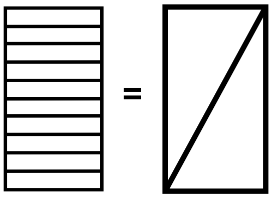
- divided in equal parts.
- a numerator, too.
- a symmetrical drawing.
- not divided in equal parts.

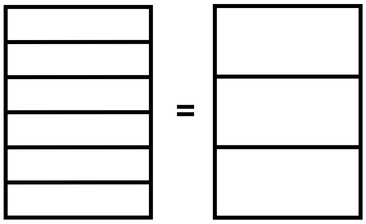
2.) **Complete** the fractions by shading the parts. **Write** the correct number in the box so the equality is true.

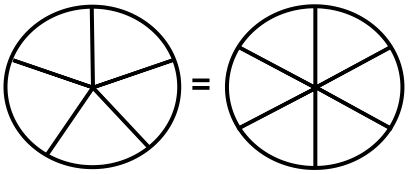
$\frac{5}{10} = \frac{\boxed{}}{2}$

$\frac{\boxed{}}{6} = \frac{2}{3}$

$\frac{\boxed{}}{5} = \frac{6}{6}$







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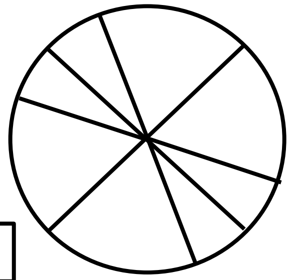
ANSWER KEY

Fraction Practice – V2



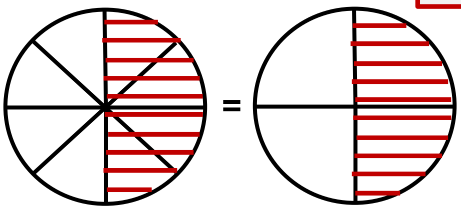
1.) Mark sketched the figure shown to the right. Select one answer from each drop-down box that makes the sentence true.

Mark's sketch is
- is a fraction
- [✓ is not a fraction]
- is congruent
- is a denominator

because it's
- divided in parts.
- a numerator, too.
- a symmetrical drawing.
- [✓ not divided in equal parts.]

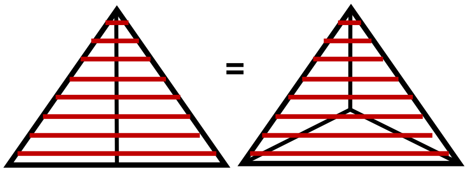
2.) **Complete** the fractions by shading the parts. **Write** the correct number in the box so the equality is true.

$\frac{\boxed{4}}{8} = \frac{2}{4}$



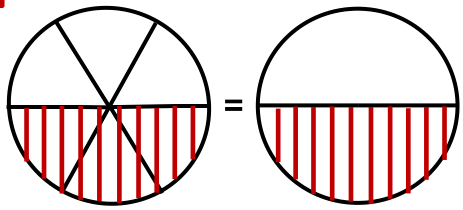
Stress the same area on each fraction.

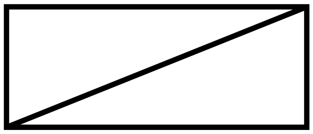
$\frac{\boxed{2}}{2} = \frac{3}{3}$



Equals 1 or 1 Whole.

$\frac{3}{6} = \frac{\boxed{1}}{2}$





1.) Blaine sketched the figure shown to the right. Select one answer in each drop-down box that makes the sentence true.

Blaine's sketch is
- is not congruent
- is not a fraction
- is congruent
- [✓ is a fraction]

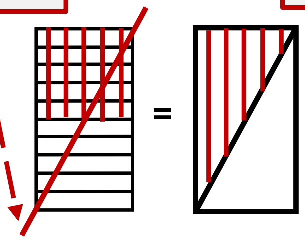
because it's
- [✓ divided in equal parts.]
- a numerator, too.
- a symmetrical drawing.
- not divided in equal parts.

It is essential math facts are taught to automaticity.

2.) **Complete** the fractions by shading the parts. **Write** the correct number in the box so the equality is true.

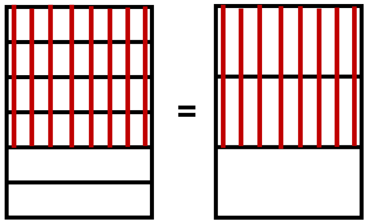
Could divide tenths in half, too.

$\frac{5}{10} = \frac{\boxed{1}}{2}$



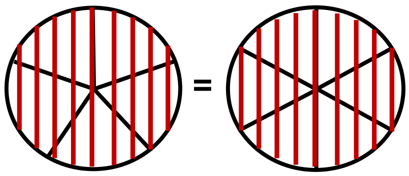
Stress the same area on each fraction.

$\frac{\boxed{4}}{6} = \frac{2}{3}$



Equals 1 or 1 Whole.

$\frac{\boxed{5}}{5} = \frac{6}{6}$



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Fraction Practice – V3

1.) Keith has two pizzas. One pizza is divided equally in halves and the other pizza is divided equally in sixths. Which pizza has the largest slices? Select one answer from each drop-down box below that makes the sentence true.

The fraction with the

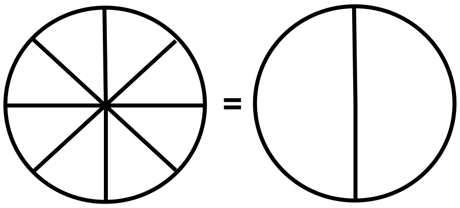
- largest numerator
- smallest numerator
- largest denominator
- smallest denominator

has the

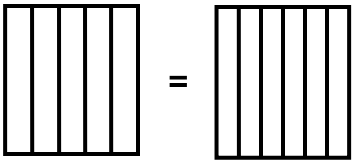
- unequal pizza slices.
- largest pizza slices.
- different size pizza slices.
- same size pizza slices.

2.) **Complete** the fractions by shading the parts. **Write** the correct number in the box so the equality is true.

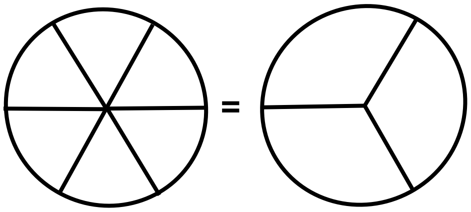
$\frac{4}{8} = \frac{\square}{2}$



$\frac{\square}{5} = \frac{6}{6}$



$\frac{4}{6} = \frac{\square}{3}$



1.) Mary divides a cookie equally into thirds and divides another cookie equally into fourths. Which cookie has the smallest pieces? Select one answer from each drop-down box that makes the sentence true.

The fraction with the

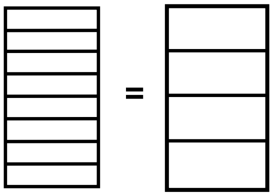
- largest numerator
- smallest numerator
- largest denominator
- smallest denominator

has the

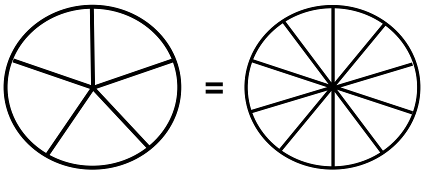
- smallest pieces.
- is the best tasting cookie.
- different size pieces.
- same size pieces.

2.) **Complete** the fractions by shading the parts. **Write** the correct number in the box so the equality is true.

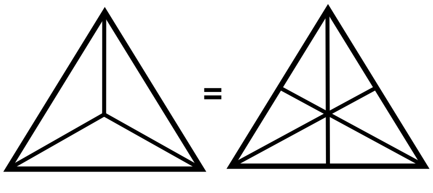
$\frac{6}{8} = \frac{\square}{4}$



$\frac{\square}{5} = \frac{8}{10}$



$\frac{\square}{3} = \frac{2}{6}$



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ANSWER KEY

Fraction Practice – V3

1.) Keith has two pizzas. One pizza is divided equally in halves and the other pizza is divided equally in sixths. Which pizza has the largest slices? Select one answer from each drop-down box below that makes the sentence true.

The fraction with the

- largest numerator
- smallest numerator
- largest denominator
- [✓ smallest denominator]

has the

- unequal pizza slices.
- [✓ largest pizza slices.]
- different size pizza slices.
- same size pizza slices.

Draw a picture of pizza in halves and sixths. Smallest denominator means biggest slices.

2.) **Complete** the fractions by shading the parts. **Write** the correct number in the box so the equality is true.

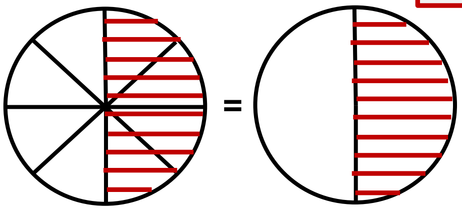
$\frac{4}{8} = \frac{\boxed{1}}{2}$

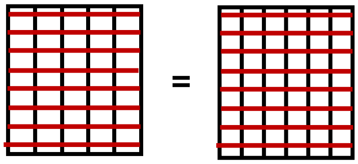
Stress the same area on each fraction.

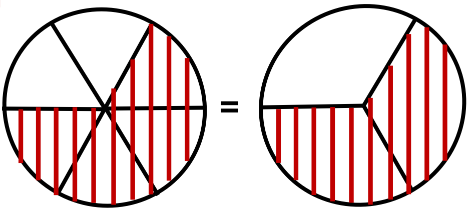
$\frac{\boxed{5}}{5} = \frac{6}{6}$

Equals 1 or 1 Whole.

$\frac{4}{6} = \frac{\boxed{2}}{3}$







1.) Mary divides a cookie equally into thirds and divides another cookie equally into fourths. Which cookie has the smallest pieces? Select one answer from each drop-down box that makes the sentence true.

The fraction with the

- largest numerator
- smallest numerator
- [✓ largest denominator]
- smallest denominator

has the

- [✓ smallest pieces.]
- is the best tasting cookie.
- different size pieces.
- same size pieces.

Draw a picture of cookie in thirds and fourths, so students can visualize the denominator sizes.

Show repeated examples in subsequent mini lessons until students realize the LARGER the denominator, the figure's equal pieces become SMALLER.

2.) **Complete** the fractions by shading the parts. **Write** the correct number in the box so the equality is true.

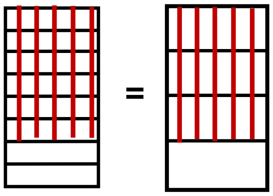
$\frac{6}{8} = \frac{\boxed{3}}{4}$

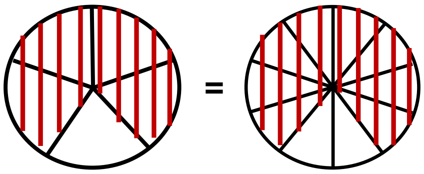
Stress the same area on each fraction.

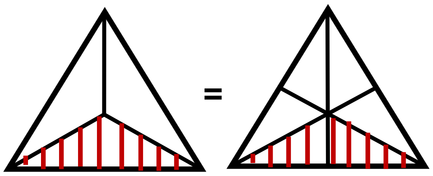
$\frac{\boxed{4}}{5} = \frac{8}{10}$

It is essential math facts are taught to automaticity.

$\frac{\boxed{1}}{3} = \frac{2}{6}$







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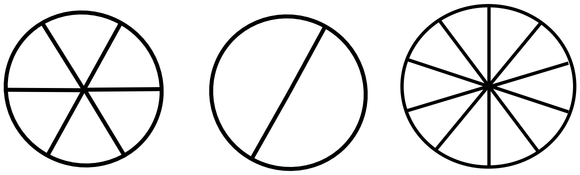
Fraction Practice – V4

Todd drew the three fractions to the right.

Answer or choose the correct response to the statements or questions below.



- ■ Todd's fractions are drawn correctly because each figure

has equal numerators.
denominators are not the same.
has a different number of pieces.
is divided into equal pieces.

- ■ Fractions with the

largest numerator
smallest numerator
largest denominator
smallest denominator

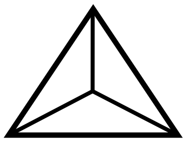
always have the

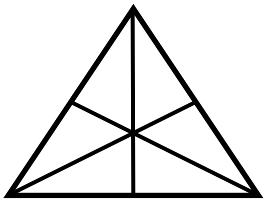
smallest slices.
different size slices.
same size slices.
same numerators.

- ■ **<u>Order</u>** the fractions with the **<u>largest equal parts</u>** from ***<u>greatest to least</u>*.** Place a "1" above the biggest, then "2" above the next, etc.

☐	☐	☐	☐
$\frac{4}{5}$	$\frac{2}{10}$	$\frac{1}{2}$	$\frac{3}{4}$

1.) Use the two figures to the right to answer or choose the correct response to the statement below.





The fractions are NOT equal because they

are both triangles.
are each divided into triangles.
are not congruent shapes.
are congruent shapes.

2.) Fractions with the

largest numerator
smallest numerator
largest denominator
smallest denominator

always have the

same congruency.
different size pieces.
largest equal pieces.
same size pieces.

3.) **<u>Order</u>** the fractions with the **<u>largest equal parts</u>** from ***<u>greatest to least</u>***. Place a "1" above the biggest, then "2" above the next, etc.

☐	☐	☐	☐
$\frac{10}{9}$	$\frac{8}{7}$	$\frac{4}{5}$	$\frac{9}{6}$

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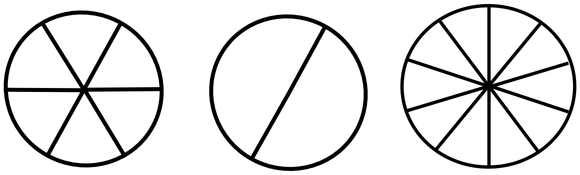
ANSWER KEY

Fraction Practice – V4

Todd drew the three fractions to the right.

Answer or choose the correct response to the statements or questions below.



- Todd's fractions are drawn correctly because each figure
  - has equal numerators.
  - denominators are not the same.
  - has a different number of pieces.
  - [✓ is divided into equal pieces.]

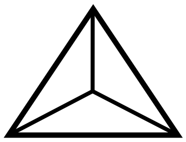
- Fractions with the
  - largest numerator
  - smallest numerator
  - [✓ largest denominator]
  - smallest denominator

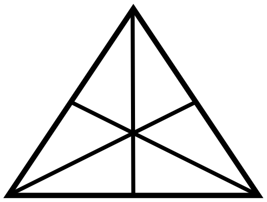
  always have the
  - [✓ smallest slices.]
  - different size slices.
  - same size slices.
  - same numerators.

- Order the fractions with the **largest equal parts** from ***greatest to least.*** Place a "1" above the biggest, then "2" above the next, etc.

3	4	1	2
$\frac{4}{5}$	$\frac{2}{10}$	$\frac{1}{2}$	$\frac{3}{4}$

1.) Use the two figures to the right to answer or choose the correct response to the statement below.





The fractions are NOT equal because they
- are both triangles.
- are each divided into triangles.
- [✓ are not congruent shapes.]
- are congruent shapes.

2.) Fractions with the
- largest numerator
- smallest numerator
- largest denominator
- [✓ smallest denominator]

always have the
- same congruency.
- different size pieces.
- [✓ largest equal pieces.]
- same size pieces.

Note: Only the **denominator** matters to determine the size of the fraction's equal pieces.

3.) Order the fractions with the **largest equal parts** from ***greatest to least.*** Place a "1" above the biggest, then "2" above the next, etc.

4	3	1	2
$\frac{10}{9}$	$\frac{8}{7}$	$\frac{4}{5}$	$\frac{9}{6}$

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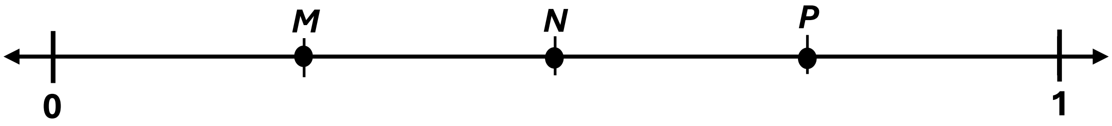
Fraction Practice – V5

- Compare the fractions using **(<, >, or =)** in the box provided. **Hint:** Evaluate the fraction's denominator first. Then, consider its numerator to help you determine the overall size of the fraction.

$\frac{1}{2}$ ○ $\frac{3}{4}$ $\frac{1}{2}$ ○ $\frac{5}{10}$ $\frac{2}{4}$ ○ $\frac{4}{8}$ $\frac{1}{2}$ ○ $\frac{1}{4}$ $\frac{1}{10}$ ○ $\frac{3}{5}$

$\frac{4}{10}$ ○ $\frac{5}{8}$ $\frac{1}{2}$ ○ $\frac{50}{100}$ $\frac{7}{8}$ ○ $\frac{7}{12}$ $\frac{1}{2}$ ○ $\frac{3}{4}$ $\frac{6}{6}$ ○ $\frac{9}{9}$

- Point ***M***, ***N*** and ***P*** are shown on the number line.



What two fractions are located at the midpoint?
(Select two answer choices)

Ⓐ $\frac{2}{4}$ Ⓒ $\frac{3}{8}$

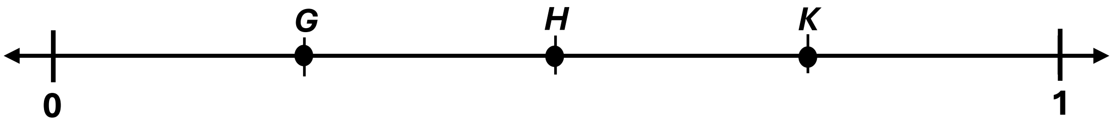
Ⓑ $\frac{3}{4}$ Ⓓ $\frac{1}{2}$

- Compare the fractions using **(<, >, or =)** in the box provided. **Hint:** Evaluate the fraction's denominator first. Then, consider its numerator to help you determine the overall size of the fraction.

$\frac{5}{6}$ ○ $\frac{1}{4}$ $\frac{7}{7}$ ○ $\frac{9}{10}$ $\frac{6}{8}$ ○ $\frac{4}{8}$ $\frac{1}{2}$ ○ $\frac{9}{20}$ $\frac{6}{10}$ ○ $\frac{3}{5}$

$\frac{4}{10}$ ○ $\frac{6}{8}$ $\frac{1}{2}$ ○ $\frac{500}{1,000}$ $\frac{6}{7}$ ○ $\frac{9}{16}$ $\frac{2}{4}$ ○ $\frac{4}{6}$ $\frac{5}{5}$ ○ 1

- Point ***G, H*** and ***K*** are shown on the number line.



Which three fractions are greater than Point ***K***?

Hint: *Create an equivalent number line in eighths.*

Ⓐ $\frac{4}{4}$ Ⓒ $\frac{7}{8}$ Ⓕ $\frac{1}{8}$

Ⓑ $\frac{6}{8}$ Ⓓ $\frac{2}{8}$ Ⓖ $\frac{8}{8}$

ANSWER KEY

Fraction Practice – V5

- Compare the fractions using **(<, >, or =)** in the box provided. **Hint:** Evaluate the fraction's denominator first. Then, consider its numerator to help you determine the overall size of the fraction.

$\frac{1}{2} < \frac{3}{4}$

$\frac{1}{2} = \frac{5}{10}$

$\frac{2}{4} = \frac{4}{8}$

Halve the fractions.

$\frac{1}{2} > \frac{1}{4}$

Same numerators

$\frac{1}{10} < \frac{3}{5}$

Denominator, then numerators

$\frac{4}{10} < \frac{5}{8}$

$^4/_{10}$ smaller than ½.
$^5/_8$ bigger than ½.

$\frac{1}{2} = \frac{50}{100}$

$\frac{7}{8} > \frac{7}{12}$

$^7/_{12}$ barely bigger than ½.
– Numerator the same

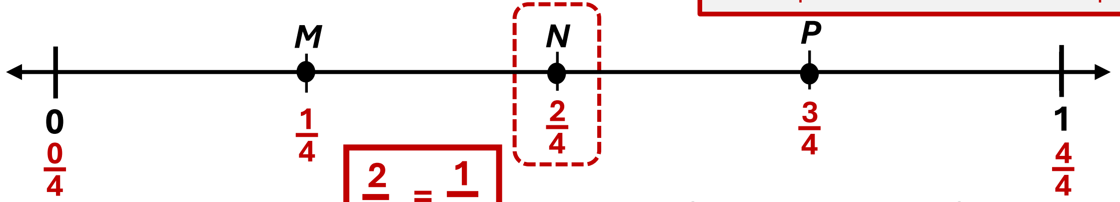
$\frac{1}{2} < \frac{3}{4}$

$\frac{6}{6} = \frac{9}{9}$

Equal to 1 whole.

Follow-up Questions:
What fraction is greater than the midpoint? (¾)
What point is less than the midpoint? (**M**)

- Point ***M***, ***N*** and ***P*** are shown on the number line.



$\frac{2}{4} = \frac{1}{2}$

What two fractions are located at the midpoint?
(Select two answer choices)

● $\frac{2}{4}$ ◀

Ⓒ $\frac{3}{8}$

Ⓑ $\frac{3}{4}$

● $\frac{1}{2}$ ◀

- Compare the fractions using **(<, >, or =)** in the box provided. **Hint:** Evaluate the fraction's denominator first. Then, consider its numerator to help you determine the overall size of the fraction.

$\frac{5}{6} > \frac{1}{4}$

$\frac{7}{7} > \frac{9}{10}$

$\frac{6}{8} > \frac{4}{8}$

$\frac{1}{2} > \frac{9}{20}$

Halve the denominator.

$\frac{6}{10} = \frac{3}{5}$

Halve $^6/_{10}$

$\frac{4}{10} < \frac{6}{8}$

$^4/_{10}$ smaller than ½.
$^6/_8$ bigger than ½.

$\frac{1}{2} = \frac{500}{1,000}$

$\frac{6}{7} > \frac{9}{16}$

$^9/_{16}$ barely bigger than ½.

$\frac{2}{4} < \frac{4}{6}$

$^4/_6$ is bigger than ½
$^3/_6$ is equal to $^2/_4$ and ½

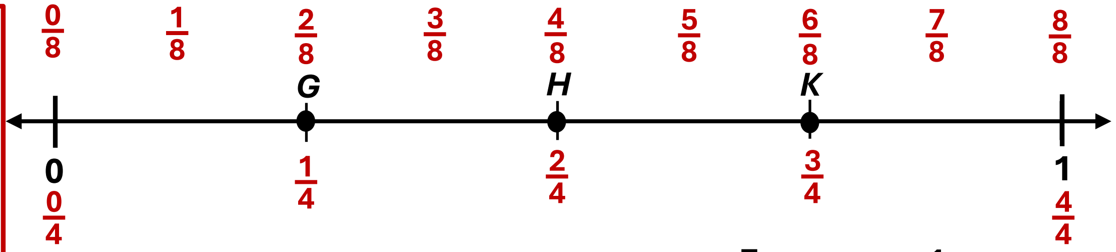
$\frac{5}{5} = 1$

- Point ***G, H*** and ***K*** are shown on the number line.

Follow-up Questions:

What fractions are equal at Pt. **K**? (¾ & $^6/_8$)

What point is less than the midpoint? (**G**)



Which three fractions are greater than Point ***K***?

***Hint:** Create an equivalent number line in eighths.*

● $\frac{4}{4}$ ◀

● $\frac{7}{8}$ ◀

Ⓕ $\frac{1}{8}$

Ⓑ $\frac{6}{8}$

Ⓓ $\frac{2}{8}$

● $\frac{8}{8}$ ◀

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Fraction Practice – V6

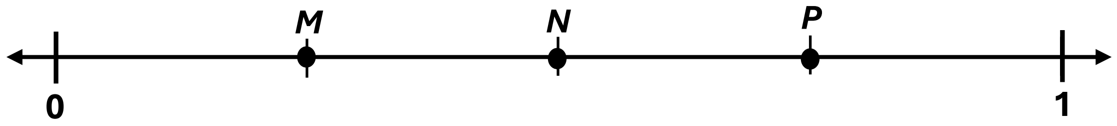
- John, Kevin and Mary each ordered a pizza. The pizzas were congruent. John ate five-tenths of his pizza, and Kevin consumed three-fourths of his pizza. Mary ate six-eighths of the pizza she bought. Show your work to prove your responses.

Who ate the least amount of their pizza? _______

Who ate the same amount of pizza? ___________ and ___________.

Order the **fractions** of pizza that was consumed (eaten) from **least to greatest:** ______ , _______ , _______

- Point ***M***, ***N*** and ***P*** are shown on the number line.



What two fractions are located at the point **M**?

(Select two answer choices)

Ⓐ $\frac{2}{4}$ Ⓒ $\frac{3}{8}$

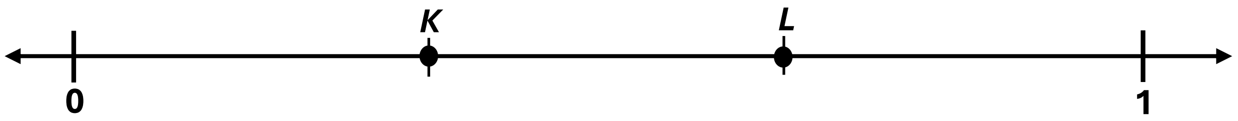
Ⓑ $\frac{2}{8}$ Ⓓ $\frac{1}{4}$

- Compare the fractions using **(<, >, or =)** in the box provided. **<u>Hint:</u>** Evaluate the fraction's denominator first. Then, consider its numerator to help you determine the overall size of the fraction.

$\frac{1}{3}$ ○ $\frac{2}{6}$ $\frac{2}{2}$ ○ $\frac{9}{9}$ $\frac{6}{6}$ ○ $\frac{7}{8}$ $\frac{1}{2}$ ○ $\frac{49}{50}$ $\frac{2}{10}$ ○ $\frac{1}{5}$

$\frac{5}{10}$ ○ $\frac{5}{8}$ $\frac{1}{2}$ ○ $\frac{500}{1,000}$ $\frac{2}{3}$ ○ $\frac{7}{16}$ $\frac{2}{4}$ ○ $\frac{4}{6}$ 1 ○ $\frac{50}{50}$

- Point ***K*** and ***L*** are shown on the number line.



Which two fractions represent Point ***L***?

Select two choices.

Ⓐ $\frac{1}{6}$ Ⓒ $\frac{2}{6}$ Ⓕ $\frac{4}{6}$

Ⓑ $\frac{2}{3}$ Ⓓ $\frac{3}{6}$ Ⓖ $\frac{1}{3}$

ANSWER KEY

Fraction Practice – V6

- John, Kevin and Mary each ordered a pizza. The pizzas were congruent. John ate five-tenths of his pizza, and Kevin consumed three-fourths of his pizza. Mary ate six-eighths of the pizza she bought. Show your work to prove your responses.

$\frac{5}{10} = \frac{1}{2}$ $\frac{3}{4} = \frac{6}{8}$

Halve the fractions

Who ate the least amount of their pizza? John

Who ate the same amount of pizza? Kevin and Mary.

Order the **fractions** of pizza that was consumed (eaten) from **least to greatest:** $\frac{5}{10}$, $\frac{3}{4}$, $\frac{6}{8}$

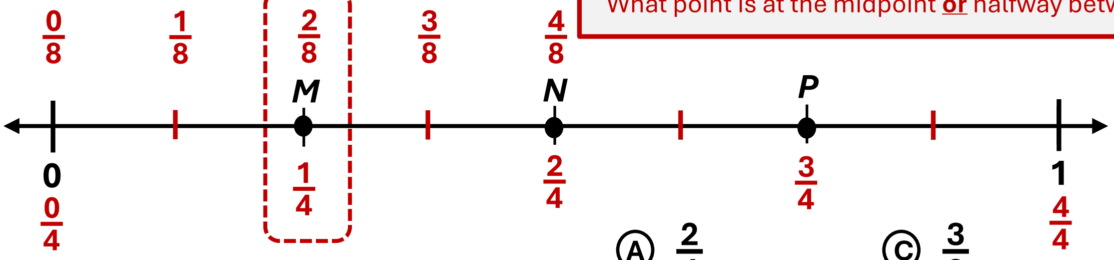
Follow-up Questions:

What fractions are greater than the midpoint? Ex. **(¾) & ($^{5}/_{8}$)**

What point is at the midpoint **or** halfway between 0 and 1? (**N**)

- Point ***M***, ***N*** and ***P*** are shown on the number line.

Create an equivalent number line in eighths.



What two fractions are located at the point **M**?

(Select two answer choices)

Ⓐ $\frac{2}{4}$ Ⓒ $\frac{3}{8}$

● $\frac{2}{8}$ ◀ ● $\frac{1}{4}$ ◀

$\frac{2}{8} = \frac{1}{4}$

- Compare the fractions using **(<, >, or =)** in the box provided. **Hint:** Evaluate the fraction's denominator first. Then, consider its numerator to help you determine the overall size of the fraction.

$\frac{1}{3} = \frac{2}{6}$ Halve $^{2}/_{6}$

$\frac{2}{2} = \frac{9}{9}$

$\frac{6}{6} > \frac{7}{8}$

$\frac{1}{2} > \frac{49}{50}$ $^{49}/_{50}$ is less than ½.

$\frac{2}{10} = \frac{1}{5}$ Halve $^{2}/_{10}$

$\frac{5}{10} < \frac{5}{8}$ Same numerator & $^{5}/_{8}$ bigger than ½.

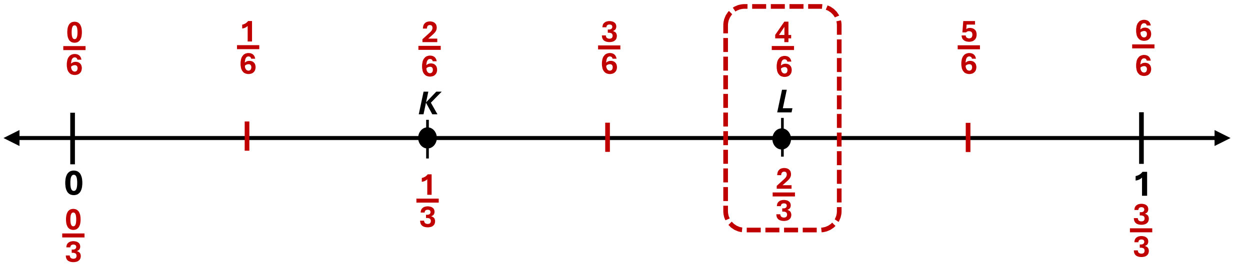
$\frac{1}{2} = \frac{500}{1,000}$

$\frac{2}{3} > \frac{7}{16}$ $^{7}/_{16}$ less than $^{8}/_{16}$ and ½.

$\frac{2}{4} < \frac{4}{6}$ $^{4}/_{6}$ is bigger than ½ $^{2}/_{4}$ is equal $^{3}/_{6}$ and ½

$1 = \frac{50}{50}$

- Point ***K*** and ***L*** are shown on the number line.



Which two fractions represent Point ***L***?

Select two choices.

Ⓐ $\frac{1}{6}$ Ⓒ $\frac{2}{6}$ ● $\frac{4}{6}$ ◀

● $\frac{2}{3}$ ◀ Ⓓ $\frac{3}{6}$ Ⓖ $\frac{1}{3}$

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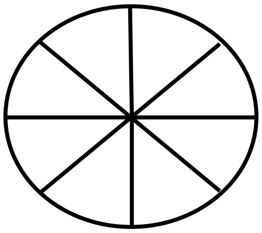
Fraction Practice – V7

- Steve, John and Bill divided a large cookie into eight equal parts as shown in the drawing below. Steve ate three-eighths. John consumed (ate) half of the cookie. Bill ate the remaining part of the cookie.

Who ate most of the cookie? __________

Who ate the least amount? ___________



Order the **fractions** of cookie that were eaten from **greatest to least:** ______ , _______ , _______

- The model below is shaded with a mixed number that is **<u>greater</u>** than one whole.

What equation below shows two different ways to represent this number as a sum?

Ⓐ $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{5}{5} + \frac{2}{5}$

Ⓑ $\frac{2}{5} + \frac{2}{5} + \frac{1}{5} = \frac{5}{5} + \frac{1}{5}$

Ⓒ $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{5}{5} + \frac{1}{5}$

Ⓓ $\frac{2}{5} + \frac{2}{5} + \frac{3}{5} = \frac{5}{5} + \frac{2}{5}$

- Compare the fractions using **(<, >, or =)** in the box provided. **<u>Hint:</u>** Evaluate the fraction's denominator first. Then, consider its numerator to help you determine the overall size of the fraction.

$\frac{1}{6}$ ○ $\frac{2}{6}$

$\frac{1}{2}$ ○ $\frac{8}{9}$

$\frac{2}{2}$ ○ $\frac{7}{8}$

$\frac{1}{2}$ ○ $\frac{50}{100}$

$\frac{4}{10}$ ○ $\frac{2}{5}$

$\frac{7}{10}$ ○ $\frac{5}{10}$

$\frac{1}{2}$ ○ $\frac{500}{1{,}000}$

$\frac{2}{3}$ ○ $\frac{1}{16}$

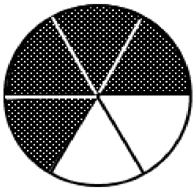
$\frac{1}{4}$ ○ $\frac{2}{3}$

$\frac{500}{500}$ ○ 1

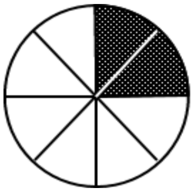
- There are four fraction models shown below.

Model **J**

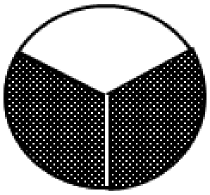
Model **K**



Model **L**



Model **M**



Which two models are equivalent fractions?

Ⓐ Models **J** and **M**

Ⓑ Models **J** and **K**

Ⓒ Models **K** and **M**

Ⓓ Models **L** and **M**

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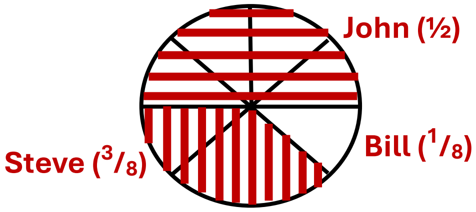
ANSWER KEY

Fraction Practice – V7

- Steve, John and Bill divided a large cookie into eight equal parts as shown in the drawing below. Steve ate three-eighths. John consumed (ate) half of the cookie. Bill ate the remaining part of the cookie.



$\boxed{\frac{4}{8} = \frac{1}{2}}$

$\boxed{\frac{3}{8} + \frac{4}{8} + \frac{1}{8} = \frac{8}{8}}$

Who ate most of the cookie? **John**

Who ate the least amount? **Bill**.

Order the **fractions** of cookie that were eaten from **greatest to least:** $\frac{4}{8}$, $\frac{3}{8}$, $\frac{1}{8}$

- The model below is shaded with a mixed number that is **greater** than one whole.

$\boxed{1\frac{1}{5} = \frac{6}{5}}$

What equation below shows two different ways to represent this number as a sum?

Ⓐ $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{5}{5} + \frac{2}{5}$

Ⓑ $\frac{2}{5} + \frac{2}{5} + \frac{1}{5} = \frac{5}{5} + \frac{1}{5}$

● $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{5}{5} + \frac{1}{5}$ ◀

Ⓓ $\frac{2}{5} + \frac{2}{5} + \frac{3}{5} = \frac{5}{5} + \frac{2}{5}$

Both sides of the equation must equal $^6/_5$.

- Compare the fractions using **(<, >, or =)** in the box provided. **Hint:** Evaluate the fraction's denominator first. Then, consider its numerator to help you determine the overall size of the fraction.

$\frac{1}{6} < \frac{2}{6}$ **Same D.**

$\frac{1}{2} < \frac{8}{9}$

$\frac{2}{2} > \frac{7}{8}$

$\frac{1}{2} = \frac{50}{100}$

$\frac{4}{10} = \frac{2}{5}$ **Halve $^4/_{10}$**

$\frac{7}{10} > \frac{5}{10}$ **Same denominator**

$\frac{1}{2} = \frac{500}{1,000}$

$\frac{2}{3} > \frac{1}{16}$

$\frac{1}{4} < \frac{2}{3}$

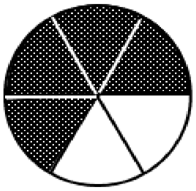
$\frac{500}{500} = 1$

Always rely on fundamentals: $^1/_{16}$ means 16 (small) parts and 1 part shaded.

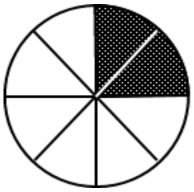
- There are four fraction models shown below.

Model **J**

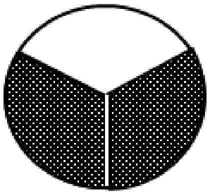
Model **K**



Model **L**



Model **M**



Which two models are equivalent fractions?

Ⓐ Models **J** and **M**

Ⓑ Models **J** and **K**

● Models **K** and **M** ◀

Ⓓ Models **L** and **M**

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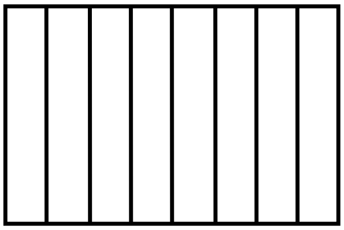
Fraction Practice – V8

- James mowed five-eighths of his yard. His sister, Yazmin, mowed one-fourth of the yard.

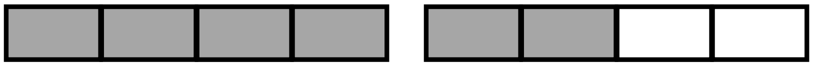


Who mowed more of the yard? __________

What fraction of the yard is **NOT** mowed? ______

Order the **fractions** of the yard mowed from **greatest to least** on the lines**:** ______ , _______ , _______

- The model below is shaded with a mixed number that is **greater** than one whole.



What equation below shows two different ways to represent this number as a sum?

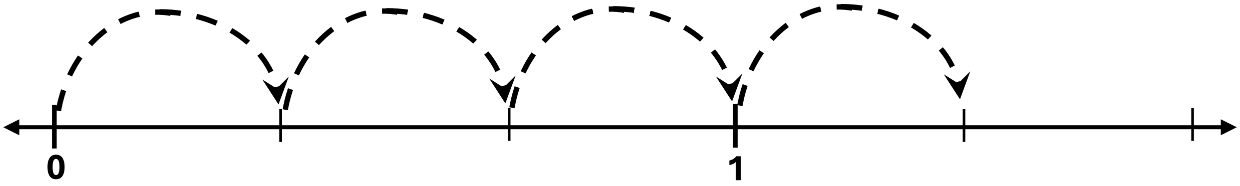
Ⓐ $\frac{2}{4} + \frac{2}{4} + \frac{2}{4} = \frac{4}{4} + \frac{1}{4}$

Ⓑ $\frac{3}{4} + \frac{3}{4} = \frac{4}{4} + \frac{2}{4}$

Ⓒ $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{5}{5} + \frac{2}{5}$

Ⓓ $\frac{2}{4} + \frac{2}{4} + \frac{3}{4} = \frac{4}{4} + \frac{3}{4}$

- The number line below shows equal jumps to represent a mixed number that is **greater** than one whole



What equation shows two different ways to represent this number as a sum?

Ⓐ $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{2}{2} + \frac{1}{2}$

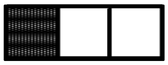
Ⓑ $\frac{2}{3} + \frac{2}{3} = \frac{3}{3} + \frac{1}{3}$

Ⓒ $\frac{1}{3} + \frac{2}{3} = \frac{3}{3} + \frac{0}{3}$

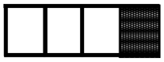
Ⓓ Answers B and C are correct.

- There are four fraction models shown below.

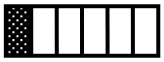
Model **W**



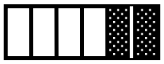
Model **X**



Model **Y**



Model **Z**



Which two models are equivalent fractions?

Ⓐ Models **W** and **X**

Ⓑ Models **X** and **Y**

Ⓒ Models **K** and **M**

Ⓓ Models **W** and **Z**

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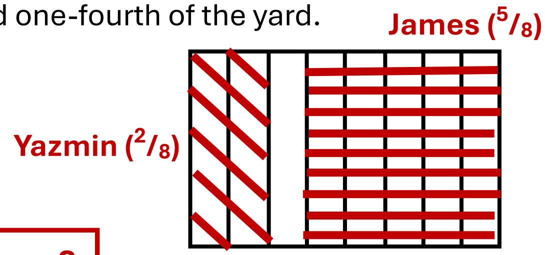
ANSWER KEY

Fraction Practice – V8

- James mowed five-eighths of his yard. His sister, Yazmin, mowed one-fourth of the yard.

Who mowed more of the yard? James

$\boxed{\frac{2}{8} = \frac{1}{4}}$

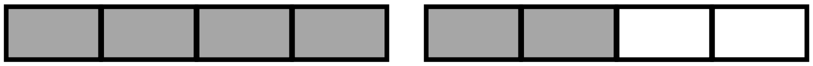


What fraction of the yard is NOT mowed? $\frac{1}{8}$

$\boxed{\frac{5}{8} + \frac{2}{8} + \frac{1}{8} = \frac{8}{8}}$

Order the **fractions** of the yard mowed from **greatest to least** on the lines: $\frac{5}{8}$, $\frac{2}{8}$, $\frac{1}{8}$

- The model below is shaded with a mixed number that is **greater** than one whole.



$\boxed{1\frac{2}{4} = \frac{6}{4}}$

What equation below shows two different ways to represent this number as a sum?

Ⓐ $\frac{2}{4} + \frac{2}{4} + \frac{2}{4} = \frac{4}{4} + \frac{1}{4}$

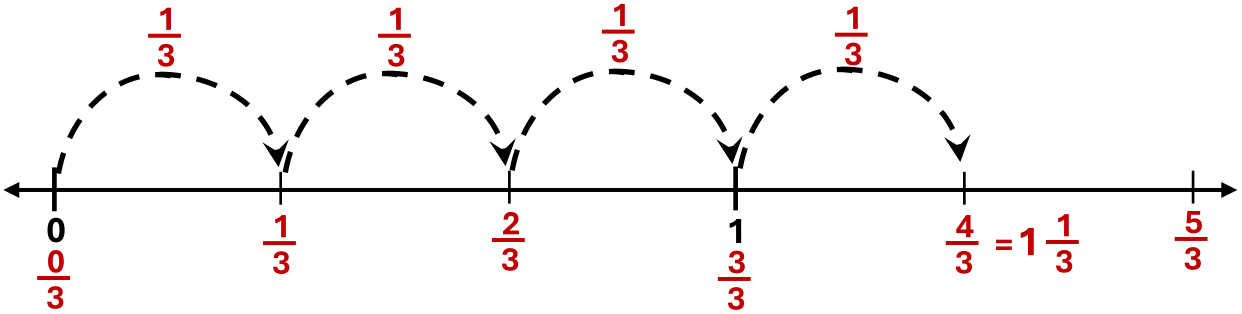
● $\frac{3}{4} + \frac{3}{4} = \frac{4}{4} + \frac{2}{4}$ ◀

Ⓒ $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{5}{5} + \frac{2}{5}$

Ⓓ $\frac{2}{4} + \frac{2}{4} + \frac{3}{4} = \frac{4}{4} + \frac{3}{4}$

Both sides of the equation must equal $^6/_4$.

- The number line below shows equal jumps to represent a mixed number that is **greater** than one whole



What equation shows two different ways to represent this number as a sum?

Ⓐ $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{2}{2} + \frac{1}{2}$

● $\frac{2}{3} + \frac{2}{3} = \frac{3}{3} + \frac{1}{3}$ ◀

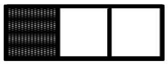
Ⓒ $\frac{1}{3} + \frac{2}{3} = \frac{3}{3} + \frac{0}{3}$

Ⓓ Answers B and C are correct.

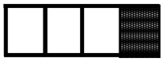
Both sides of the equation must equal $^4/_3$.

- There are four fraction models shown below.

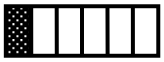
Model **W**



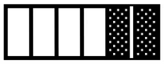
Model **X**



Model **Y**



Model **Z**



Which two models are equivalent fractions?

Ⓐ Models **W** and **X**

Ⓑ Models **X** and **Y**

Ⓒ Models **K** and **M**

● Models **W** and **Z** ◀

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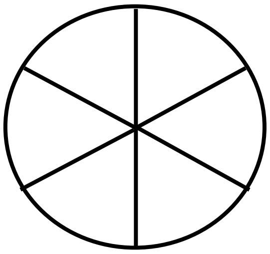
Fraction Practice – V9

- Carol ate one-sixth of a cake. Her brother, Phillip, consumed (ate) one-third of the cake.

Who ate the most cake? __________



What fraction of the cake wasn't eaten? ______

Order the **fractions** of the cake from **least to greatest** on the lines: ______ , _______ , _______

- The model below is shaded with a mixed number that is **<u>greater</u>** than one whole.

What equation below shows two different ways to represent this number as a sum?

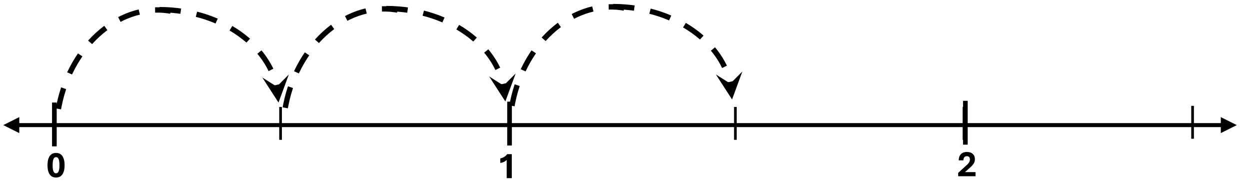
Ⓐ $\frac{2}{2} + \frac{2}{2} + \frac{1}{2} = \frac{2}{2} + \frac{3}{2}$

Ⓒ $\frac{2}{2} + \frac{1}{2} + \frac{2}{2} = \frac{4}{2} + \frac{1}{2}$

Ⓑ $\frac{3}{2} + \frac{2}{2} = \frac{5}{2} + \frac{0}{2}$

Ⓓ All choices are correct.

- The number line below shows equal jumps to represent a mixed number that is **<u>greater</u>** than one whole



What equation shows two different ways to represent this number as a sum?

Ⓐ $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{2}{2} + \frac{1}{2}$

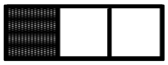
Ⓒ $\frac{1}{2} + \frac{2}{2} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$

Ⓑ $\frac{1}{2} + \frac{2}{2} = \frac{2}{2} + \frac{2}{2}$

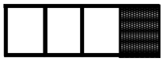
Ⓓ Answers A and C are correct.

- There are four fraction models shown below.

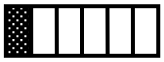
Model **W**



Model **X**



Model **Y**



Model **Z**

Which two models are equivalent fractions?

Ⓐ Models **W** and **X**

Ⓑ Models **X** and **Z**

Ⓒ Models **K** and **M**

Ⓓ Models **W** and **Z**

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ANSWER KEY

Fraction Practice – V9

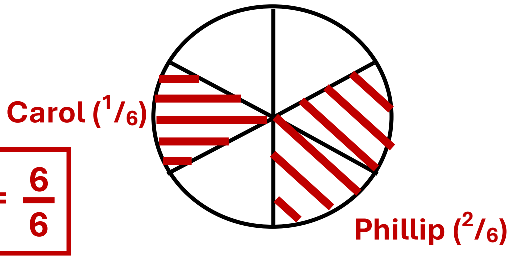
- Carol ate one-sixth of a cake. Her brother, Phillip, consumed (ate) one-third of the cake.

Who ate the most cake? Phillip

$\boxed{\frac{1}{3} = \frac{2}{6}}$

What fraction of the cake wasn't eaten? $\frac{3}{6}$

$\boxed{\frac{1}{6} + \frac{2}{6} + \frac{3}{6} = \frac{6}{6}}$



Order the **fractions** of the cake from **least to greatest** on the lines: $\frac{1}{6}$, $\frac{2}{6}$, $\frac{3}{6}$

- The model below is shaded with a mixed number that is **greater** than one whole.

$\boxed{2\frac{1}{2} = \frac{5}{2}}$

What equation below shows two different ways to represent this number as a sum?

Ⓐ $\frac{2}{2} + \frac{2}{2} + \frac{1}{2} = \frac{2}{2} + \frac{3}{2}$

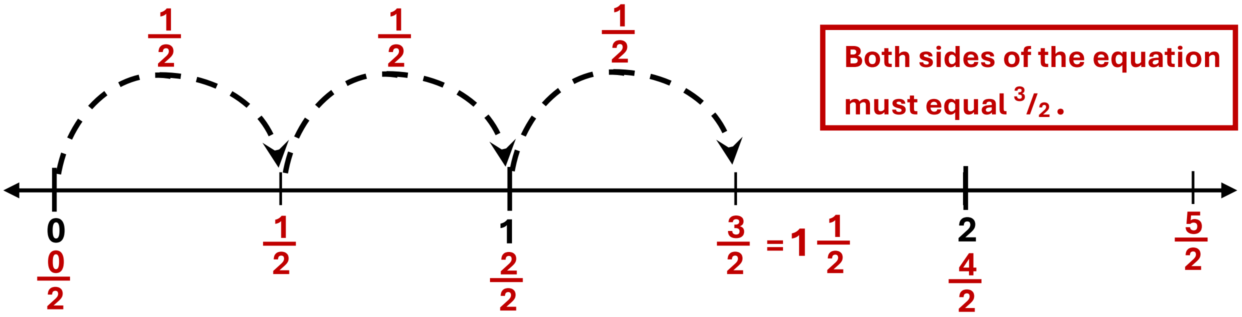
Ⓑ $\frac{3}{2} + \frac{2}{2} = \frac{5}{2} + \frac{0}{2}$

Ⓒ $\frac{2}{2} + \frac{1}{2} + \frac{2}{2} = \frac{4}{2} + \frac{1}{2}$

● All choices are correct. ◀

Both sides of the equation must equal $^5/_2$.

- The number line below shows equal jumps to represent a mixed number that is **greater** than one whole



Both sides of the equation must equal $^3/_2$.

What equation shows two different ways to represent this number as a sum?

Ⓐ $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{2}{2} + \frac{1}{2}$

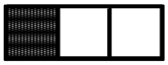
Ⓑ $\frac{1}{2} + \frac{2}{2} = \frac{2}{2} + \frac{2}{2}$

Ⓒ $\frac{1}{2} + \frac{2}{2} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$

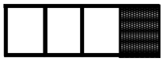
● Answers A and C are correct. ◀

- There are four fraction models shown below.

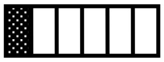
Model **W**



Model **X**



Model **Y**



Model **Z**

Which two models are equivalent fractions?

Ⓐ Models **W** and **X**

● Models **X** and **Z** ◀

Ⓒ Models **K** and **M**

Ⓓ Models **W** and **Z**

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Fraction Practice – V10

- Which fraction completes the comparison shown in the number sentence below?

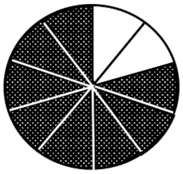
$$\frac{6}{8} < \boxed{}$$

Ⓐ $\frac{5}{10}$ Ⓑ $\frac{3}{4}$ Ⓒ $\frac{4}{5}$ Ⓓ $\frac{1}{2}$

- Which fraction is greater than $1\frac{5}{9}$?

Ⓐ $\frac{14}{9}$ Ⓑ $\frac{11}{8}$ Ⓒ $\frac{8}{7}$ Ⓓ $\frac{13}{7}$

- The model shown to the right represents a fraction.
  Which two fractions are less than the model?
  (Choose two correct answers.)



Ⓕ $\frac{10}{10}$ Ⓖ $\frac{3}{5}$ Ⓗ $\frac{9}{10}$ Ⓙ $\frac{7}{10}$ Ⓚ $\frac{4}{5}$

- The number of sport cards that Jason owns is shown below.

Hockey Cards	☐ ☐ ☐ ☐ ☐ ☐
Baseball Cards	☐ ☐ ☐ ☐
Football Cards	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ = 1 sport card

What fraction of the cards are Baseball cards? ☐

What fraction of the cards are Hockey or Football cards? ☐

- The table shows the lengths of four rope types.

ROPE LENGTHS

Rope Type	Length (meters)
K	$\frac{76}{8}$
L	$\frac{100}{8}$
M	$\frac{27}{3}$
O	$\frac{155}{10}$

Which comparison is true?

Ⓐ Rope A is shorter in length than Rope M.

Ⓑ Rope B is the shortest rope type.

Ⓒ Rope L is longer than rope type O.

Ⓓ Rope K is longer than rope type M.

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ANSWER KEY

Fraction Practice – V10

- Which fraction completes the comparison shown in the number sentence below?

$$\frac{6}{8} < \boxed{}$$

Ⓐ $\frac{5}{10}$ Ⓑ $\frac{3}{4}$ ● $\frac{4}{5}$ ◀   Ⓓ $\frac{1}{2}$

Students need to recognize immediately the proper fraction five-ninths is a little more than half – so a little more than 1 ½. They must grasp fraction magnitudes.

- Which fraction is greater than $1\frac{5}{9}$?

Ⓐ $\frac{14}{9}$ $1\frac{5}{9}$ **Equal to!**

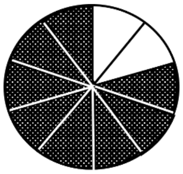
Ⓑ $\frac{11}{8}$ $1\frac{3}{8}$ **Less than 1 ½**

Ⓒ $\frac{8}{7}$ $1\frac{1}{7}$ **Close to 1**

● $\frac{13}{7}$ $1\frac{6}{7}$ ◀ **Close to 2**

Students must be numerically proficient converting mixed numbers to improper fractions and vice versa.

- The model shown to the right represents a fraction.
  Which two fractions are less than the model?
  (Choose two correct answers.)



$\frac{8}{10} = \frac{4}{5}$

Ⓕ $\frac{10}{10}$ ● $\frac{3}{5}$ ◀   Ⓗ $\frac{9}{10}$ ● $\frac{7}{10}$ ◀   Ⓚ $\frac{4}{5}$

- The number of sport cards that Jason owns is shown below.

Hockey Cards ☐ ☐ ☐ ☐ ☐ ☐ 6

Baseball Cards ☐ ☐ ☐ ☐ 4 **Part(s) to Whole**

Football Cards ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 8

☐ = 1 sport card

Students must be numerically proficient converting mixed numbers to improper fractions and vice versa. They must be proficient with their math facts.

What fraction of the cards are Baseball cards? $\boxed{\frac{4}{18}}$

18 Total

What fraction of the cards are Hockey or Football cards? $\boxed{\frac{14}{18}}$

6 + 8 = 14 **18 Total**

- The table shows the lengths of four ropes.

ROPE LENGTHS

Rope Type	Length (meters)
K	$\frac{76}{8}$
L	$\frac{100}{8}$
M	$\frac{27}{3}$
O	$\frac{155}{10}$

Divide (Convert)

$9\frac{4}{8}$

$12\frac{4}{8}$

9

$15\frac{5}{10}$

Which comparison is true?

Ⓐ Rope A is shorter in length than Rope M.

Ⓑ Rope B is the shortest rope type.

Ⓒ Rope L is longer than rope type O.

▶ ● Rope K is longer than rope type M.

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Fraction Practice – V11

- Which fraction comparison is true in the number sentence below?

Ⓐ $\frac{6}{8} > \frac{3}{4}$ Ⓑ $\frac{1}{8} = \frac{2}{6}$ Ⓒ $\frac{2}{3} < \frac{4}{4}$ Ⓓ None are correct.

- Jeff and Susan both tried to eat the most cake in a contest at the Texas State Fair.
  - Jeff ate $\frac{5}{8}$ of his cake.
  - Susan ate $\frac{5}{6}$ of her cake.

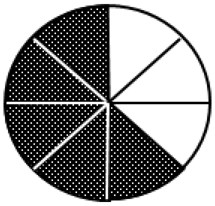
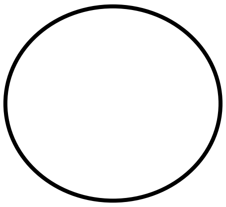
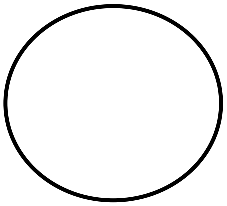
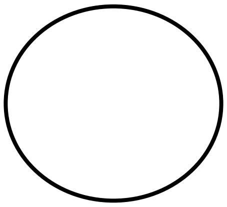
Compare the amount of cake that Jeff and Susan ate from the dropdown menu.

Susan ate	less cake than Jeff because	she had the	larger slices.
	same amount of cake as Jeff because		smaller slices.
	more cake than Jeff because		same size slices.
	cake but more of less than Jeff because		same numerators.

- William rode his bike home. He rode $\frac{4}{16}$ of the way home and stopped at the store. Then, he rode another another $\frac{7}{16}$ of the way home and stopped. Is William ***more than*** or ***less than*** *halfway* home on his bike ride?

William is ______________ halfway home because he has ridden ________ which is _______________half.

- Jane has four circles that are the same size. She divided the first circle to represent the fraction $\frac{5}{8}$.

Which of the answer choices is NOT correct if Jane wants to divide a circle so the fraction is greater than $\frac{5}{8}$?

Ⓐ Jane could divide a circle in thirds and shade one of its equal parts.

Ⓑ Jane could divide a circle in halves and shade two of its equal parts.

Ⓒ Jane could divide a circle in fourths and shade two of its equal parts.

Ⓓ Jane could divide a circle in sixths and shade three of its equal parts.

- Estimate the fraction of milk used to bake three cakes to the **<u>nearest fourth</u>**. Betty Crocker used $\frac{3}{8}$ cups of milk on the first two cakes and $\frac{1}{4}$ cups of milk on the last cake.

Betty used _________ cups of milk to bake the three cakes.

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ANSWER KEY

Fraction Practice – V11

Show students a threshold number of examples until they master the content.

- Which fraction comparison is true in the number sentence below?

Ⓐ $\frac{6}{8} > \frac{3}{4}$ Ⓑ $\frac{1}{8} = \frac{2}{6}$ ● $\frac{2}{3} < \frac{4}{4}$ Ⓓ None are correct.

- Jeff and Susan both tried to eat the most cake in a contest at the Texas State Fair.

Numerators are the same. Only dependent on each fraction's denominator.

  - Jeff ate $\frac{5}{8}$ of his cake.
  - Susan ate $\frac{5}{6}$ of her cake.

Compare the amount of cake that Jeff and Susan ate from the dropdown menu. $\frac{5}{6} > \frac{5}{8}$

Susan ate

less cake than Jeff because
same amount of cake as Jeff because
[✓ more cake than Jeff because]
cake but more of less than Jeff because

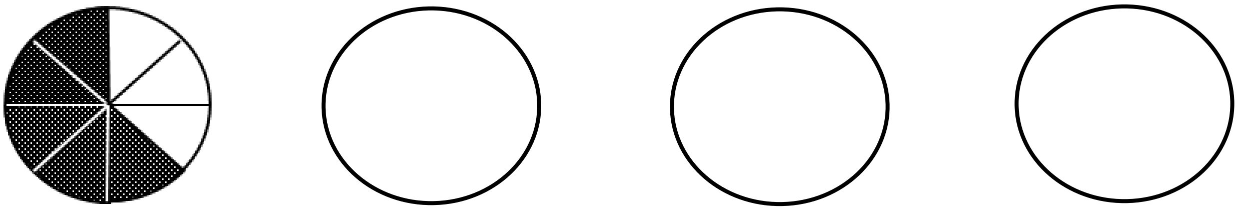
she had the

[✓ larger slices.]
smaller slices.
same size slices.
same numerators.

- William rode his bike home. He rode $\frac{4}{16}$ of the way home and stopped at the store. Then, he rode another another $\frac{7}{16}$ of the way home and stopped. Is William ***more than*** or ***less than*** *halfway* home on his bike ride?

William is more than ***halfway home because he has ridden*** $\frac{11}{16}$ ***which is*** more than ***half.***

- Jane has four circles that are the same size. She divided the first circle to represent the fraction $\frac{5}{8}$.



Which of the answer choices is NOT correct if Jane wants to divide a circle so the fraction is greater than $\frac{5}{8}$

Ⓐ Jane could divide a circle in thirds and shade one of its equal parts.

● Jane could divide a circle in halves and shade two of its equal parts.

Ⓒ Jane could divide a circle in fourths and shade two of its equal parts.

Ⓓ Jane could divide a circle in sixths and shade three of its equal parts.

- Estimate the fraction of milk used to bake three cakes to the **nearest fourth**. Betty Crocker used $\frac{3}{8}$ cups of milk on the first two cakes and $\frac{1}{4}$ cups of milk on the last cake.

Either fraction – $^5/_8$ used.

Betty Crocker used $\frac{2}{4}$ or $\frac{3}{4}$ cups of milk to bake the three cakes.

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Fraction Practice – V12

- Which fraction completes the comparison shown in the number sentence below?

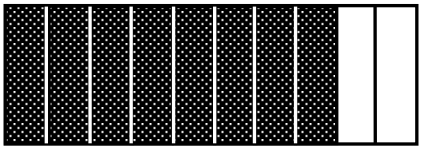
$$\frac{6}{8} > \boxed{}$$

Ⓐ $\frac{50}{100}$ Ⓑ $\frac{3}{4}$ Ⓒ $\frac{4}{5}$ Ⓓ $\frac{7}{8}$

- Which fraction is less than $1\frac{5}{9}$?

Ⓐ $\frac{14}{9}$ Ⓑ $\frac{15}{8}$ Ⓒ $\frac{8}{7}$ Ⓓ $\frac{13}{7}$

- The model shown to the right represents a fraction. Which two fractions are MORE than the model? *(Choose two correct answers.)*



Ⓗ $\frac{10}{10}$ Ⓖ $\frac{3}{5}$ Ⓗ $\frac{9}{10}$ Ⓙ $\frac{7}{10}$ Ⓚ $\frac{4}{5}$

- The numbers of coins that Jesus owns is shown below.

Pennies ☺ ☺ ☺ ☺ ☺ ☺ ☺

Dimes ☺ ☺ ☺

Quarters ☺ ☺ ☺ ☺ ☺ ☺

☺ = 1 coin

What fraction of the coins are Pennies and Quarters? ☐

What fraction of the coins are Dimes? ☐

- The table shows the heights of four toy models.

Toy Model Heights

Toy Model	Height (inches)
X-4	$\frac{50}{4}$
X-8	$\frac{80}{8}$
M-2	$\frac{33}{2}$
N-6	$\frac{150}{12}$

Which comparison is true?

Ⓐ Toy Model X-4 is the longest.

Ⓑ Toy Model X-8 is the longer than Toy N-6.

Ⓒ Toy Model M-2 is longer than Toy Model X-8.

Ⓓ Toy Model N-6 is the same height as X-8.

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ANSWER KEY

Fraction Practice – V12

- Which fraction completes the comparison shown in the number sentence below?

$$\frac{6}{8} > \square$$

● $\frac{50}{100}$ ◀   Ⓑ $\frac{3}{4}$ Ⓒ $\frac{4}{5}$ Ⓓ $\frac{7}{8}$

Students need to recognize immediately the proper fraction five-ninths is a little more than half – so a little more than 1 ½. They must grasp fraction magnitudes.

- Which fraction is less than $1\frac{5}{9}$?

Ⓐ $\frac{14}{9}$ $1\frac{5}{9}$ **Equal to!**

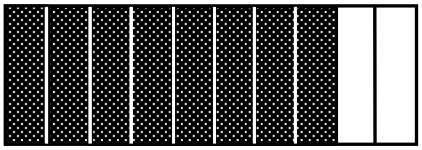
Ⓑ $\frac{15}{8}$ $1\frac{7}{8}$ **Close to 2**

● $\frac{8}{7}$ $1\frac{1}{7}$ ◀ **Close to 1**

Ⓓ $\frac{13}{7}$ $1\frac{6}{7}$ **Close to 2**

Students must be numerically proficient converting mixed numbers to improper fractions and vice versa.

- The model shown to the right represents a fraction.
Which two fractions are MORE than the model?
(Choose two correct answers.)



$\frac{8}{10} = \frac{4}{5}$

● $\frac{10}{10}$ ◀   Ⓖ $\frac{3}{5}$ ● $\frac{9}{10}$ ◀   Ⓙ $\frac{7}{10}$ Ⓚ $\frac{4}{5}$

- The numbers of coins that Jesus owns is shown below.

Pennies ☺ ☺ ☺ ☺ ☺ ☺ ☺ 7

Dimes ☺ ☺ ☺ 3

Quarters ☺ ☺ ☺ ☺ ☺ ☺ 6

☺ = 1 coin

Part(s) to Whole

What fraction of the coins are Pennies and Quarters? $\boxed{\frac{13}{16}}$

6 + 7 = 13   **16 Total**

What fraction of the coins are Dimes? $\boxed{\frac{3}{16}}$

16 Total

Students must be numerically proficient converting mixed numbers to improper fractions and vice versa. They must be proficient with their math facts.

- The table shows the heights of four toy models.

Toy Model Heights

Toy Model	Height (inches)	Divide (Convert)
X-4	$\frac{50}{4}$	$12\frac{2}{4}$
X-8	$\frac{80}{8}$	10
M-2	$\frac{33}{2}$	$16\frac{1}{2}$
N-6	$\frac{150}{12}$	$12\frac{6}{12}$

Which comparison is true?

Ⓐ Toy Model X-4 is the longest.

Ⓑ Toy Model X-8 is the longer than Toy N-6.

▶ ● Toy Model M-2 is longer than Toy Model X-8.

Ⓓ Toy Model N-6 is the same height as X-8.

All fractions represent division problems.

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