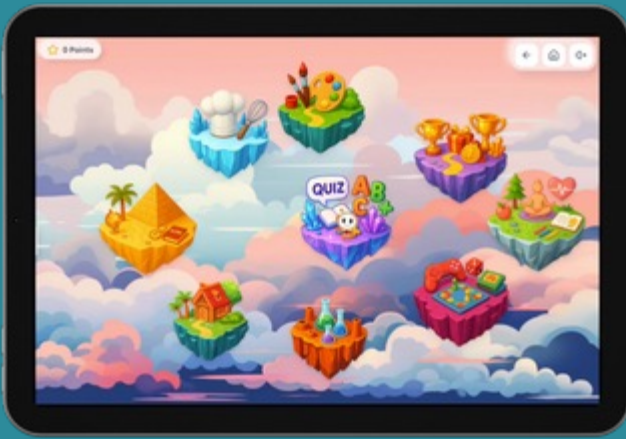


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Equivalent Fractions - Year 4

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Equivalent Fractions

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

$\frac{1}{2}$



$\frac{2}{4}$



$\frac{4}{8}$



Same amount, different names



Multiply or divide the numerator and denominator by the same number.

The value stays the same.

Folding Fraction Lab



Cut around each shape. Fold carefully along the dotted lines.

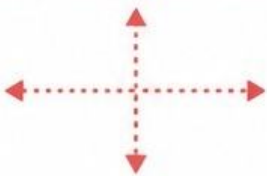


Circle

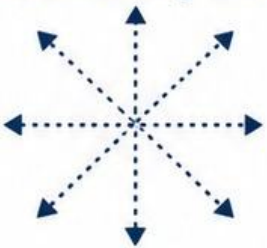
1. Fold in halves



2. Fold in quarters



3. Fold in eighths



Square

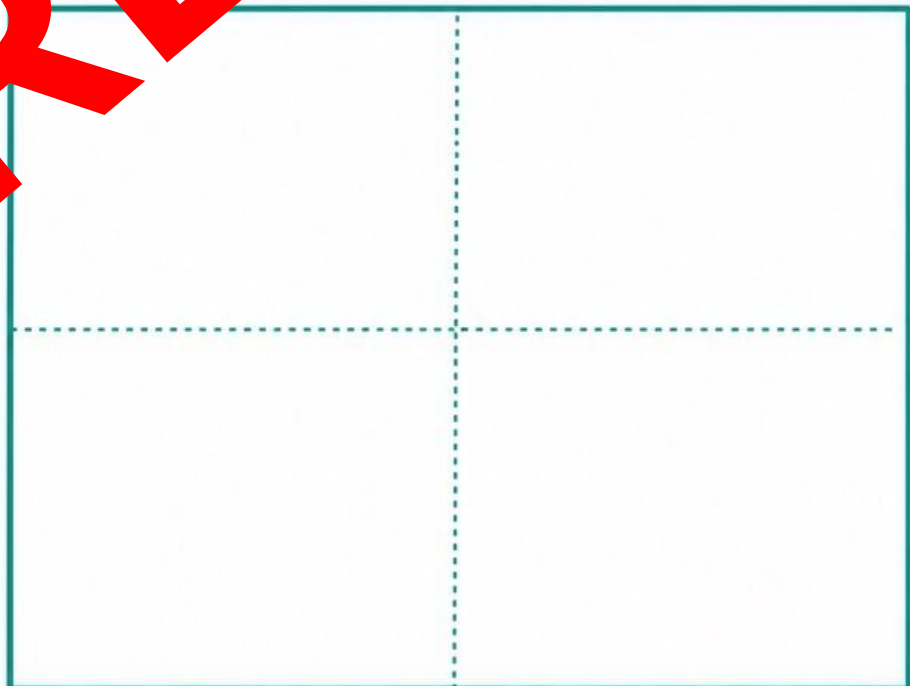
1. Fold in halves



2. Fold in quarters



3. Fold in eighths



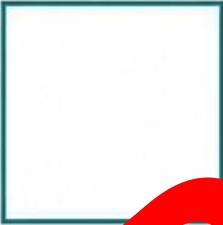
Make equal parts. Each fold creates a new equivalent fraction.

Folding Fraction Lab:

Record and Explain

Name: _____

1							
$\frac{1}{2}$				$\frac{1}{2}$			
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$

Shape	Original fraction	After first fold	After second fold	Equivalent fraction
Circle 				
Square 				



What stayed the same as the number of equal parts changed?



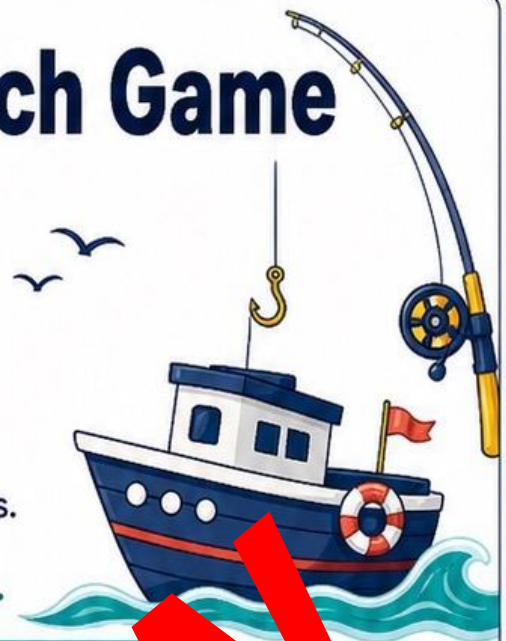
2. Write one equivalent-fraction family you made.



Fraction Fishing Match Game

How to play

1. Cut out the fish cards.
2. Mix the cards and place them face down.
3. Take turns choosing a fish.
4. Place it in the matching fraction family.
5. Check the family. Keep the fish if it belongs.

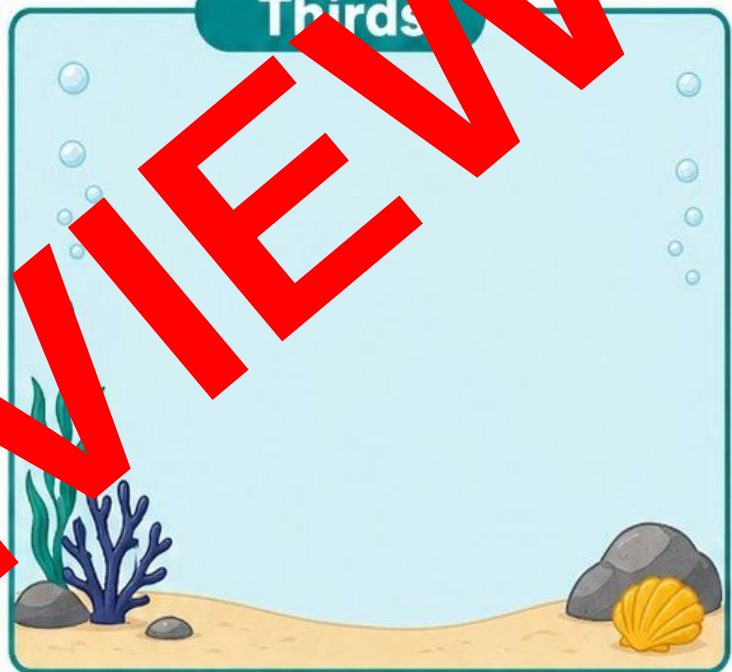


The player with the most fish wins.

Halves



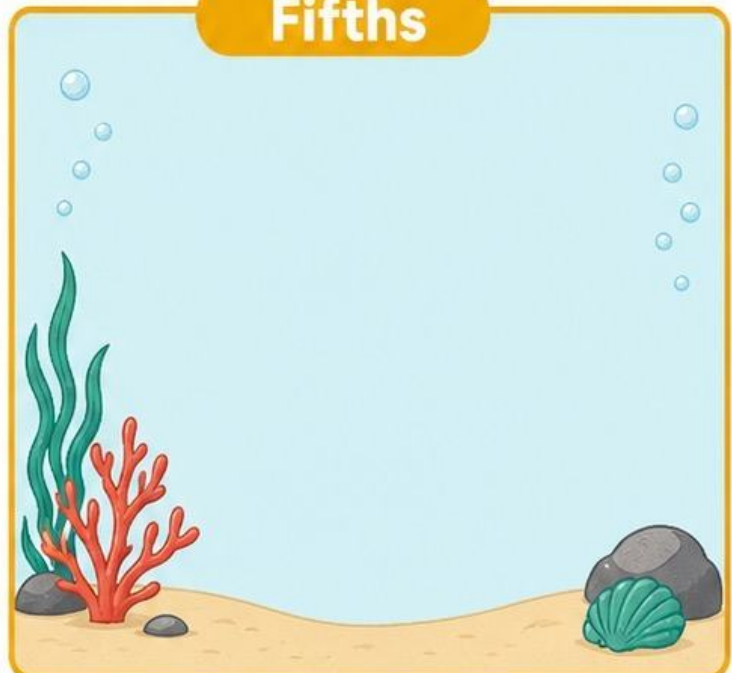
Thirds



Quarters



Fifths



Fraction Fishing Cards

Cut along the dashed lines.



Pizza Fraction Family Puzzles

How to play

- 1 Cut out the topping cards.
- 2 Choose a pizza base.
- 3 Find every fraction that belongs to its family.
- 4 Place the matching toppings on the pizza.



Check each fraction by multiplying or dividing both parts by the same number.

$\frac{1}{2}$ family

$\frac{1}{3}$ family

$\frac{1}{4}$ family

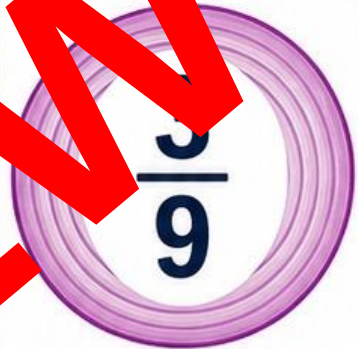
$\frac{1}{5}$ family



Pizza Fraction Topping Cards



Cut along the dashed lines.

 $\frac{1}{2}$	 $\frac{2}{4}$	 $\frac{3}{6}$	 $\frac{5}{10}$
 $\frac{6}{12}$	 $\frac{1}{3}$	 $\frac{2}{5}$	 $\frac{3}{9}$
 $\frac{4}{12}$	 $\frac{6}{15}$	 $\frac{1}{4}$	 $\frac{2}{8}$
 $\frac{3}{12}$	 $\frac{4}{16}$	 $\frac{6}{24}$	 $\frac{1}{5}$
 $\frac{2}{10}$	 $\frac{3}{15}$	 $\frac{4}{20}$	 $\frac{6}{30}$

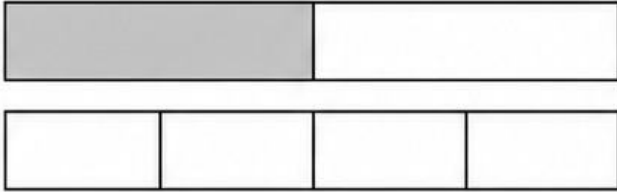
PREVIEW

Name: _____

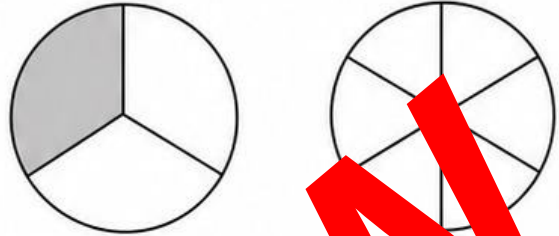
Build Equivalent Fractions: Visual Models

 Shade the second model to show the same amount. Then complete the equivalent fraction.

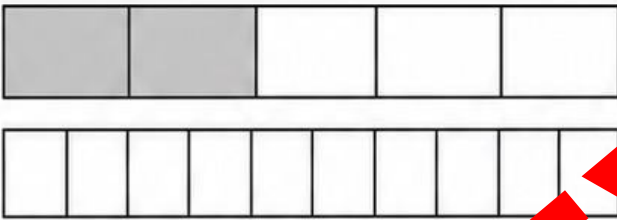
1. $\frac{1}{2} = \frac{\quad}{4}$



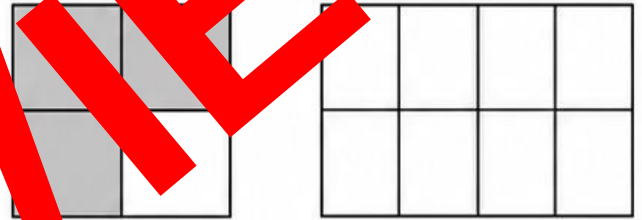
2. $\frac{1}{3} = \frac{\quad}{6}$



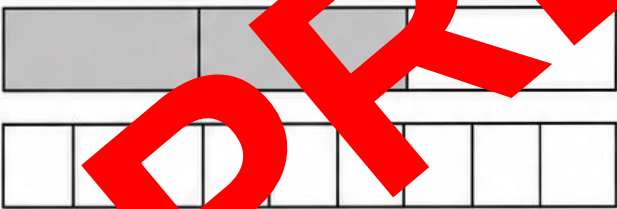
3. $\frac{2}{5} = \frac{\quad}{10}$



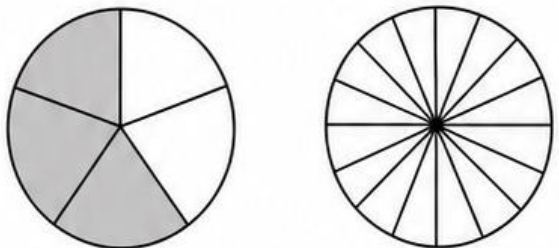
4. $\frac{3}{4} = \frac{\quad}{8}$



5. $\frac{2}{3} = \frac{\quad}{9}$



6. $\frac{3}{5} = \frac{\quad}{15}$



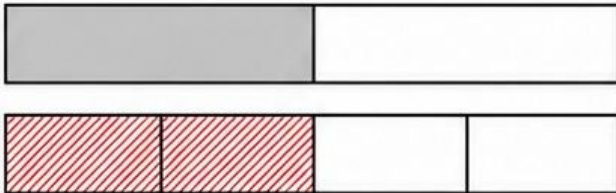
 **Explain:** How do the models prove the fractions are equivalent?

Name: ANSWERS

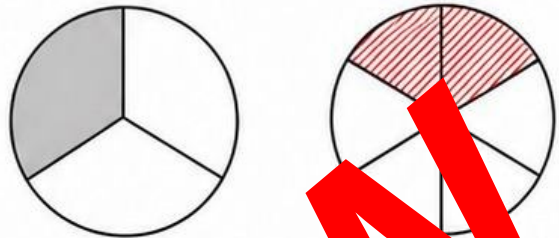
Build Equivalent Fractions: Visual Models

 Shade the second model to show the same amount. Then complete the equivalent fraction.

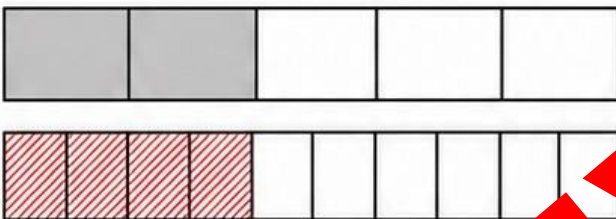
1. $\frac{1}{2} = \frac{2}{4}$



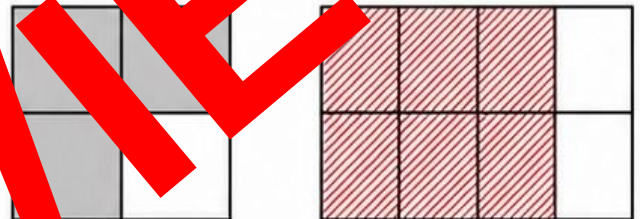
2. $\frac{1}{3} = \frac{2}{6}$



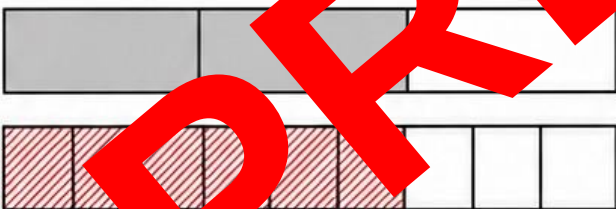
3. $\frac{2}{5} = \frac{4}{10}$



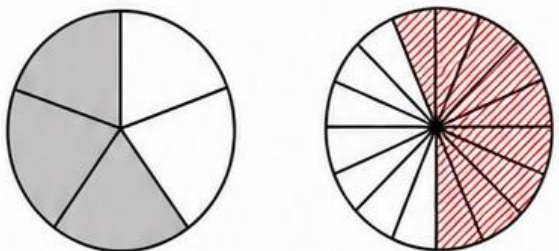
4. $\frac{3}{4} = \frac{6}{8}$



5. $\frac{2}{3} = \frac{6}{9}$



6. $\frac{3}{5} = \frac{9}{15}$

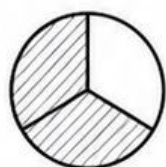


 **Explain:** How do the models prove the fractions are equivalent?

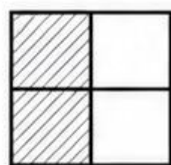
— Each pair shades the same amount of the whole. The —
— numerator and denominator were multiplied by the —
— same number, so the fraction's value did not change. —
—
—
—

Build Equivalent Fractions: Number Strategies

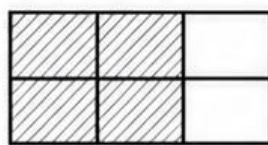
Name: _____



x



=



Multiply both parts by the shown factor. Write the new numerator and denominator.

$$\frac{2}{3}$$

$$\frac{2}{2}$$

$$\frac{4}{6}$$

1. $\frac{1}{2} \times \frac{2}{2} =$ _____

7. $\frac{3}{8} \times \frac{3}{3} =$ _____

2. $\frac{2}{3} \times \frac{3}{3} =$ _____

8. $\frac{2}{10} \times \frac{2}{2} =$ _____

3. $\frac{3}{4} \times \frac{2}{2} =$ _____

9. $\frac{5}{6} \times \frac{5}{5} =$ _____

4. $\frac{2}{5} \times \frac{4}{4} =$ _____

10. $\frac{5}{9} \times \frac{4}{4} =$ _____

5. $\frac{4}{7} \times \frac{3}{3} =$ _____

11. $\frac{4}{11} \times \frac{2}{2} =$ _____

6. $\frac{1}{6} \times \frac{2}{2} =$ _____

12. $\frac{7}{12} \times \frac{3}{3} =$ _____

Why does multiplying by $\frac{2}{2}$, $\frac{3}{3}$ or $\frac{4}{4}$ keep the value the same?

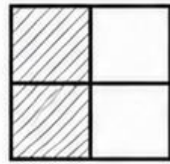
Build Equivalent Fractions: Number Strategies

Name: **ANSWERS**



$$\frac{2}{3}$$

x



$$\frac{2}{2}$$

=



$$\frac{4}{6}$$

Multiply both parts by the shown factor. Write the new numerator and denominator.

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

7. $\frac{3}{8} \times \frac{3}{3} = \frac{9}{24}$

2. $\frac{2}{3} \times \frac{3}{3} = \frac{6}{9}$

8. $\frac{2}{10} \times \frac{7}{7} = \frac{14}{70}$

3. $\frac{3}{4} \times \frac{2}{2} = \frac{6}{8}$

9. $\frac{5}{6} \times \frac{5}{5} = \frac{25}{30}$

4. $\frac{2}{5} \times \frac{4}{4} = \frac{8}{20}$

10. $\frac{5}{9} \times \frac{4}{4} = \frac{20}{36}$

5. $\frac{4}{7} \times \frac{3}{3} = \frac{12}{21}$

11. $\frac{4}{11} \times \frac{2}{2} = \frac{8}{22}$

6. $\frac{5}{6} \times \frac{2}{2} = \frac{10}{12}$

12. $\frac{7}{12} \times \frac{3}{3} = \frac{21}{36}$

Why does multiplying by $\frac{2}{2}$, $\frac{3}{3}$ or $\frac{4}{4}$ keep the value the same?

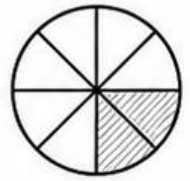
Each multiplier is equal to one. It scales the numerator and denominator by the same factor, so the value stays the same.

Multiply to Match



Name: _____

Multiply the numerator and denominator by the same number to complete each equivalent fraction.



1. $\frac{1}{2} = \frac{\quad}{8}$

2. $\frac{2}{3} = \frac{\quad}{12}$

3. $\frac{3}{5} = \frac{\quad}{20}$

4. $\frac{4}{\quad} = \frac{\quad}{21}$

5. $\frac{5}{8} = \frac{\quad}{24}$

6. $\frac{\quad}{9} = \frac{\quad}{27}$

7. $\frac{2}{5} = \frac{14}{\quad}$

8. $\frac{3}{4} = \frac{18}{\quad}$

9. $\frac{5}{\quad} = \frac{20}{\quad}$

10. $\frac{4}{11} = \frac{12}{\quad}$

11. $\frac{7}{12} = \frac{21}{\quad}$

12. $\frac{9}{10} = \frac{45}{\quad}$

Whatever you do to the numerator, do the same to the denominator.

Multiply to Match



Name: ANSWERS

Multiply the numerator and denominator by the same number to complete each equivalent fraction.



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

2. $\frac{2}{3} = \frac{8}{12}$

3. $\frac{3}{5} = \frac{12}{20}$

4. $\frac{4}{7} = \frac{8}{21}$

5. $\frac{5}{8} = \frac{15}{24}$

6. $\frac{7}{9} = \frac{21}{27}$

7. $\frac{2}{5} = \frac{14}{35}$

8. $\frac{3}{4} = \frac{18}{24}$

9. $\frac{5}{6} = \frac{20}{24}$

10. $\frac{4}{11} = \frac{12}{33}$

11. $\frac{7}{12} = \frac{21}{36}$

12. $\frac{9}{10} = \frac{45}{50}$

Whatever you do to the numerator, do the same to the denominator.

Divide and Simplify



Name: _____



Divide the **numerator** and denominator by the same factor.
Write each fraction in lowest terms.

1. $\frac{6}{8}$ _____
Divided by: _____

6. $\frac{16}{28}$ _____
Divided by: _____

2. $\frac{8}{12}$ _____
Divided by: _____

7. $\frac{8}{24}$ _____
Divided by: _____

3. $\frac{9}{15}$ _____
Divided by: _____

8. $\frac{20}{30}$ _____
Divided by: _____

4. $\frac{12}{18}$ _____
Divided by: _____

9. $\frac{25}{35}$ _____
Divided by: _____

5. $\frac{15}{20}$ _____
Divided by: _____

10. $\frac{32}{40}$ _____
Divided by: _____

How do you know when a fraction is in lowest terms?

Divide and Simplify



Name: ANSWERS



Divide the **numerator** and denominator by the same factor.
Write each fraction in lowest terms.

1. $\frac{6}{8}$ $\frac{3}{4}$
Divided by: 2

6. $\frac{16}{28}$ $\frac{4}{7}$
Divided by: 4

2. $\frac{8}{12}$ $\frac{2}{3}$
Divided by: 4

7. $\frac{8}{12}$ $\frac{2}{3}$
Divided by: 6

3. $\frac{9}{15}$ $\frac{3}{5}$
Divided by: 3

8. $\frac{20}{30}$ $\frac{2}{3}$
Divided by: 10

4. $\frac{12}{16}$ $\frac{3}{4}$
Divided by: 4

9. $\frac{25}{35}$ $\frac{5}{7}$
Divided by: 5

5. $\frac{15}{20}$ $\frac{3}{4}$
Divided by: 5

10. $\frac{32}{40}$ $\frac{4}{5}$
Divided by: 8

How do you know when a fraction is in lowest terms?

The numerator and denominator have no common factor greater than 1.

Common Denominator Connections

Name: _____

Rename each pair using the shared denominator. Then write $<$, $>$ or $=$.

1 $\frac{1}{2}$ and $\frac{1}{3}$

Shared denominator: 6

$$\frac{\quad}{6} \quad \text{and} \quad \frac{\quad}{6}$$
$$\frac{1}{2} \quad \text{—} \quad \frac{1}{3}$$

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

Shared denominator: 12

$$\frac{\quad}{12} \quad \text{and} \quad \frac{\quad}{12}$$
$$\frac{1}{4} \quad \text{—} \quad \frac{1}{6}$$

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

Shared denominator: 12

$$\frac{\quad}{12} \quad \text{and} \quad \frac{\quad}{12}$$
$$\frac{2}{3} \quad \text{—} \quad \frac{1}{4}$$

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

Shared denominator: 10

$$\frac{\quad}{10} \quad \text{and} \quad \frac{\quad}{10}$$
$$\frac{3}{5} \quad \text{—} \quad \frac{1}{2}$$

5 $\frac{3}{4}$ and $\frac{2}{3}$

Shared denominator: 12

$$\frac{\quad}{12} \quad \text{and} \quad \frac{\quad}{12}$$
$$\frac{3}{4} \quad \text{—} \quad \frac{2}{3}$$

6 $\frac{5}{6}$ and $\frac{3}{4}$

Shared denominator: 12

$$\frac{\quad}{12} \quad \text{and} \quad \frac{\quad}{12}$$
$$\frac{5}{6} \quad \text{—} \quad \frac{3}{4}$$

Common Denominator Connections

Name: ANSWERS

Rename each pair using the shared denominator. Then write $<$, $>$ or $=$.

1 $\frac{1}{2}$ and $\frac{1}{3}$

Shared denominator: 6

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

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

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

Shared denominator: 12

$\frac{3}{12}$ and $\frac{2}{12}$

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

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

Shared denominator: 12

$\frac{8}{12}$ and $\frac{3}{12}$

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

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

Shared denominator: 10

$\frac{6}{10}$ and $\frac{5}{10}$

$\frac{3}{5} > \frac{1}{2}$

5 $\frac{3}{4}$ and $\frac{2}{3}$

Shared denominator: 12

$\frac{9}{12}$ and $\frac{8}{12}$

$\frac{3}{4} > \frac{2}{3}$

6 $\frac{5}{6}$ and $\frac{3}{4}$

Shared denominator: 12

$\frac{10}{12}$ and $\frac{9}{12}$

$\frac{5}{6} > \frac{3}{4}$

Mixed Equivalent Fractions Review

Name: _____

A. Circle the fraction that is NOT equivalent.

				
---	--	--	--	--

1. $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, $\frac{4}{10}$

2. $\frac{2}{3}$, $\frac{4}{6}$, $\frac{6}{9}$, $\frac{8}{15}$

3. $\frac{3}{4}$, $\frac{6}{8}$, $\frac{9}{12}$, $\frac{12}{16}$

B. Complete each equivalent fraction.

4. $\frac{1}{3} = \frac{\quad}{12}$

5. $\frac{5}{6} = \frac{20}{\quad}$

6. $\frac{\quad}{15} = \frac{3}{5}$

7. $\frac{14}{21} = \frac{\quad}{3}$

8. $\frac{4}{10} = \frac{2}{\quad}$

9. $\frac{7}{8} = \frac{\quad}{24}$

C. Simplify to lowest terms.

					
---	---	--	--	--	--

10. $\frac{10}{15} = \frac{\quad}{\quad}$

11. $\frac{18}{30} = \frac{\quad}{\quad}$

12. $\frac{28}{42} = \frac{\quad}{\quad}$

Mia says $\frac{2}{3} = \frac{6}{12}$. Is she correct? Explain.

Mixed Equivalent Fractions Review

Name: ANSWERS

A. Circle the fraction that is NOT equivalent.

				
---	--	--	--	--

1. $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, $\frac{4}{10}$

2. $\frac{2}{3}$, $\frac{4}{6}$, $\frac{6}{9}$, $\frac{8}{15}$

3. $\frac{3}{4}$, $\frac{6}{8}$, $\frac{9}{12}$, $\frac{12}{15}$

B. Complete each equivalent fraction.

4. $\frac{1}{3} = \frac{4}{12}$

5. $\frac{5}{6} = \frac{20}{24}$

6. $\frac{9}{15} = \frac{3}{5}$

7. $\frac{14}{21} = \frac{2}{3}$

8. $\frac{4}{10} = \frac{2}{5}$

9. $\frac{7}{8} = \frac{21}{24}$

C. Simplify to lowest terms.

					
---	---	--	--	--	--

10. $\frac{10}{15} = \frac{2}{3}$

11. $\frac{18}{30} = \frac{3}{5}$

12. $\frac{28}{42} = \frac{2}{3}$

Mia says $\frac{2}{3} = \frac{6}{12}$. Is she correct? Explain.

No. To make twelfths, multiply both parts of $\frac{2}{3}$ by 4:

$$\frac{2}{3} = \frac{8}{12}$$

Mia changed the numerator and denominator by different factors.

Fraction Gallery Assessment — Part A

Name: _____

Score: ____ / 12

1. Complete: $\frac{1}{2} = \frac{\quad}{8}$

2. Complete: $\frac{2}{3} = \frac{\quad}{12}$

3. Complete: $\frac{3}{5} = \frac{\quad}{15}$

4. Complete: $\frac{4}{7} = \frac{12}{\quad}$

5. Circle the equivalent pair:

A. $\frac{2}{3}$ and $\frac{6}{8}$

B. $\frac{3}{4}$ and $\frac{9}{12}$

C. $\frac{2}{5}$ and $\frac{6}{10}$

6. Use the two blank fraction bars to show $\frac{2}{4} = \frac{1}{2}$.

7. Draw fraction bars to prove $\frac{3}{5} = \frac{6}{10}$.

8. True or false? $\frac{4}{6} = \frac{8}{12}$. Explain how you know.

Fraction Gallery Assessment — Part A

Name: ANSWERS

Score: 12 / 12

1. Complete: $\frac{1}{2} = \frac{4}{8}$

2. Complete: $\frac{2}{3} = \frac{8}{12}$

3. Complete: $\frac{3}{5} = \frac{9}{15}$

4. Complete: $\frac{4}{7} = \frac{12}{21}$

5. Circle the equivalent pair:

A. $\frac{2}{3}$ and $\frac{6}{8}$

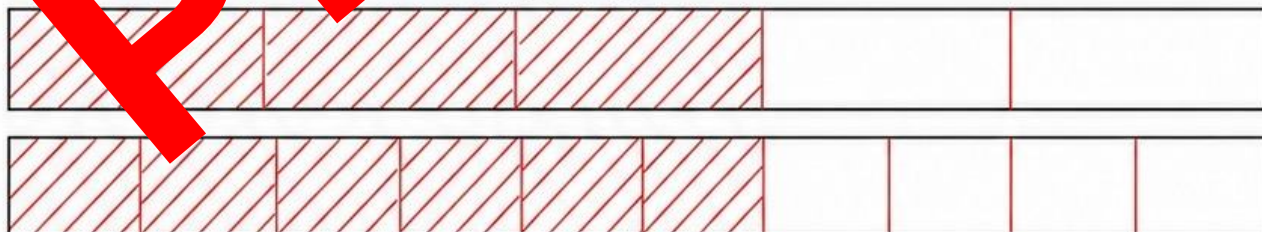
B. $\frac{3}{4}$ and $\frac{9}{12}$

C. $\frac{2}{5}$ and $\frac{6}{10}$

6. Use the two blank fraction bars to show why $\frac{2}{4} = \frac{1}{2}$.



7. Draw fraction bars to prove $\frac{3}{5} = \frac{6}{10}$.



8. True or false? $\frac{4}{6} = \frac{8}{12}$. Explain how you know.

True. $\frac{4}{6}$ simplifies to $\frac{2}{3}$ and $\frac{8}{12}$ also simplifies to $\frac{2}{3}$.

Fraction Gallery Assessment — Part B

Name: _____

Score: ____ / 12

Simplify to lowest terms.

9. $\frac{6}{9} = \underline{\hspace{2cm}}$

10. $\frac{12}{18} = \underline{\hspace{2cm}}$

11. $\frac{15}{25} = \underline{\hspace{2cm}}$

12. $\frac{21}{28} = \underline{\hspace{2cm}}$

Use equivalent fractions to compare. Write $<$, $>$ or $=$.

13. $\frac{2}{3} \text{ — } \frac{3}{4}$

14. $\frac{3}{5} \text{ — } \frac{1}{2}$

15. $\frac{5}{6} \text{ — } \frac{7}{9}$

16. $\frac{3}{4} \text{ — } \frac{9}{12}$

17. Liam says $\frac{2}{5} = \frac{4}{15}$ because he multiplied the numerator by 2 and the denominator by 3. Explain the error and correct the equation.

18. Write two fractions equivalent to $\frac{7}{8}$.

$\frac{7}{8} = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

19. Three quarters of a ribbon is green. Jess describes the same amount as $\frac{9}{12}$. Is Jess correct? Show a calculation and explain.

Fraction Gallery Assessment — Part B

Name: ANSWERS

Score: 12 / 12

Simplify to lowest terms.

9. $\frac{6}{9} = \frac{2}{3}$

10. $\frac{12}{18} = \frac{2}{3}$

11. $\frac{15}{25} = \frac{3}{5}$

12. $\frac{21}{28} = \frac{3}{4}$

Use equivalent fractions to compare. Write $<$, $>$ or $=$.

13. $\frac{2}{3} < \frac{3}{4}$

14. $\frac{3}{5} > \frac{1}{2}$

15. $\frac{5}{6} > \frac{7}{9}$

16. $\frac{3}{4} < \frac{9}{10}$

17. Liam says $\frac{2}{5} = \frac{4}{15}$ because he multiplied the numerator by 2 and the denominator by 3. Explain the error and correct the equation.

Liam used different factors. Multiply both parts by 2: $\frac{2}{5} = \frac{4}{10}$, not $\frac{4}{15}$.

18. Write two fractions equivalent to $\frac{7}{8}$.

$\frac{7}{8} = \frac{14}{16} = \frac{21}{24}$

19. Three quarters of a ribbon is green. Jess describes the same amount as $\frac{9}{12}$. Is Jess correct? Show a calculation and explain.

Yes. $\frac{3}{4} \times \frac{3}{3} = \frac{9}{12}$, so both fractions describe the same amount.



Equivalent Fractions Rubric



Student: _____

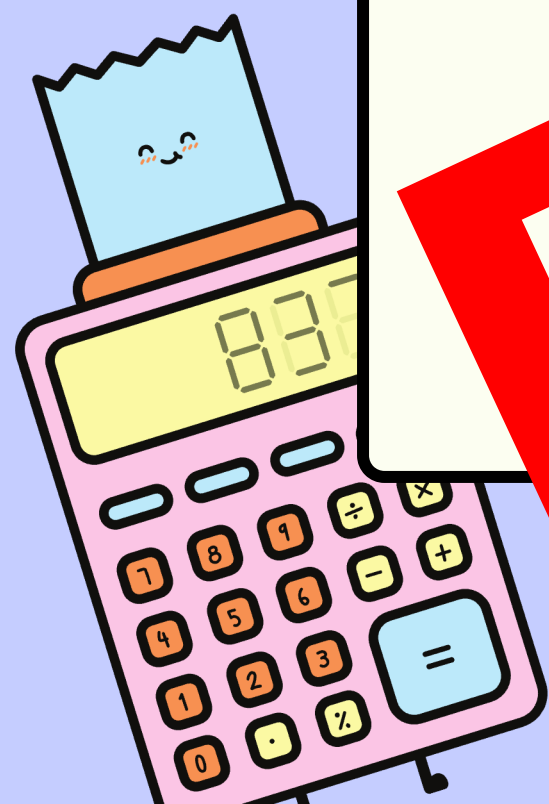
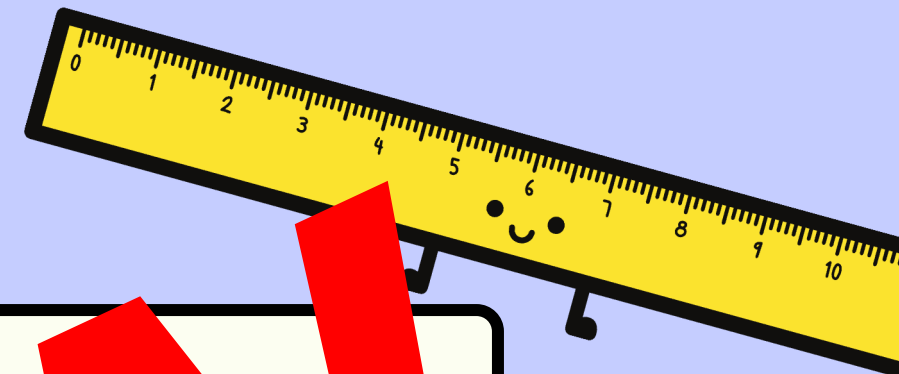
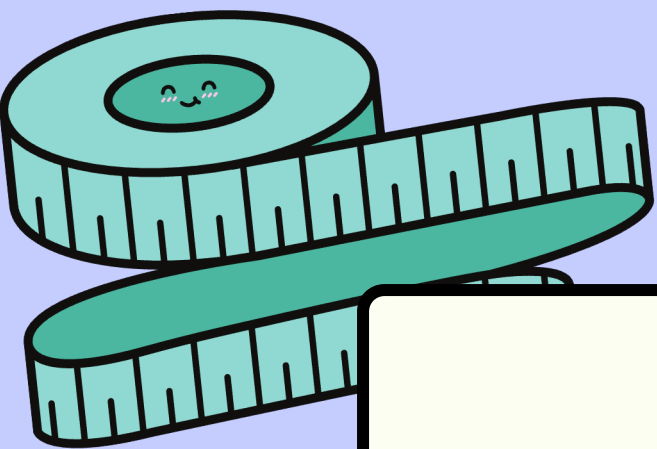
Date: _____

Overall level: _____

Criteria	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
1. Recognises equivalent fractions	Needs support to identify matching values.	Identifies familiar examples with some accuracy.	Accurately identifies equivalent fractions.	Explains equivalence using models and symbols.	Justifies equivalence in more than one way.
2. Uses visual models	Models are incomplete or unclear.	Shows simple models with accuracy.	Uses accurate fraction bars or area models.	Connects accurate models to fraction notation.	Compares multiple models and explains them.
3. Generates equivalents	Changes only one part of a fraction.	Uses a simple multiplier or divisor.	Scales numerator and denominator equally.	Generates and checks several equivalents.	Selects efficient factors and proves equivalence.
4. Simplifies fractions	Needs support to find a common factor.	Simplifies familiar fractions with prompts.	Simplifies accurately.	Chooses efficient common factors independently.	Verifies lowest terms and explains the method.
5. Explains reasoning	Gives little mathematical explanation.	Gives a partly clear explanation.	Uses correct fraction language and evidence.	Connects models, calculations and reasoning.	Compares strategies and defends conclusions.
6. Accuracy and independence	Frequent errors; relies on support.	Mostly accurate with reminders.	Accurate on core tasks.	Accurate and independent on most tasks.	Precise, efficient and self-checking.

Teacher feedback: _____

Next step: _____



PREVIEW

Equivalent Fractions



Same Amount, Different Names

One half can be renamed in many ways.

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

Each fraction covers the same amount of the whole.



What Does Equivalent Mean?

Equivalent fractions have equal value.

The numerator and denominator look different,
but they name the same point or shaded amount.



Fraction Refresher

Numerator: the number of equal parts chosen.

Denominator: the total number of equal parts in one whole.

Example: In $\frac{3}{5}$, 3 parts are chosen from 5 equal parts.



The One Rule

Multiply or divide the numerator and denominator
by the same non-zero whole number.
Do the same thing to both parts.



Build an Equivalent Fraction

Start with $\frac{2}{3}$.

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

Both parts were multiplied by 2, so the value stayed equal.



Build a Fraction Family

PREVIEW

$$\frac{3}{5} \times \frac{2}{1} = \frac{6}{5}$$

$$\frac{3}{5} \times \frac{3}{3} = \frac{9}{15}$$

$$\text{So } \frac{3}{5} \times \frac{6}{10} = \frac{9}{15}.$$



Why Does the Value Stay the Same?

$\frac{2}{2}$ and $\frac{4}{4}$ each equal 1.

Multiplying by 1 changes the name,
not the amount.



Find a Missing Numerator

$$4/7 = 12/21$$

$12 \div 4 = 3$, so multiply the denominator by 3 too.

$4 \times 3 = 12$. Therefore, $4/7 = 12/21$.



Find a Missing Denominator

$$\frac{5}{8} = \frac{15}{?}$$

$5 \times 3 = 15$ so multiply the denominator by 3 too.

$8 \times 3 = 24$ Therefore, $\frac{5}{8} = \frac{15}{24}$.



Simplify by Dividing Both Parts

PREVIEW

$12/16$ divided by $4 = 3/4$

Divide both parts by same factor

Steps to fraction equal.



Lowest Terms

A fraction is in lowest terms when its numerator and denominator have no common number factor greater than 1.
Example: $\frac{3}{4}$ is already in lowest terms.



Equivalent or Not?

$6/8 = 3/4$ because both parts divide by 2.

$4/6$ is not equivalent to $2/10$ because the parts were not scaled by the same factor.

Always check the numerator and denominator together.



Common-Denominator Connection

PREVIEW

Remember $\frac{1}{2}$ and $\frac{1}{3}$ is sixths.

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

Now the fair is easy to compare: $\frac{3}{6} > \frac{2}{6}$.



Guided Review

1. Complete: $2/3 = ?/10$

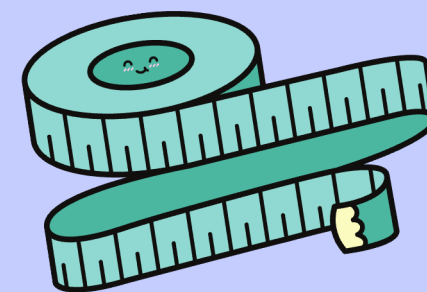
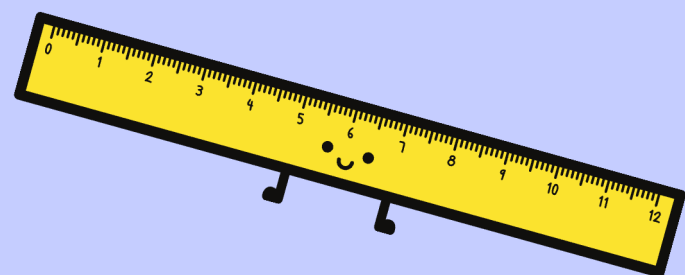
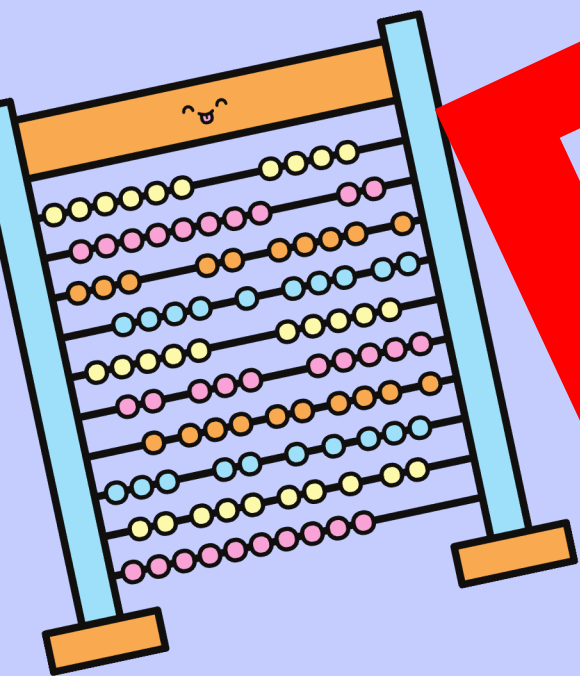
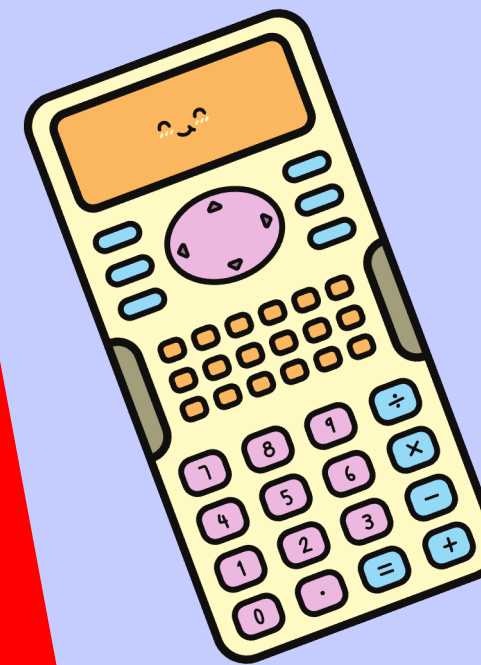
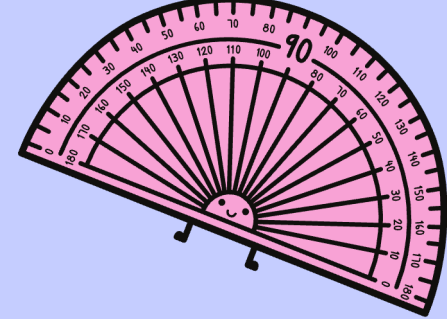
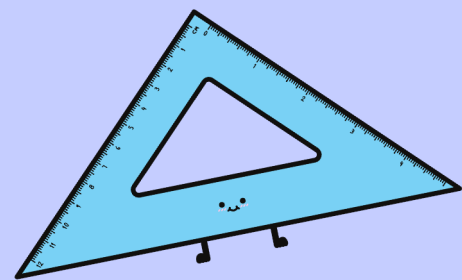
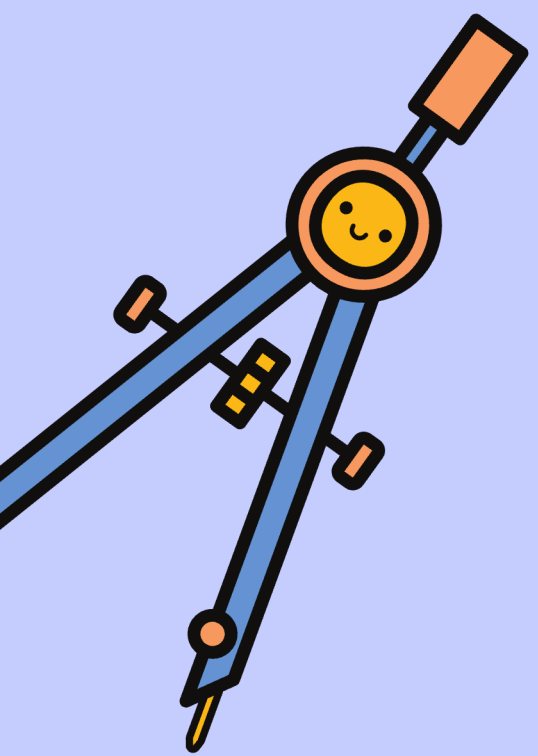
2. Complete: $3/4 = 9/?$

Simplify. $5/5$

True or false: $5/6 = 10/12$

Explain one answer to a partner.





Well Done!
Same amount,
different names.

PREVIEW

Equivalent Fractions

Quiz

PREVIEW



Question 1: True or False

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

True or false?

PREVIEW



Answer 1

PREVIEW

True

$$\frac{3}{4} \times \frac{2}{2} = \frac{6}{8}.$$



Question 2: Multiple Choice

Which fraction is equivalent to $\frac{2}{5}$?

A. $\frac{3}{10}$

B. $\frac{4}{10}$

C. $\frac{3}{20}$

D. $\frac{8}{25}$



Answer 2

PREVIEW

B. 4/

$$\frac{2}{5} \times \frac{2}{2} = \frac{4}{10}.$$



Question 3: Short Answer

PREVIEW

Completed 9/7/21

Show the factor you used.



Answer 3

PREVIEW

$9/2$

$7 \times 3 = 21$, so $3 \times 3 = 9$.



Question 4: Multiple Choice

What is the simplest form of $\frac{12}{16}$?

A. $\frac{6}{8}$

B. $\frac{4}{6}$

C. $\frac{3}{4}$

D. $\frac{2}{3}$



Answer 4

PREVIEW

C. 3,

Divide both parts of $12/16$ by 4.



Question 5: True or False

$\frac{4}{6} = \frac{2}{10}$

True or false?



Answer 5

PREVIEW

False

$4/6$ simplifies to $2/3$, while $8/10$ simplifies to $4/5$.



Question 6: Multiple Choice

A model has $\frac{3}{6}$ equal parts shaded.

What fraction is $\frac{3}{6}$ in lowest terms?

A. $\frac{1}{2}$ B. $\frac{1}{2}$

C. $\frac{2}{3}$ D. $\frac{3}{4}$



Answer 6

PREVIEW

B. 1.

$3/6$ divided by $3/3 = 1/2$.



Question 7: Short Answer

PREVIEW

Completed 7/8 7/24

Show the factor you used.



Answer 7

PREVIEW

$15/2$

$5 \times 3 = 24$, so $5 \times 3 = 15$.



Question 8: Multiple Choice

Which pairs are equivalent?

A. $\frac{1}{2}$ and $\frac{2}{3}$

B. $\frac{2}{3}$ and $\frac{8}{12}$

C. $\frac{3}{4}$ and $\frac{5}{20}$

D. $\frac{4}{7}$ and $\frac{8}{21}$



Answer 8

P. 2/3 and 3/4

$$2/3 \times 4/4 = 8/12.$$



Question 9: True or False

Dividing the numerator and denominator by the same non-zero whole number keeps the fraction's value.

True or false?



Answer 9

PREVIEW

True
Dividing both sides by the same factor renames the same value.



Question 10: Short Answer

PREVIEW

Simplify $\frac{6}{9}$ to lowest term.

Explain the division you used.



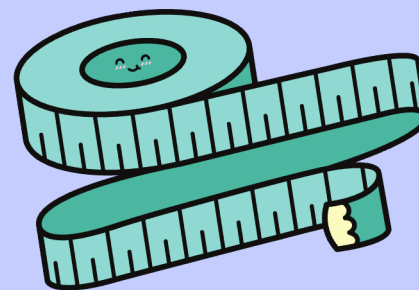
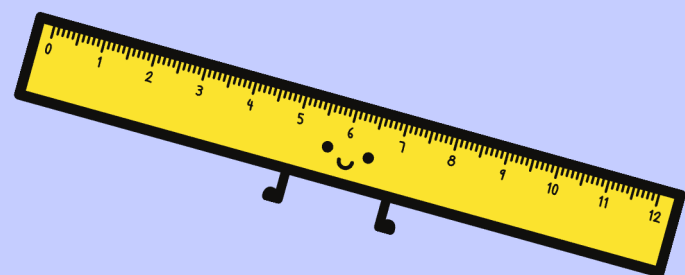
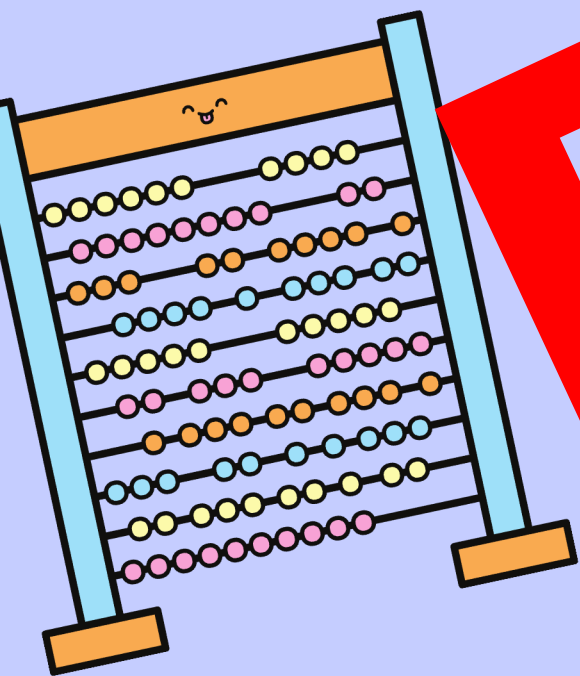
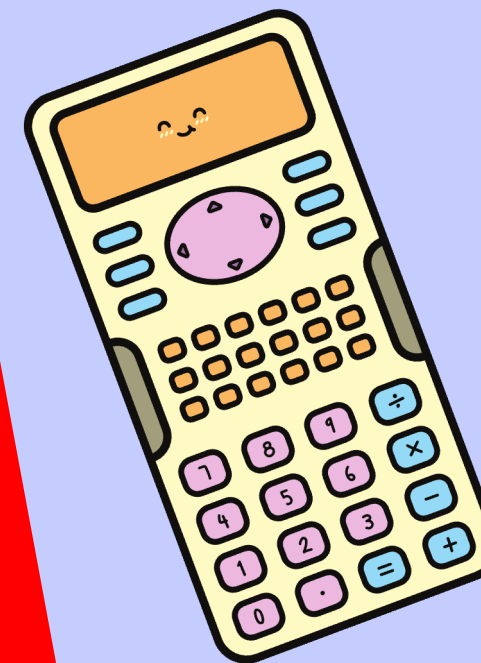
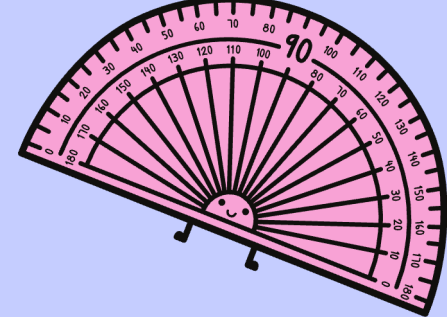
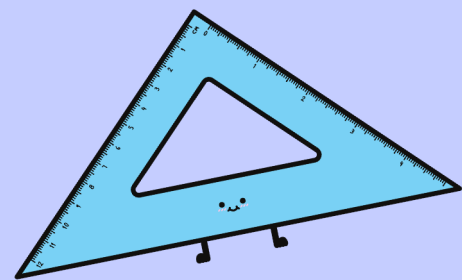
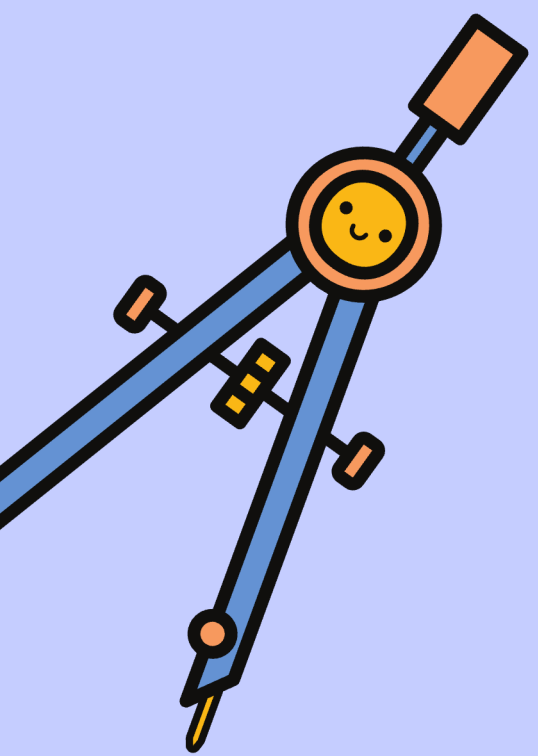
Answer 10

PREVIEW

2/3

Divide the numerator and denominator by 3.





Well Done!
You are an
quivalence expert

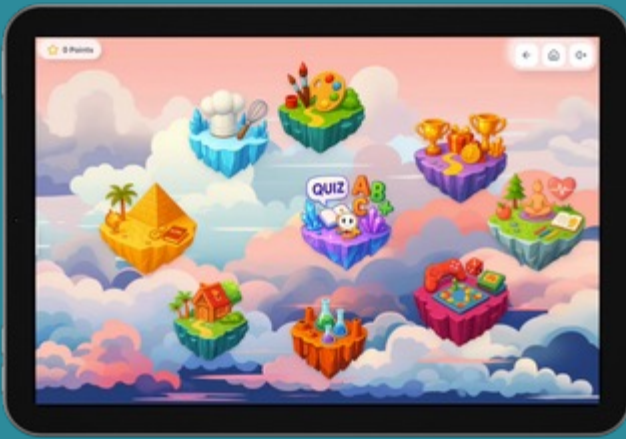
PREVIEW

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Fun with Fractions - Year 4

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Fraction Families at a Glance

1

Proper Fraction

Definition:

The numerator is less than the denominator. Its value is less than one.

Example:

$$\frac{3}{5}$$



2

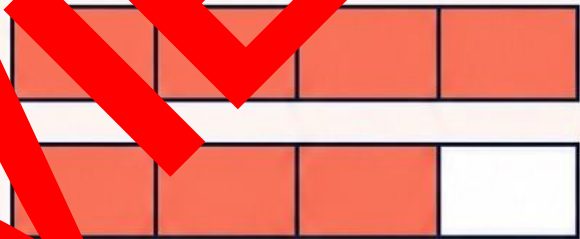
Improper Fraction

Definition:

The numerator is equal to or greater than the denominator. Its value is at least one.

Example:

$$\frac{7}{4}$$



3

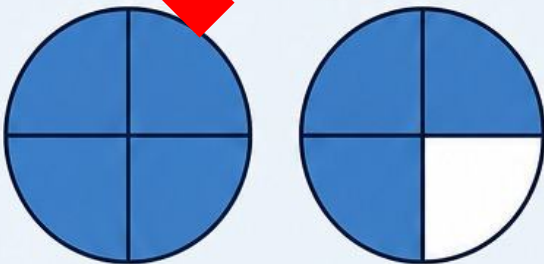
Mixed Number

Definition:

A whole number and a fraction written together.

Example:

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



4

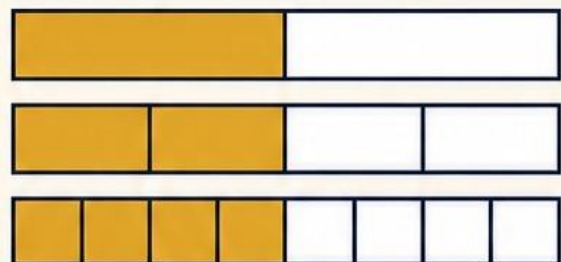
Equivalent Fractions

Definition:

Different fractions that name the same value.

Example:

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

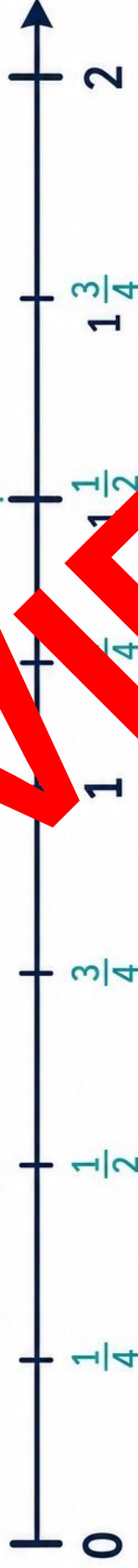


Fractions on Number Lines

Halves: 0 to 3



Quarters: 0 to 2



Thirds: 0 to 2



Mixed Numeral Conversion Steps

Improper Fraction → Mixed Numeral

$$\frac{11}{4} = 2 \frac{3}{4}$$

$$11 \div 4 = 2 \text{ remainder } 3$$

- 1 Divide the numerator by the **denominator**.
- 2 The **quotient** is the whole number.
- 3 The **remainder** becomes the **numerator**. Keep the **denominator**.

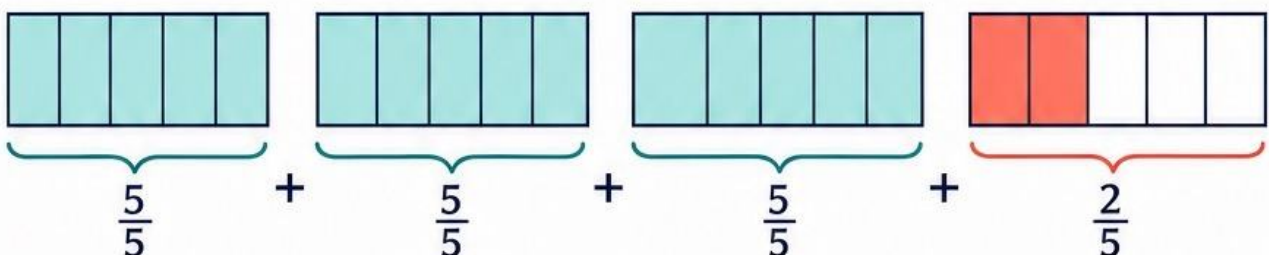


Mixed Numeral → Improper Fraction

$$3 \frac{2}{5} = \frac{17}{5}$$

$$3 \times 5 + 2 = 17$$

- 1 Multiply the **whole number** by the **denominator**.
- 2 Add the **numerator**.
- 3 Write the result over the same **denominator**.





Fraction Representation Match



Players

2–4

You will need

The matching cards, scissors and a recording sheet.

How to play

1. Cut out the cards and shuffle them.
2. Place all cards face up.
3. Find four cards that show the same value: a numeral, words, a model and a number-line point.
4. Explain how you know the four cards match.
5. Record the set, then find another.



Challenge

Order the completed sets from least to greatest. Write each value as both an improper fraction and a mixed numeral when possible.

Worked example — not a game card

$$\frac{1}{2}$$

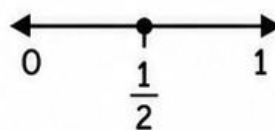
numeral

one-half

words



model

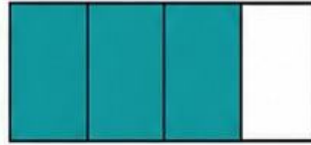


number-line point

Fraction Representation Match — Cards 1

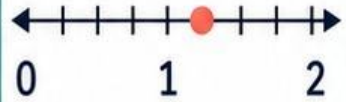
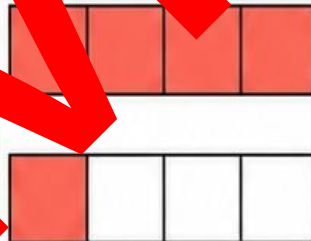
$$\frac{3}{4}$$

three-quarters



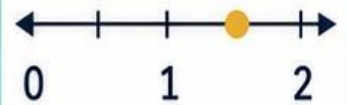
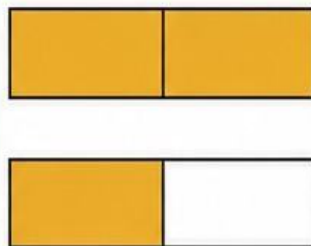
$$\frac{5}{4}$$

one and
one-quarter



$$\frac{3}{2}$$

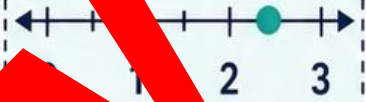
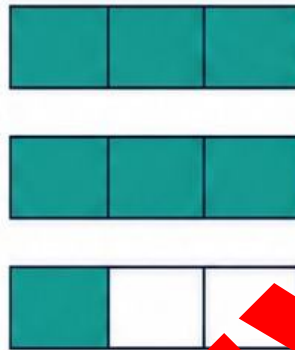
one and
one-half



Fraction Representation Match – Cards 2

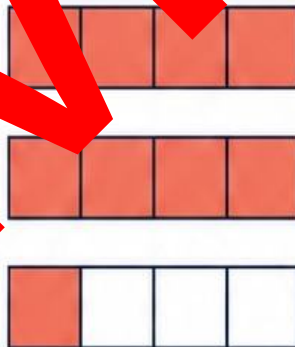
$$\frac{7}{3}$$

two and
one-third



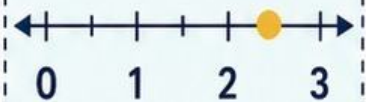
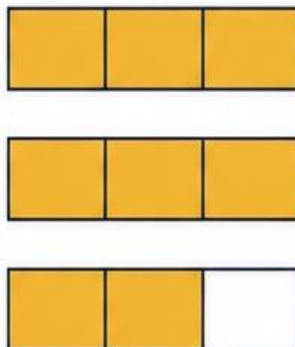
$$\frac{9}{4}$$

two and
one-quarter



$$\frac{8}{3}$$

two and
two-thirds



Number Line Bingo



Players

2–6



You will need

One bingo board per player, the calling cards and counters.



Set up

Shuffle the calling cards and place them face down.
Each player takes a board and counters.



How to play

1. The caller turns over one card and reveals the value.
2. Players cover one space that shows the same value as a fraction, mixed numeral, model or number-line point.
3. If no space matches, play continues.
4. The first player to cover three spaces in a row, column or diagonal calls BINGO.
5. Check every covered space before declaring a winner.



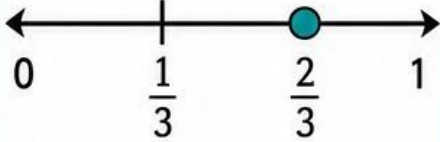
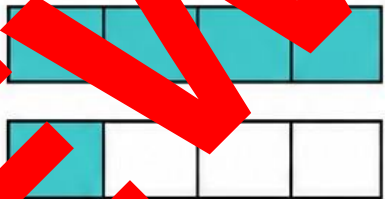
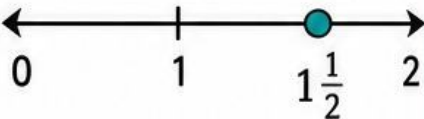
Teacher's checklist

1. $1/2$	11. $9/10$
2. $2/3$	12. $11/10 = 1 \frac{1}{10}$
3. $3/4$	13. $13/10 = 1 \frac{3}{10}$
4. $4/3 = 1 \frac{1}{3}$	14. $17/10 = 1 \frac{7}{10}$
5. $5/4 = 1 \frac{1}{4}$	15. $19/10 = 1 \frac{9}{10}$
6. $3/2 = 1 \frac{1}{2}$	16. $5/2 = 2 \frac{1}{2}$
7. $5/3 = 1 \frac{2}{3}$	17. $7/3 = 2 \frac{1}{3}$
8. $7/4 = 1 \frac{3}{4}$	18. $9/4 = 2 \frac{1}{4}$
9. $3/10$	19. $8/3 = 2 \frac{2}{3}$
10. $7/10$	20. $11/4 = 2 \frac{3}{4}$

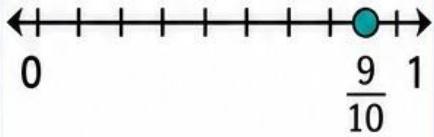
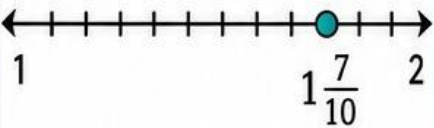
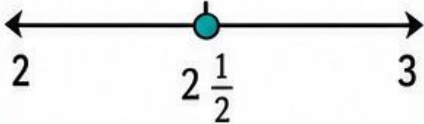


Number Line Bingo — Boards 1 and 2

Board 1

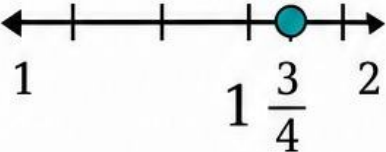
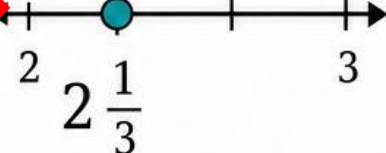
		$\frac{3}{4}$
$1\frac{1}{3}$		
	$\frac{5}{3}$	$1\frac{3}{4}$

Board 2

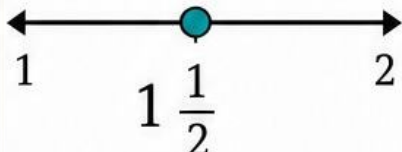
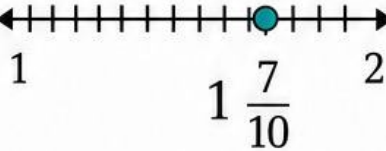
$\frac{3}{10}$		
$1\frac{1}{10}$		$\frac{13}{10}$
	$1\frac{9}{10}$	

Number Line Bingo — Boards 3 and 4

Board 3

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

Board 4

	$1\frac{1}{3}$	
$\frac{1}{3}$	FREE	
	$2\frac{1}{4}$	$\frac{8}{3}$

Number Line Bingo – Calling Cards

$$\frac{1}{2}$$

$$\frac{2}{3}$$

$$\frac{3}{4}$$

$$\frac{4}{3}$$

$$\frac{5}{4}$$

$$\frac{3}{2}$$

$$\frac{5}{3}$$

$$\frac{7}{4}$$

$$\frac{3}{10}$$

$$\frac{7}{10}$$

$$\frac{9}{10}$$

$$\frac{11}{10}$$

$$\frac{13}{10}$$

$$\frac{17}{10}$$

$$\frac{19}{10}$$

$$\frac{5}{2}$$

$$\frac{7}{3}$$

$$\frac{9}{4}$$

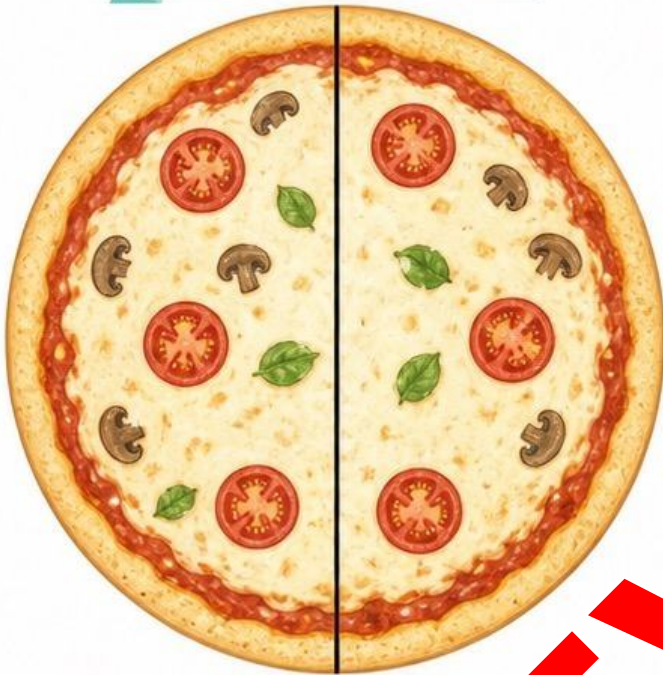
$$\frac{8}{3}$$

$$\frac{11}{4}$$

Pizza Fraction Workshop — Fraction Mats

Use the mats with the challenge cards. Show, compare and combine equal parts.

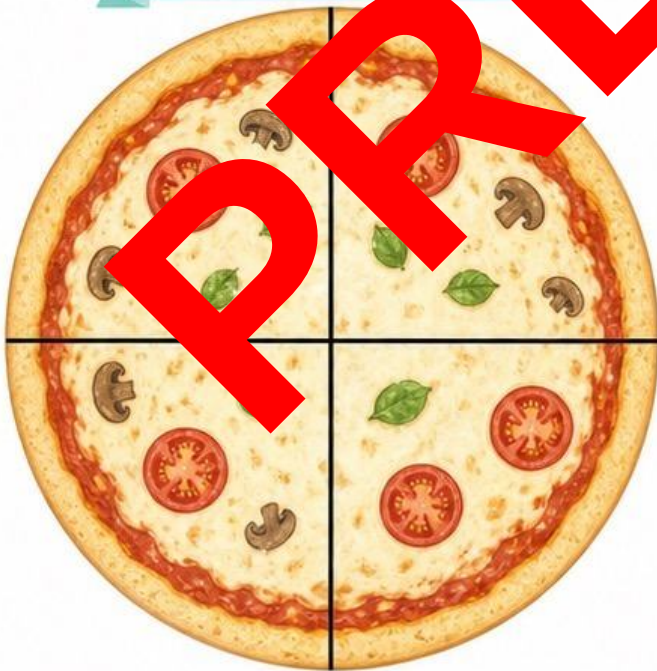
Halves



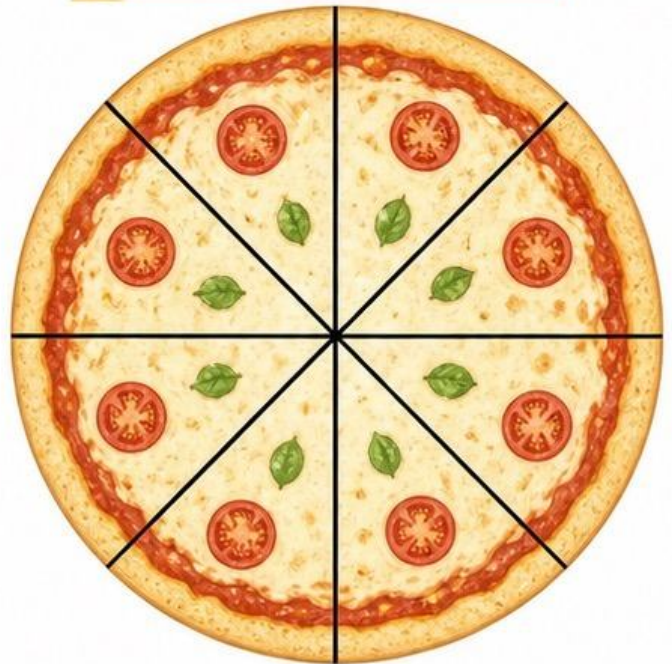
Thirds



Quarters



Eighths





Pizza Fraction Challenge Cards

Use the fraction mats. For values greater than one, use a second copy of the matching mat.



1

Show $\frac{1}{2}$
on the halves
mat.



2

Show $\frac{2}{3}$
on the thirds
mat.



3

Show $\frac{3}{4}$
on the quarters
mat.



4

Show $\frac{5}{8}$
on the eighths
mat.



5

Use quarters
to show a fraction
equivalent to $\frac{1}{2}$.
Name it.



6

Use eighths
to show a fraction
equivalent to $\frac{1}{2}$.
Name it.



7

Compare $\frac{1}{3}$
and $\frac{1}{4}$.
Which is greater?
Explain.



8

Combine $\frac{1}{4}$
and $\frac{2}{4}$.
Name the total.



9

Build $\frac{5}{4}$.
Write the
matching mixed
numeral.



10

Build $\frac{7}{3}$.
Write the
matching mixed
numeral.



11

Show $1\frac{1}{2}$
in two
different ways.



12

Create a fraction
greater than one.
Give it two names.



Mixed and Improper Fraction Dominoes – Set 1

Match each improper fraction to its equivalent mixed numeral. Build one continuous chain.

$1\frac{1}{2} \quad \frac{5}{3}$

$1\frac{2}{3} \quad \frac{7}{4}$

$1\frac{3}{5} \quad \frac{6}{5}$

$1\frac{1}{5} \quad \frac{13}{10}$

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

$2\frac{1}{2} \quad \frac{7}{3}$

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

$2\frac{1}{4} \quad \frac{12}{5}$

$2\frac{2}{5} \quad \frac{27}{10}$

$2\frac{7}{10} \quad \frac{7}{2}$

$3\frac{1}{2} \quad \frac{10}{3}$

$3\frac{1}{3} \quad \frac{13}{4}$

Mixed and Improper Fraction Dominoes — Set 2

$$3\frac{1}{4} \quad \frac{16}{5}$$

$$3\frac{1}{5} \quad \frac{37}{10}$$

$$3\frac{7}{10} \quad \frac{4}{3}$$

$$1\frac{1}{3} \quad \frac{5}{4}$$

$$1\frac{1}{4} \quad \frac{7}{5}$$

$$1\frac{2}{5} \quad \frac{19}{10}$$

$$1\frac{9}{10} \quad \frac{8}{5}$$

$$2\frac{2}{3} \quad \frac{11}{4}$$

$$2\frac{3}{4} \quad \frac{14}{5}$$

$$2\frac{4}{5} \quad \frac{33}{10}$$

$$3\frac{3}{10} \quad \frac{15}{4}$$

$$3\frac{3}{4} \quad \frac{3}{2}$$

Number Line Foundations — Page 1

Name: _____ Date: _____

Use equal intervals and fraction size to complete each task.

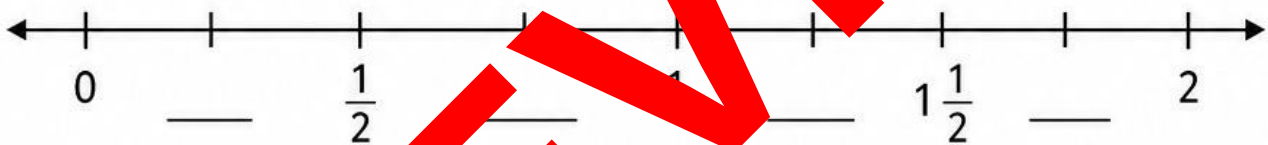
1. A number line from 0 to 1 is divided into four equal intervals.
What fraction does each interval represent?

Each interval is _____.

2. Write the missing halves.

0, _____, 1, _____, 2, _____, 3

3. Write the missing quarters.



4. Continue counting by halves.

1, $1\frac{1}{2}$, _____, _____, 3

5. Order these fractions from least to greatest.

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

_____ < _____ < _____ < _____

6. Complete the equivalent fraction.



$\frac{1}{2}$



$\frac{\quad}{4}$

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

Number Line Foundations — Page 1

Name: ANSWERS Date: _____

Use equal intervals and fraction size to complete each task.

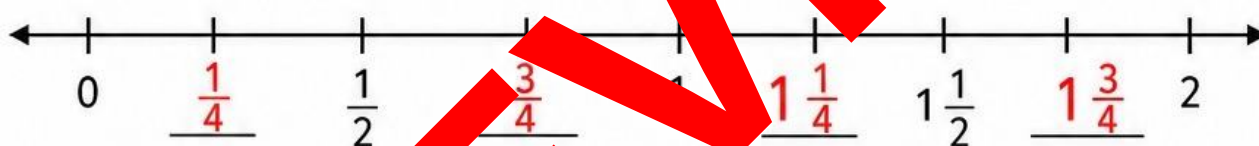
1. A number line from 0 to 1 is divided into four equal intervals.
What fraction does each interval represent?

Each interval is $\frac{1}{4}$.

2. Write the missing halves.

0, $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3

3. Write the missing quarters.



4. Continue counting by halves.

1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3

5. Order these values from least to greatest.

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

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

6. Complete the equivalent fraction.



$\frac{1}{2}$



$\frac{2}{4}$

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

Number Line Foundations — Page 2

Name: _____

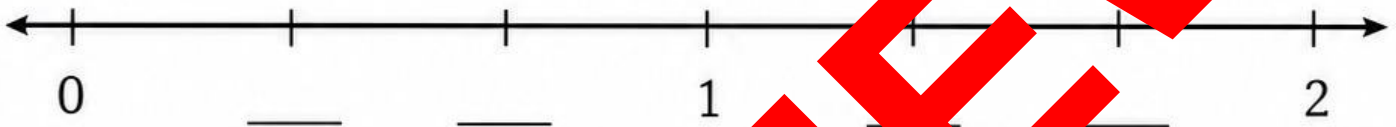
Date: _____

Use thirds and tenths to count across whole numbers.

1. Continue counting by thirds.

0, $\frac{1}{3}$, $\frac{2}{3}$, 1, _____, _____, 2

2. Write the missing thirds.



3. Continue counting by tenths.

$\frac{8}{10}$, $\frac{9}{10}$, 1, _____, $1\frac{3}{10}$

4. Write each improper fraction as a mixed numeral.

$\frac{7}{3} =$ _____ $\frac{13}{10} =$ _____

5. Write each mixed numeral as an improper fraction.

$1\frac{2}{3} =$ _____ $1\frac{7}{10} =$ _____

6. Why must the intervals on a number line be equal?

Number Line Foundations — Page 2

Name: ANSWERS

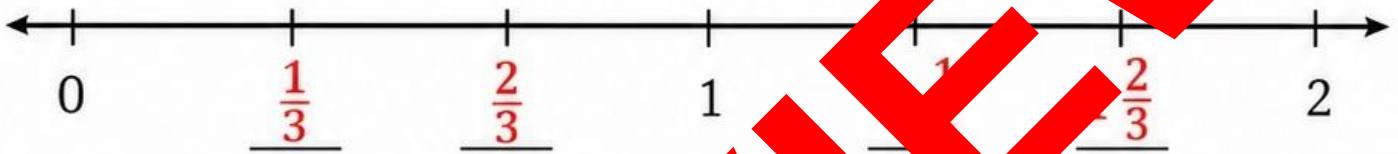
Date: _____

Use thirds and tenths to count across whole numbers.

1. Continue counting by thirds.

0, $\frac{1}{3}$, $\frac{2}{3}$, 1, $1\frac{1}{3}$, $1\frac{2}{3}$, 2

2. Write the missing thirds.



3. Continue counting by tenths.

$\frac{8}{10}$, $\frac{9}{10}$, 1, $1\frac{1}{10}$, $1\frac{2}{10}$, $1\frac{3}{10}$

4. Write each improper fraction as a mixed numeral.

$\frac{7}{3} =$ $2\frac{1}{3}$ $\frac{13}{10} =$ $1\frac{3}{10}$

5. Write each mixed numeral as an improper fraction.

$1\frac{2}{3} =$ $\frac{5}{3}$ $1\frac{7}{10} =$ $\frac{17}{10}$

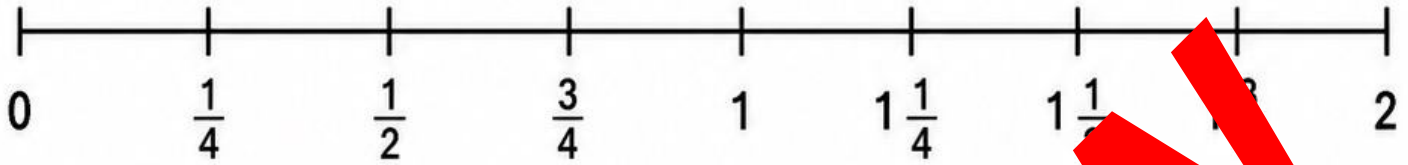
6. Why must the intervals on a number line be equal?

Equal intervals make every step the same size, so each
position shows the fraction accurately.

Fraction Line Reasoning

Name: _____ Date: _____

Use the labelled number line and equivalent forms to justify your thinking.



1. Write the value one tick before 1 and one tick after 1.

Before 1: _____ After 1: _____

2. Which is greater: $\frac{5}{4}$ or $\frac{3}{2}$? Explain using the number line.

3. Complete the equivalent fractions.

$$\frac{\quad}{4} = \frac{\quad}{4} \qquad \frac{6}{4} = \frac{\quad}{4}$$

4. Sam says $\frac{6}{4} = 1\frac{1}{4}$. Sam correct? Explain and give the correct mixed numeral.

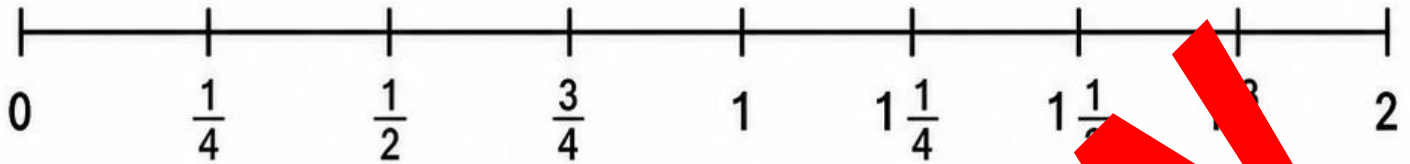
5. Explain why $\frac{6}{4}$ and $1\frac{2}{4}$ name the same value.

Fraction Line Reasoning

Name: ANSWERS

Date: _____

Use the labelled number line and equivalent forms to justify your thinking.



1. Write the value one tick before 1 and one tick after 1.

Before 1: $\frac{3}{4}$ After 1: $1\frac{1}{4}$

2. Which is greater: $\frac{5}{4}$ or $\frac{3}{2}$? Explain using the number line.

$\frac{3}{2}$ is greater because it is farther to the right than $\frac{5}{4}$.

3. Complete the equivalent fractions.

$$\frac{7}{4} = \frac{\quad}{4}$$

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

4. Sam says $\frac{5}{4} = 1\frac{1}{4}$. Sam correct? Explain and give the correct mixed numeral.

No. $\frac{5}{4} = 1\frac{1}{4}$. The value $1\frac{2}{4}$ is $\frac{6}{4}$.

5. Explain why $\frac{6}{4}$ and $1\frac{2}{4}$ name the same value.

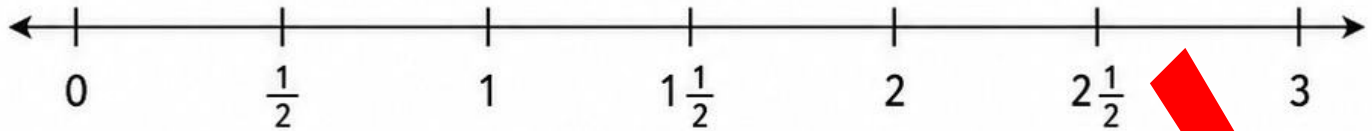
Four quarters make one whole. Two quarters remain, so $\frac{6}{4} = 1\frac{2}{4}$.

Mixed Numeral Number Lines

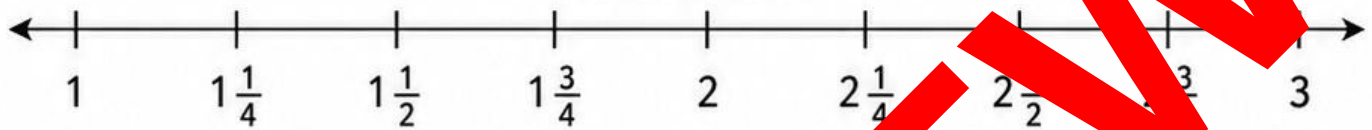
Name: _____ Date: _____

Read mixed numerals as positions beyond one whole.

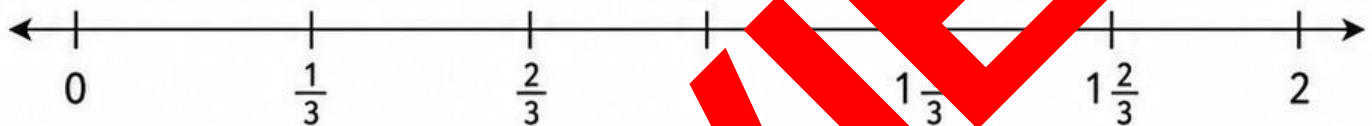
HALVES



QUARTERS



THIRDS



1. What value is halfway between 1 and 2? _____
2. What value is one quarter step after 2? _____
3. Write $1\frac{2}{3}$ as an improper fraction. _____
4. Write both forms for the value $2\frac{1}{4}$.

Mixed numeral: $2\frac{1}{4}$ Improper fraction: _____

5. Convert each value.

$$\frac{5}{3} = \underline{\hspace{2cm}}$$

$$\frac{17}{10} = \underline{\hspace{2cm}}$$

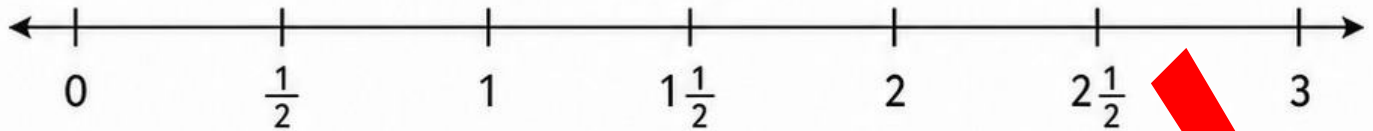
6. Draw a number line from 2 to 3 and mark $2\frac{3}{4}$.

Mixed Numeral Number Lines

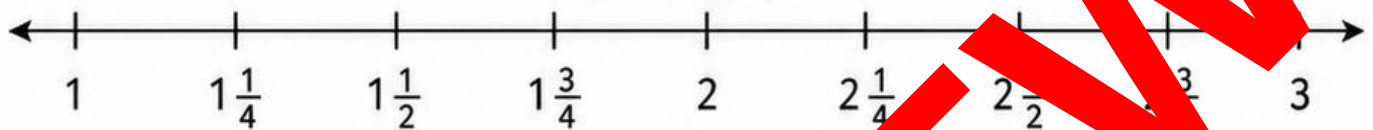
Name: **ANSWERS** Date: _____

Read mixed numerals as positions beyond one whole.

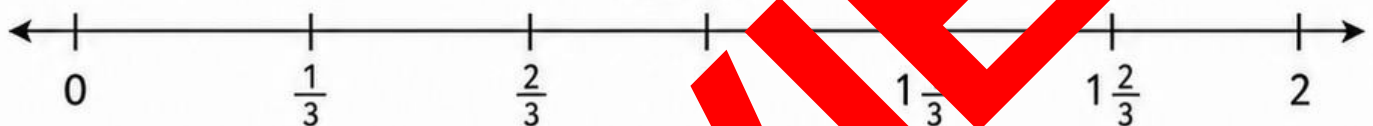
HALVES



QUARTERS



THIRDS



- What value is halfway between 1 and 2? $1\frac{1}{2}$
- What value is one quarter of the way after 2? $2\frac{1}{4}$
- Write $1\frac{2}{3}$ as an improper fraction. $\frac{5}{3}$
- Write both forms of the value $2\frac{1}{4}$.

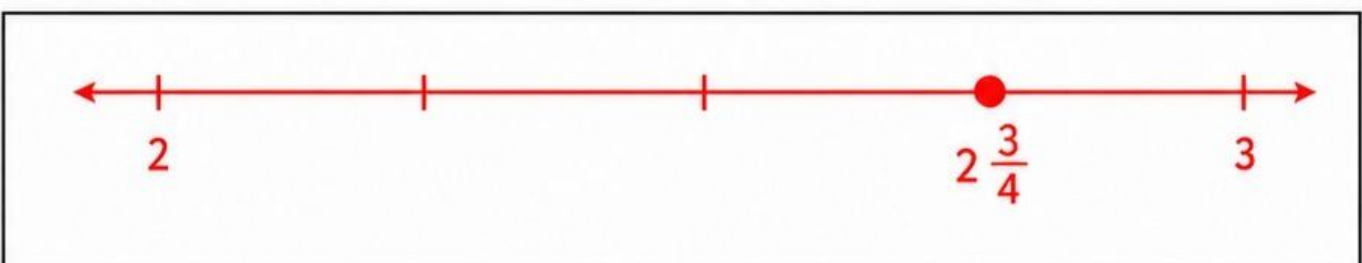
Mixed numeral: $2\frac{1}{4}$ Improper fraction: $\frac{9}{4}$

- Convert each value.

$$\frac{5}{3} = 1\frac{2}{3}$$

$$\frac{17}{10} = 1\frac{7}{10}$$

- Draw a number line from 2 to 3 and mark $2\frac{3}{4}$.



Mixed Numerals to Improper Fractions

Name: _____ Date: _____

Multiply the whole number by the denominator, then add the numerator.

$$2 \frac{1}{3} = \frac{2 \times 3 + 1}{3} = \frac{7}{3}$$

1. $1 \frac{1}{2} =$ _____

2. $2 \frac{3}{4} =$ _____

3. $3 \frac{2}{5} =$ _____

4. $1 \frac{1}{10} =$ _____

5. $4 \frac{1}{3} =$ _____

6. $2 \frac{5}{6} =$ _____

7. $5 \frac{3}{8} =$ _____

8. $3 \frac{9}{10} =$ _____

9. Draw a model that proves $2 \frac{3}{4} = \frac{11}{4}$.

10. Explain how you can check an improper-fraction answer.

Mixed Numerals to Improper Fractions

Name: ANSWERS Date: _____

Multiply the whole number by the denominator, then add the numerator.

$$2 \frac{1}{3} = \frac{2 \times 3 + 1}{3} = \frac{7}{3}$$

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

2. $2 \frac{3}{4} = \frac{11}{4}$

3. $3 \frac{2}{5} = \frac{17}{5}$

4. $1 \frac{7}{10} = \frac{17}{10}$

5. $4 \frac{1}{3} = \frac{13}{3}$

6. $2 \frac{5}{6} = \frac{17}{6}$

7. $5 \frac{3}{8} = \frac{43}{8}$

8. $3 \frac{9}{10} = \frac{39}{10}$

9. Draw a model that proves $2 \frac{3}{4} = \frac{11}{4}$.

2 wholes = $\frac{8}{4}$. Then $\frac{8}{4} + \frac{3}{4} = \frac{11}{4}$, so $2 \frac{3}{4} = \frac{11}{4}$.

10. Explain how you can check an improper-fraction answer.

- Divide the numerator by the denominator. The quotient and _____
- remainder should rebuild the original mixed numeral. _____

Improper Fractions to Mixed Numerals

Name: _____

Date: _____

Divide the numerator by the denominator. Use the quotient and remainder.

$$\frac{11}{4} = 2 \text{ remainder } 3 = 2\frac{3}{4}$$

1. $\frac{5}{2} =$ _____

2. $\frac{7}{3} =$ _____

3. $\frac{13}{4} =$ _____

4. $\frac{17}{5} =$ _____

5. $\frac{19}{6} =$ _____

6. $\frac{25}{8} =$ _____

7. $\frac{31}{10} =$ _____

8. $\frac{22}{7} =$ _____

9. Use multiplication to check that $\frac{17}{5} = 3\frac{2}{5}$.

10. What does the remainder tell you when converting an improper fraction?

Improper Fractions to Mixed Numerals

Name: **ANSWERS**

Date: _____

Divide the numerator by the denominator. Use the quotient and remainder.

$$\frac{11}{4} = 2 \text{ remainder } 3 = 2\frac{3}{4}$$

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

2. $\frac{7}{3} = 2\frac{1}{3}$

3. $\frac{13}{4} = 3\frac{1}{4}$

4. $\frac{17}{5} = 3\frac{2}{5}$

5. $\frac{19}{6} = 3\frac{1}{6}$

6. $\frac{25}{8} = 3\frac{1}{8}$

7. $\frac{31}{10} = 3\frac{1}{10}$

8. $\frac{22}{7} = 3\frac{1}{7}$

9. Use multiplication to check that $\frac{17}{5} = 3\frac{2}{5}$.

$$3 \times 5 + 2 = 17, \text{ so } 3\frac{2}{5} = \frac{17}{5}.$$

10. What does the remainder tell you when converting an improper fraction?

— The remainder becomes the numerator
— of the fractional part. The denominator
— stays the same.

Models and Symbols Challenge

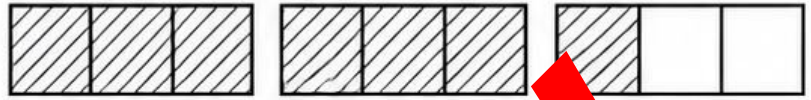
Name: _____

Date: _____

Connect fraction models, mixed numerals and improper fractions.

1. Shade the model to show $\frac{7}{4}$.

2. The model shows a mixed numeral. Write both forms.

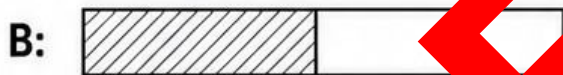


Mixed numeral: _____ Improper fraction: _____

3. Draw a model to show $\frac{13}{5}$.

--	--	--	--	--	--	--	--	--	--

4. Match each model to its symbol.



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

A = _____ B = _____ C = _____

5. Find the two equivalent pairs. Explain how you know.

$\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{6}{8}$

6. Create a representation for a mixed numeral greater than 2. Give it both names.

Mixed numeral: _____

Improper fraction: _____

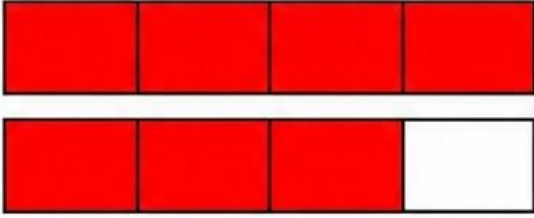
Models and Symbols Challenge

Name: **ANSWERS**

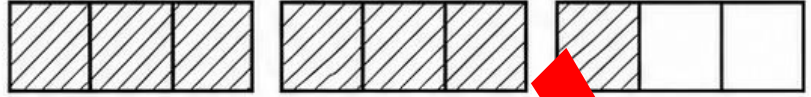
Date: _____

Connect fraction models, mixed numerals and improper fractions.

1. Shade the model to show $\frac{7}{4}$.



2. The model shows a mixed numeral. Write both forms.



Mixed numeral: $2\frac{1}{3}$ Improper fraction: $\frac{7}{3}$

3. Draw a model to show $\frac{13}{5}$.

Two whole fifth-bars = $\frac{10}{5}$. Shade 3 more. Total: $\frac{13}{5}$.

4. Match each model to its symbol.



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

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

5. Find the two equivalent pairs. Explain how you know.

$\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{6}{8}$

$\frac{1}{2} = \frac{2}{4}$ and $\frac{3}{4} = \frac{6}{8}$. Multiply numerator and denominator by the same number.

6. Create a representation for a mixed numeral greater than 2. Give it both names.

Example: two whole bars and one half-bar.

$2\frac{1}{2}$

$\frac{5}{2}$

Mixed numeral: $2\frac{1}{2}$

Improper fraction: $\frac{5}{2}$

Name: _____

Date: _____

Fraction Number Line Challenge

Assessment — Page 1 of 2

1. What is a numerator?

[1 mark]

2. What is a denominator?

[1 mark]

3. Name each fraction type.

a) $\frac{3}{5}$ _____

b) $\frac{7}{4}$ _____

c) $1\frac{3}{4}$ _____

[3 marks]

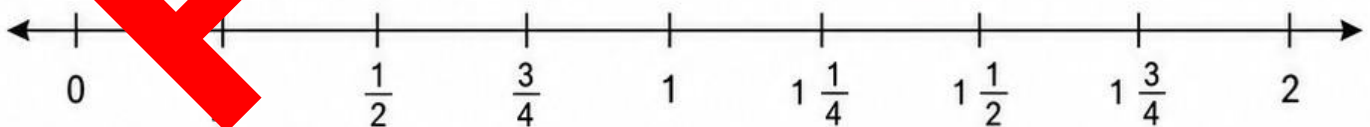
4. Complete each counting sequence.

a) 0, $\frac{1}{2}$, 1, $1\frac{1}{2}$, _____

b) 0, $\frac{1}{3}$, $\frac{2}{3}$, _____, _____

[2 marks]

5. Study the quarter number line.



a) What fraction is one tick before 1? _____

b) What fraction is one tick after 1? _____

[2 marks]

6. Convert $\frac{7}{4}$ to a mixed numeral. _____

[1 mark]

Page total: ____ / 10

Fraction Number Line Challenge

Assessment — Page 1 of 2

1. What is a numerator?

The top number. It counts the selected equal parts.

[1 mark]

2. What is a denominator?

The bottom number. It shows the total equal parts in one whole.

[1 mark]

3. Name each fraction type.

a) $\frac{3}{5}$ proper fractionb) $\frac{7}{4}$ improper fractionc) $1\frac{3}{4}$ mixed numeral

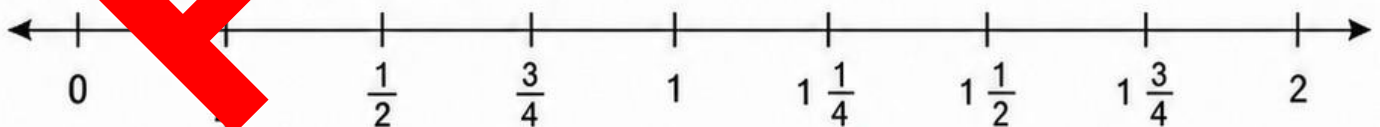
[3 marks]

4. Complete each counting sequence

a) 0, $\frac{1}{2}$, 1, $\frac{1}{2}$, 2, $2\frac{1}{2}$ b) 0, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{1}{3}$, $1\frac{2}{3}$

[2 marks]

5. Study the number line.

a) What fraction is one tick before 1? $\frac{3}{4}$ b) What fraction is one tick after 1? $1\frac{1}{4}$

[2 marks]

6. Convert $\frac{7}{4}$ to a mixed numeral. $1\frac{3}{4}$

[1 mark]

Name: _____

Date: _____

Fraction Number Line Challenge

Assessment — Page 2 of 2

7. Convert each number.

a) Write $2\frac{3}{4}$ as an improper fraction. _____

b) Write $\frac{13}{5}$ as a mixed numeral. _____

[2 marks]

8. Complete each equivalent fraction.

a) $\frac{1}{2} = \frac{\quad}{4}$

b) $\frac{3}{4} = \frac{\quad}{8}$

[2 marks]

9. Write $<$, $>$ or $=$.

a) $\frac{5}{4}$ _____ $\frac{3}{2}$

b) $\frac{7}{4}$ _____ $1\frac{1}{2}$

[2 marks]

10. Order from least to greatest.

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

[1 mark]

11. Mary says $1\frac{1}{2} = \frac{3}{3}$. Explain her mistake and write the correct improper fraction.

[2 marks]

12. Write two different fractions between 1 and 2.

_____ and _____

[1 mark]

Page total: _____ / 10

Assessment total: _____ / 20

Name: _____

ANSWERS

Date: _____

Fraction Number Line Challenge

Assessment — Page 2 of 2

7. Convert each number.

a) Write $2\frac{3}{4}$ as an improper fraction.

$$\frac{11}{4}$$

b) Write $\frac{13}{5}$ as a mixed numeral.

$$2\frac{3}{5}$$

[2 marks]

8. Complete each equivalent fraction.

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

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

[2 marks]

9. Write $<$, $>$ or $=$.

a) $\frac{5}{4} < \frac{3}{2}$

b) $\frac{7}{4} > 1\frac{1}{2}$

[2 marks]

10. Order from least to greatest.

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

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

[1 mark]

11. Mia says $1\frac{2}{3} = \frac{3}{3}$. Explain her mistake and write the correct improper fraction.Mia not combine the whole with the two thirds.Multiply 1 by 3, then add 2: $1\frac{2}{3} = \frac{5}{3}$.

[2 marks]

12. Write two different fractions between 1 and 2.

$\frac{5}{4}$ and $\frac{3}{2}$

[1 mark]

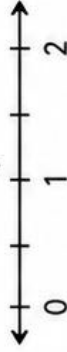
Page total: 10 / 10Assessment total: 20 / 20



$$\frac{2}{4}$$

Fun with Fractions Rubric

$$\frac{3}{4}$$



Student: _____

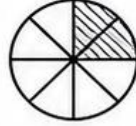
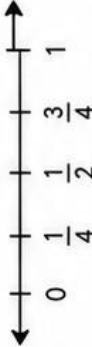
Date: _____

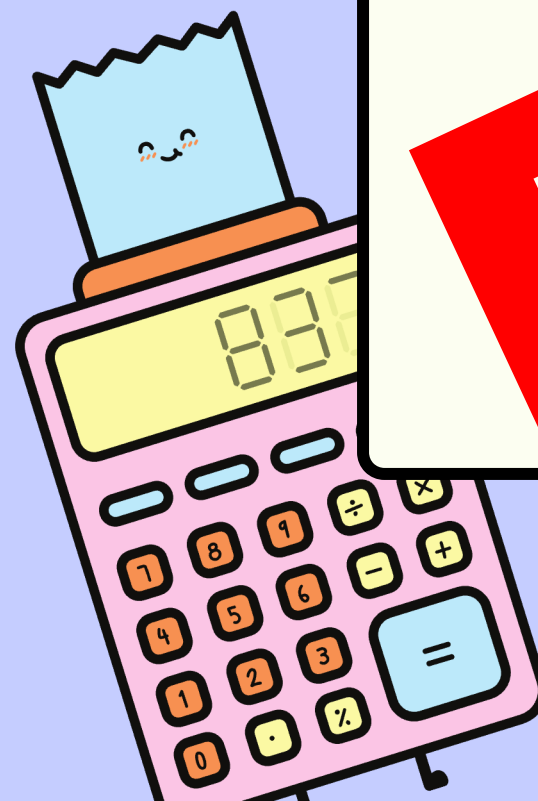
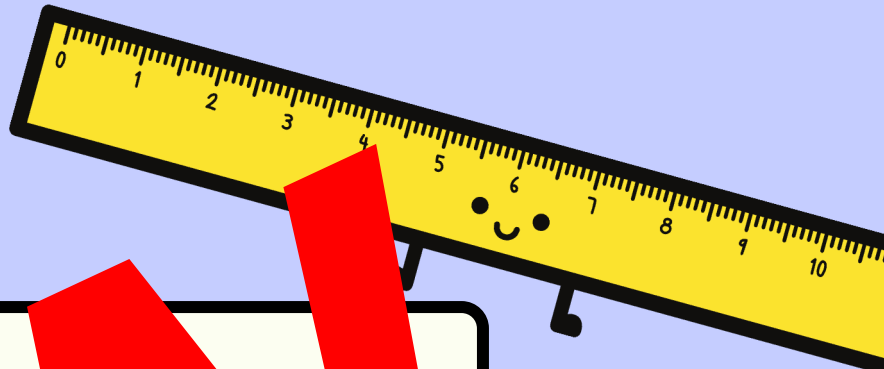
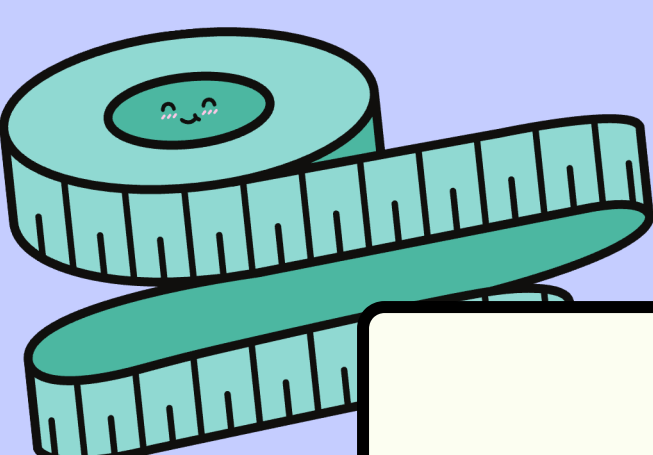
Teacher: _____

CRITERIA	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
1. IDENTIFIES FRACTION TYPES	Needs support to name fraction types.	Names some proper, improper and mixed fractions.	Correctly identifies proper, improper and mixed forms.	Identifies forms accurately and explains key features.	Justifies classifications across varied representations.
2. COUNTS AND LOCATES FRACTIONS	Counts simple intervals with guidance.	Counts and locates familiar fractions to one whole.	Counts and locates fractions beyond one whole.	Locates mixed numerals and improper fractions accurately.	Uses number-line structure flexibly to solve unfamiliar tasks.
3. CONVERTS MIXED AND IMPROPER FORMS	Begins conversions with support.	Completes some conversions using a model.	Converts common mixed numerals and improper fractions.	Converts accurately and checks with multiplication and addition.	Chooses efficient methods and explains why they work.
4. CONNECTS REPRESENTATIONS	Matches a few models and symbols with help.	Connects familiar models, words and symbols.	Connects models and number lines and symbolic forms.	Moves accurately between several representations.	Creates and compares representations to prove equivalence.
5. EXPLAINS FRACTION REASONING	Gives a brief answer with limited reasoning.	Gives a partly clear explanation using an example.	Explains a convincing strategy with a maths language.	Explains clear, logical reasoning and checks the result.	Communicates precise reasoning and evaluates another method.

TEACHER FEEDBACK:

NEXT STEPS:





PREVIEW

Fun with Fractions



Our Learning Intentions

- Recognise proper fractions, improper fractions and mixed numerals.
 - Count fractions across whole-number boundaries.
 - Locate fractions and mixed numerals on number lines.
- Convert between mixed numerals and improper fractions and explain why.



Fraction Parts

The numerator is the top number. It counts the selected equal parts.

The denominator is the bottom number. It shows how many equal parts make one whole.

For example, in $\frac{3}{4}$, the numerator is 3 and 4 is the denominator.



Fraction Families

Proper fraction: numerator is smaller than denominator — $\frac{3}{5}$

Improper fraction: numerator is at least as large as denominator — $\frac{7}{4}$

Mixed number: a whole number and a proper fraction — $1\frac{3}{4}$

Equivalent fractions: different names for the same value — $\frac{1}{2} = \frac{2}{4}$



Mixed Numerals

A mixed numeral combines one or more wholes with a fraction part.

$2 \frac{1}{3}$ means 2 whole objects and 1 of 3 equal parts of another whole.

The fractional part must be less than one whole.



Read Mixed Numerals

$1 \frac{1}{2}$ is read as 'one and one half'.

$2 \frac{3}{4}$ is read as 'two and three quarters'.

$3 \frac{2}{5}$ is read as 'three and two fifths'.

Always say the whole number part first, then name the fraction.



Improper Fractions

An improper fraction has a numerator that is equal to or greater than its denominator.

$\frac{5}{4}$ means five equal parts. For quarters make one whole, with one quarter left.

so $\frac{5}{4} = 1 \frac{1}{4}$.



Two Names, One Value

An improper fraction and a mixed numeral can name the same amount.

$$7/3 = 2 \frac{1}{3}$$

Both names describe seven one-third parts: six thirds make two wholes, with one third remaining.



Improper to Mixed

1. Divide the numerator by the denominator.
 2. The quotient is the whole-number part.
 3. The remainder becomes the new numerator.
 4. Keep the original denominator.
- Check: $\text{quotient} \times \text{denominator} + \text{numerator} = \text{original numerator}$.



Guided Conversion

Convert $\frac{11}{4}$ to a mixed number.

$11 \div 4 = 2$ remainder 3

2 is the whole-number part.

The numerator is 3 and 4 stays the denominator.

$$\frac{11}{4} = 2 \frac{3}{4}$$



Your Turn

Convert $\frac{14}{3}$ to a mixed number.

How many groups of 3 fit into 14?

What is the remainder?

Write the denominator as 3.

Explain how you can check your answer.



Check Your Thinking

$$14 \div 3 = 4 \text{ remainder } 2$$

$$14/3 = 4 \frac{2}{3}$$

$$\text{Check: } (4 \frac{2}{3}) \times 3 = 14$$

The quotient is 4 and the remainder is 2 because the parts are still thirds.



Mixed to Improper

1. Multiply the whole number by the denominator.
2. Add the numerator.
3. Write the total over the original denominator.

The denominator stays the same because the size of each equal part does not change.



Guided Conversion

Convert $3 \frac{2}{5}$ to an improper fraction.

$3 \times 5 = 15$ fifths in the three wholes
 $+ 2 = 17$ fifths altogether

$$3 \frac{2}{5} = \frac{17}{5}$$



Your Turn

Convert $2\frac{3}{4}$ to an improper fraction.

Multiply the whole number by the denominator.

Add the numerator.

Keep the denominator.

Write each step so another learner can follow your reasoning.



Check Your Thinking

$$2 \times 4 = 8$$

$$8 + 3 = 11$$

$$2\frac{3}{4} = \frac{11}{4}$$

The given number line shows that $2\frac{3}{4}$ is more than two complete wholes and three quarters more.



Count by Halves

0, $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3 ...

every step adds one half.

Two halves make one whole, so the count crosses a whole number after every second step.



Count by Thirds

0, $\frac{1}{3}$, $\frac{2}{3}$, 1, $1\frac{1}{3}$, $1\frac{2}{3}$, 2 ...

Each step adds one third.

Three thirds make one whole so $\frac{5}{3}$ is the same value as $1\frac{2}{3}$.



Count by Quarters

0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2 ...

Each step adds one quarter.

Four quarter-steps make one whole.



Count by Tenths

0, $\frac{1}{10}$, $\frac{2}{10}$, $\frac{3}{10}$... $\frac{9}{10}$ 1 $\frac{1}{10}$...

Every step adds one tenth.

Ten tenths make one whole. Equal intervals are essential even when the count passes 1.



Fractions on Number Lines

A number line is divided into equal intervals.

The denominator shows how many equal intervals make one whole.

The numerator shows how many intervals to count from zero.

Always check the endpoints before labelling a point.



Mixed Numerals on Lines

Values greater than 1 continue beyond the first whole

$1\frac{1}{2}$ is halfway between 1 and 2.

$2\frac{1}{4}$ is one quarter-step after 2.

$1\frac{2}{3}$ is two third-steps after 1 $\frac{1}{3}$, so it equals $1\frac{2}{3}$.



Guided Placement

On a quarter number line from 0 to 2:
 $\frac{7}{4} = 1 \frac{3}{4}$, so count seven quarter-steps from zero.

On a halves line from 0 to 3:
 $\frac{5}{2}$ lies halfway between 2 and 3.



Check the Intervals

$1 \frac{3}{4}$ is the quarter-step immediately before 2.

$2 \frac{1}{2}$ is the half-step immediately after 2.

A correct outcome depends on equal spacing, not on guessing from the drawing.



Compare Representations

$11/4$ and $2\frac{3}{4}$ are equivalent.

Model: two whole groups of four quarters plus three quarters.

Number line: eleven quarters from zero.

Equation: $11 \div 4 = 2$ remainder 3.

Each representation shows the same value.



Choose and Explain

Choose one value greater than

Show it in two different ways: a model, words, a fraction symbol or a number line.

Explain how your representations prove they have the same value.

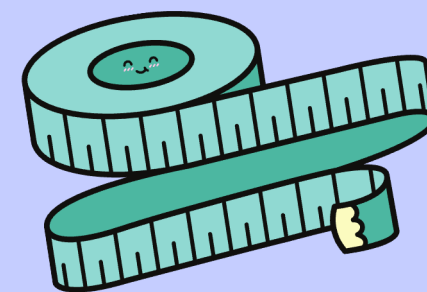
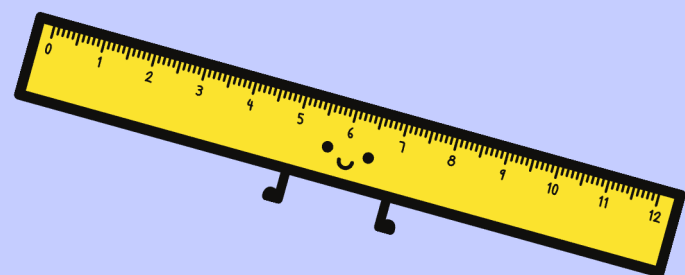
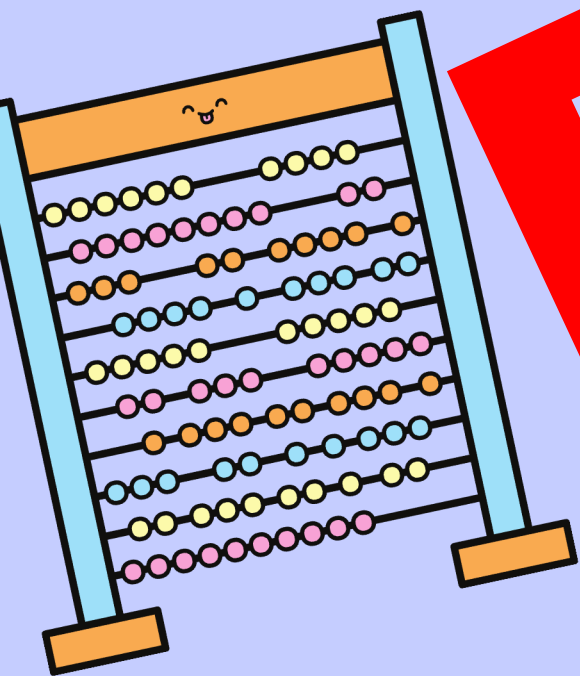
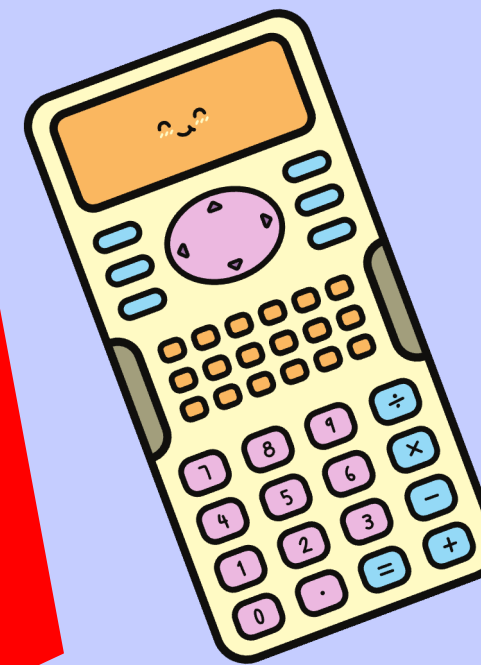
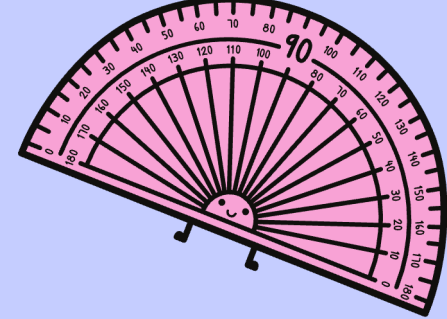
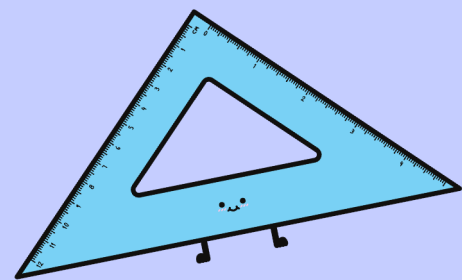
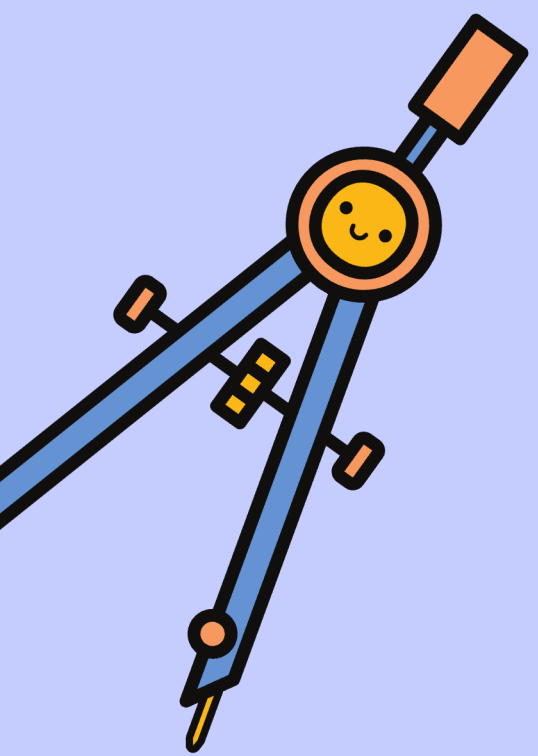


Lesson Summary

- Fractions name equal parts of a whole.
- Improper fractions and mixed numbers can name the same value.
- Equal intervals make number lines accurate.
- Conversion methods preserve the size of each fractional part.

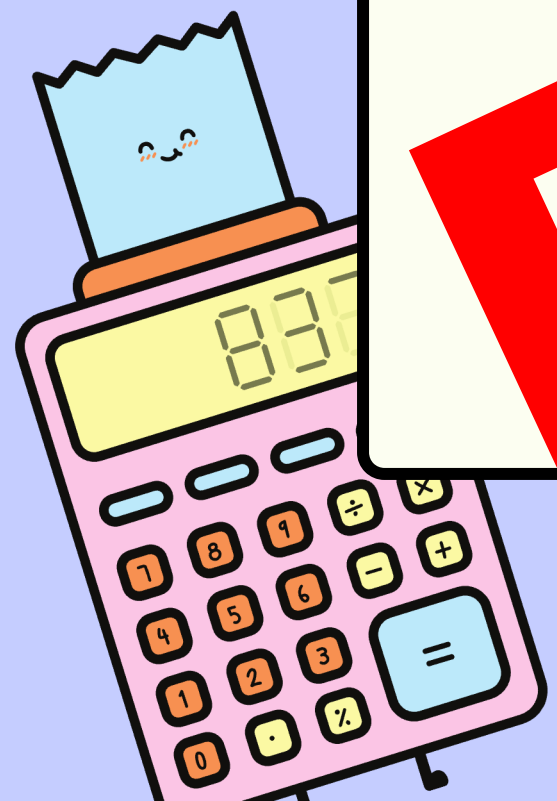
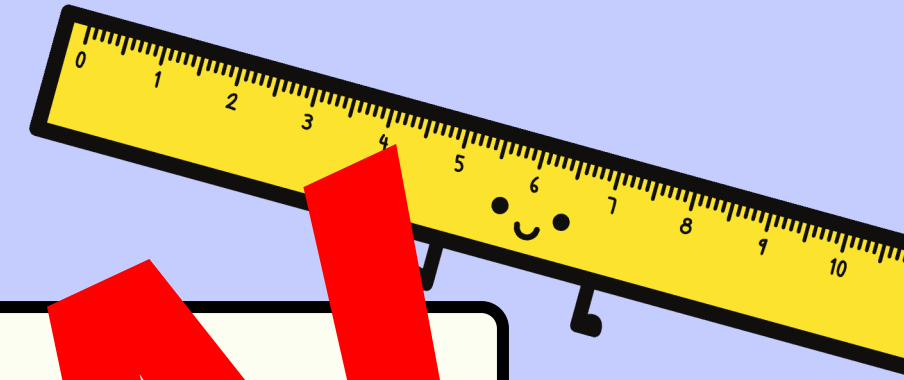
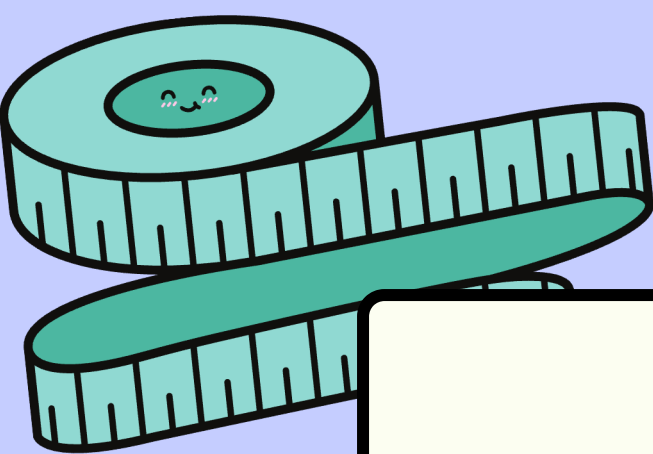
Can you explain each idea using your own example?





Well Done!

PREVIEW



PREVIEW

Fun with Fractions Quiz



Question 1

In the fraction $\frac{7}{10}$, which number is the denominator?

A. 10

B. 7

C. 3

D. 3



Answer 1

B.

The numerator is the top number. It counts the selected equal parts.



Question 2

PREVIEW

is a proper fraction.



Answer 2

5 is smaller than 8, $\frac{5}{8}$ is less than one whole and is a proper fraction.



Question 3

Which fraction is improper?

A. $\frac{3}{5}$

B. $\frac{9}{4}$

C. $\frac{6}{7}$

D. $\frac{4}{9}$



Answer 3

The numerator is greater than the denominator, so the value is greater than one whole.



Question 4

Write $1\frac{3}{4}$ as an improper fraction.

Show your calculation.

PREVIEW



Answer 4

PREVIEW

$$(1 \times 4 + 3) / 4 = 7/4$$



Question 5

Write $13/5$ as a mixed number.

A. $2 \frac{3}{5}$

B. $3 \frac{2}{5}$

C. $2 \frac{4}{5}$

D. $3 \frac{3}{5}$



Answer 5

PREVIEW

A. 2

$\div 5 = 2$ remainder 3.



Question 6

When counting by halves, what are the next two values after $1\frac{1}{2}$?

PREVIEW



Answer 6

PREVIEW

..., then $\frac{1}{2}$

Each step adds one half.



Question 7

Which value is halfway between 1 and 2?

A. $1\frac{1}{4}$

B. $1\frac{1}{2}$

C. $\frac{3}{4}$

D. 2



Answer 7

B. 1.5

One-half added to 1 reaches the midpoint between 1 and 2.



Question 8

PREVIEW

True or False?
6/4 and 1 2/4 are equivalent.



Answer 8

Six quarters make one whole and two quarters more: $6/4 = 1 \frac{2}{4}$.



Question 9

Between which two consecutive whole numbers does $7/3$ lie?

Write in mixed-numeral form too.



Answer 9

PREVIEW

$$7/3 = 2 \frac{1}{3}$$



Question 10

Which calculation correctly converts $3\frac{1}{4}$ to a fraction?

A. $(3 \times 4 + 1) / 4 = 13/4$

B. $(3 \times 4 + 1) / 4 = 13/4$

C. $(3 \times 1) / 4 = 7/4$

D. $(3 \times 4 + 3) / 4 = 19/4$

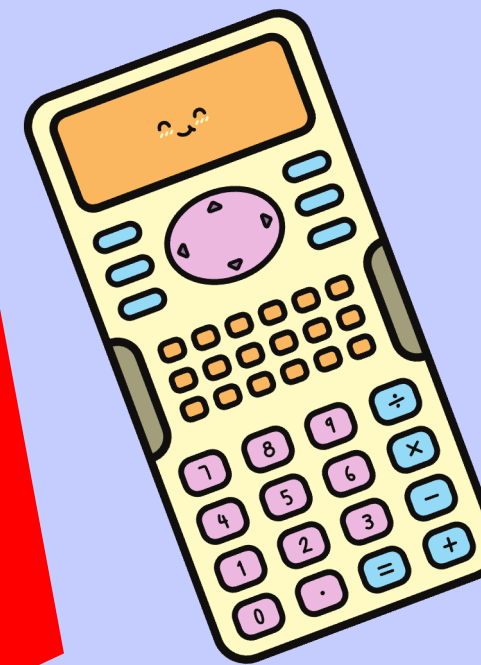
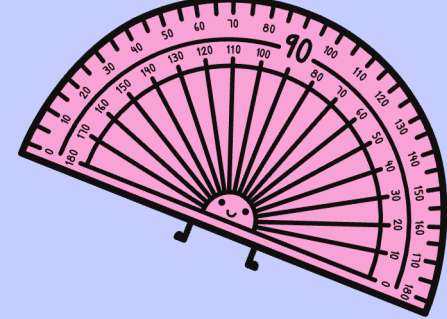
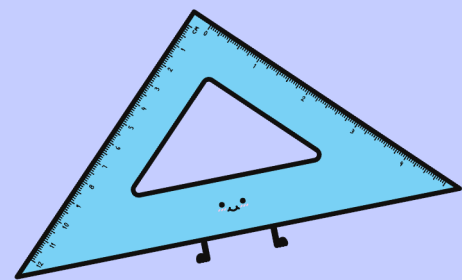
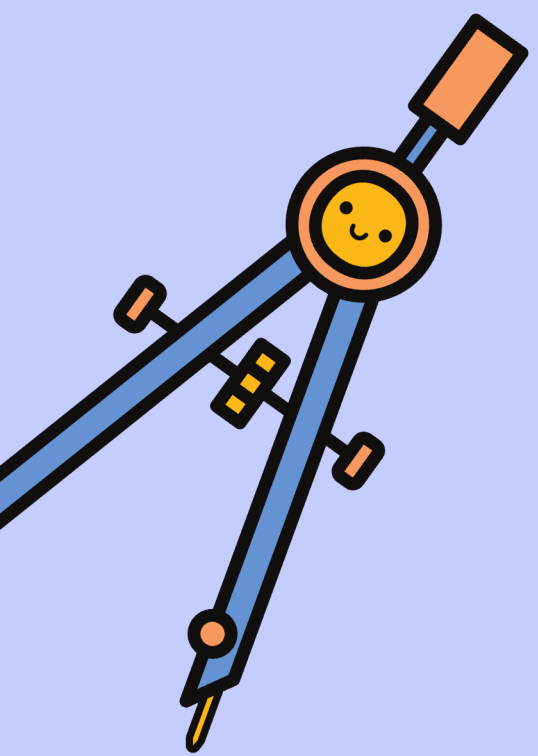


Answer 10

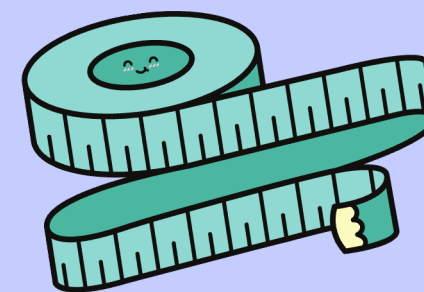
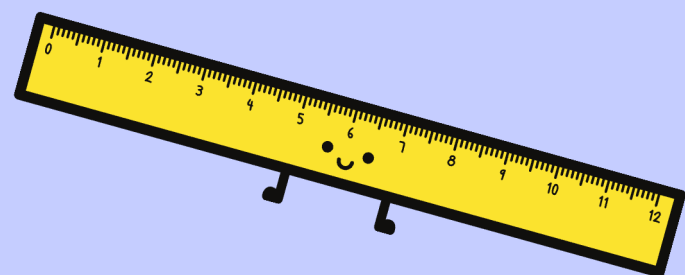
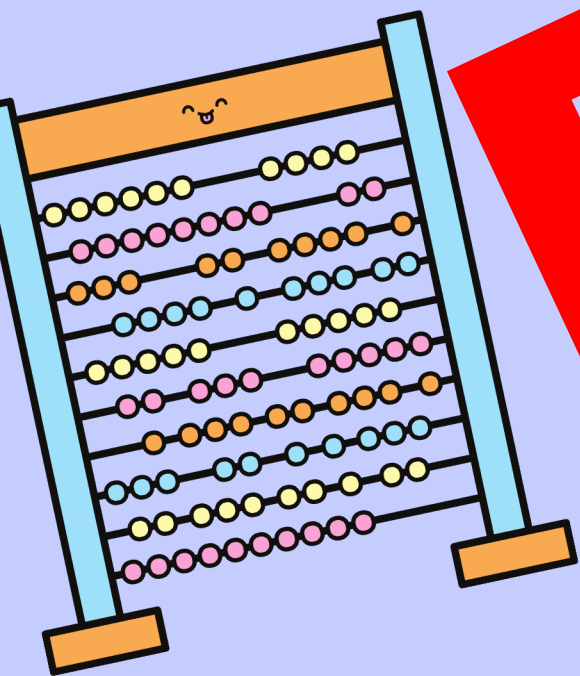
$$A \div 4 + 1, 4 = 1 + 4$$

Multiply the whole number by the denominator, then add the numerator.





Well Done!

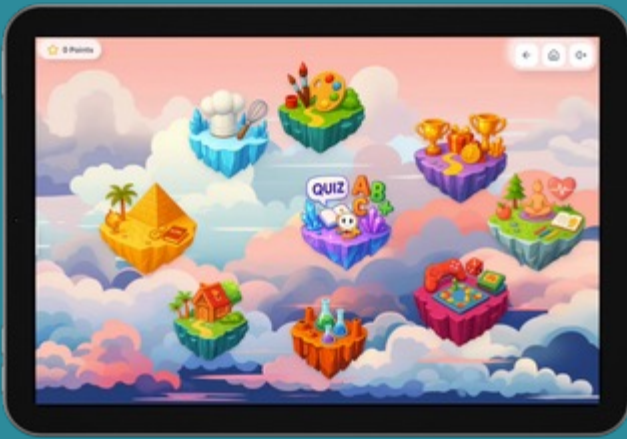


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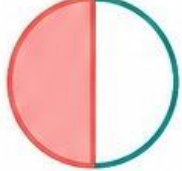
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Fractions on a Number Line - Year 4

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Fractions on a Number Line

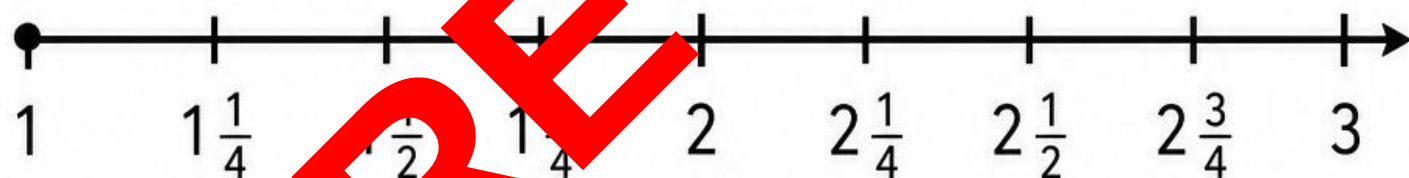


The denominator tells us how many equal steps fit between whole numbers.

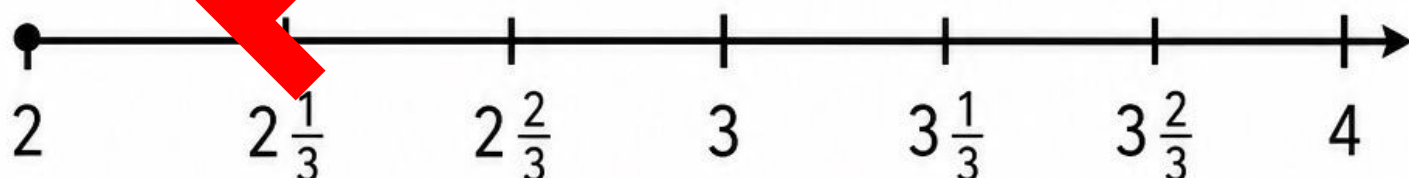
HALVES



QUARTERS



THIRDS

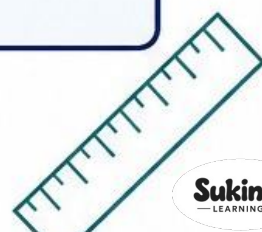


Mixed number:

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

Improper fraction:

$$\frac{11}{4}$$





Fraction Line Match-Up

Match each mixed number to the same position on a number line.

YOU WILL NEED

- the 24 cut-apart cards
- scissors
- an optional timer

HOW TO PLAY

1. Cut out the cards and shuffle them.
2. Place all cards face up.
3. Match each mixed number card to its number-line card.
4. Explain how the tick marks helped you.
5. Check each pair with a partner.

TRY THESE VERSIONS



COOPERATIVE:

Build an array of 12 pairs together.



SPEED ROUND:

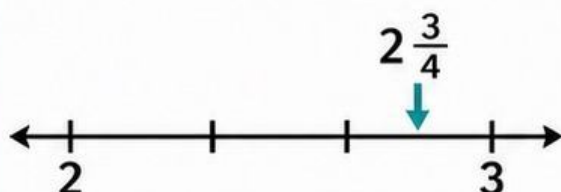
Find all pairs before the timer ends.



CHALLENGE:

Say the matching improper fraction.

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



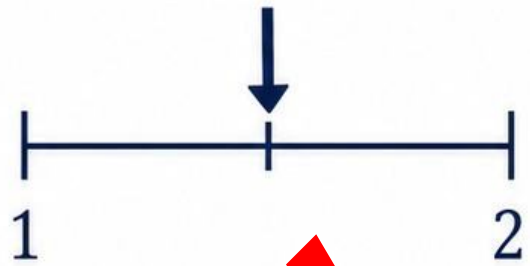
Look at the **denominator** first. It tells you the **equal step size**.



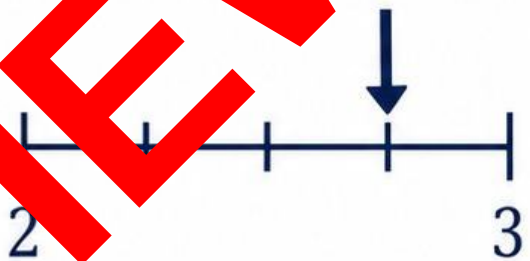
Fraction Line Match-Up - Card Set A



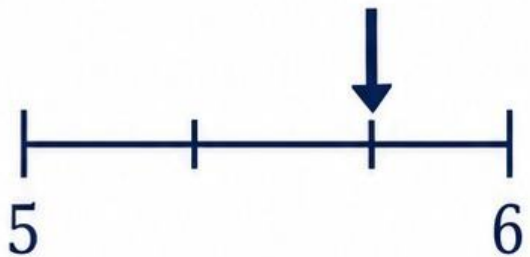
$$1 \frac{1}{2}$$



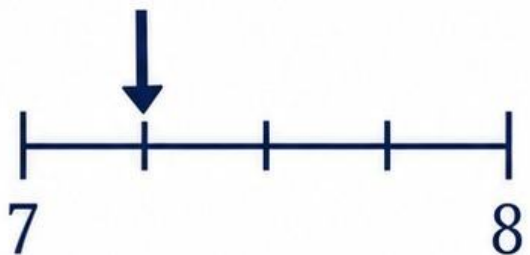
$$2 \frac{3}{4}$$



$$5 \frac{2}{3}$$

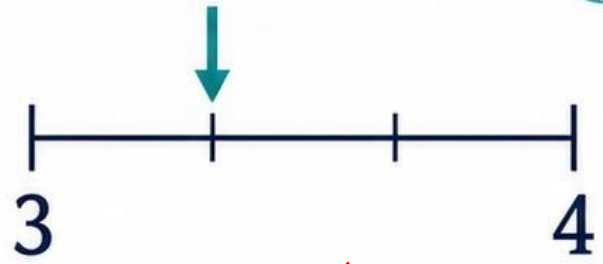


$$7 \frac{1}{4}$$

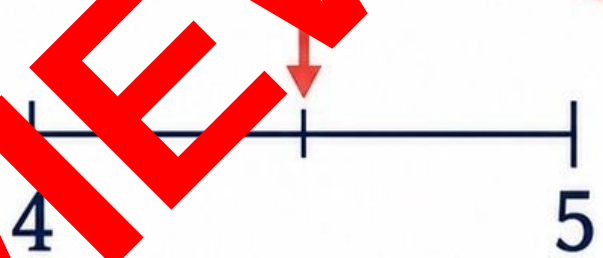


Fraction Line Match-Up - Card Set B

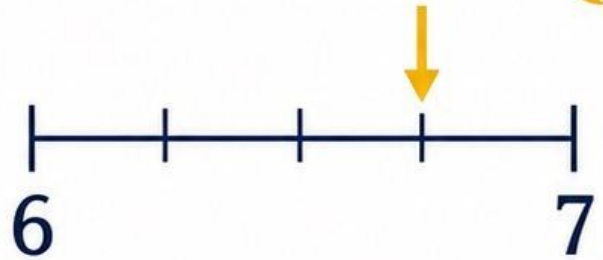

$$3 \frac{1}{3}$$

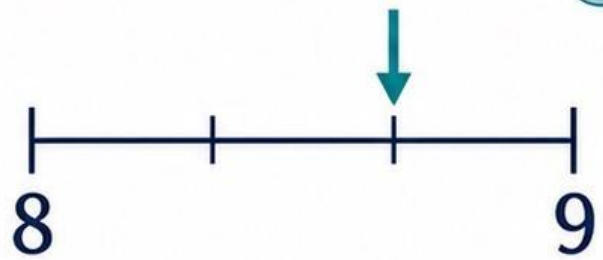

$$4 \frac{1}{2}$$


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

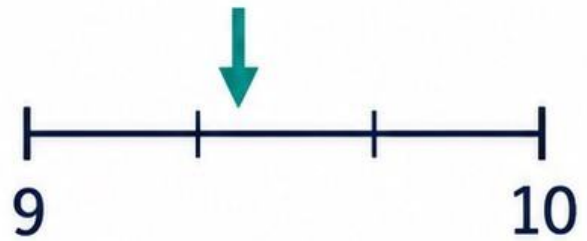




$$8 \frac{2}{3}$$

Fraction Line Match-Up - Card Set C

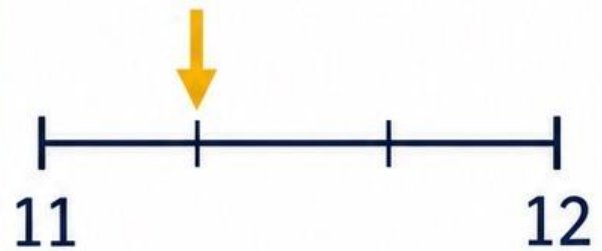
$$9\frac{1}{4}$$



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



$$11\frac{1}{3}$$



$$12\frac{3}{4}$$

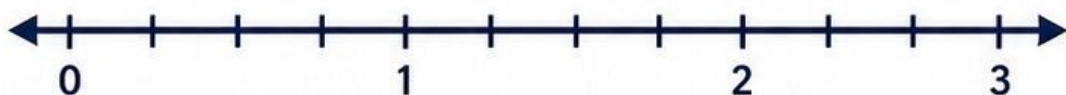


$\frac{3}{4}$



Mixed Number $1\frac{1}{2}$ Number-Line Relay

Build, mark, explain – then pass the baton.



YOU WILL NEED

- challenge cards
- the reusable recording mat in a sleeve
- a whiteboard marker
- one counter or token per team



HOW TO PLAY

- 1 Form teams of 2.
- 2 The Reader chooses and reads a challenge card.
- 3 The Marker partitions and labels the number line.
- 4 The Explainer justifies the answer.
- 5 The Checker confirms equal intervals and the target point.
- 6 Rotate roles and choose a new card.



SCORING

1 point for an accurate line + 1 point for a clear explanation.

RELAY ROLES

READER



MARKER



EXPLAINER



CHECKER



Equal intervals first. Labels second. Reasoning always.

Mixed Number Number-Line Relay - Challenge Cards

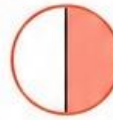
1

Count from 1 to 3 by quarters.



2

Count from $4\frac{1}{2}$ to 7 by halves.



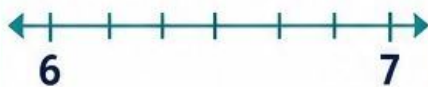
3

Count from $2\frac{1}{3}$ to 4 by thirds.



4

Mark $6\frac{3}{4}$ between 6 and 7.



5

Mark $8\frac{1}{3}$ between 8 and 9. Mark $10\frac{1}{2}$ between 10 and 11.



6

Mark $10\frac{1}{2}$ between 10 and 11.



7

Convert $\frac{11}{4}$ to a mixed number, then mark it.



8

Convert $\frac{14}{3}$ to a mixed number, then mark it.



9

Convert $\frac{17}{2}$ to a mixed number, then mark it.



10

Name a mixed number between $5\frac{1}{4}$ and $5\frac{3}{4}$.



11

Which is closer to 9: $8\frac{2}{3}$ or $9\frac{1}{4}$? Explain.



12

Compare $12\frac{1}{2}$ and $12\frac{2}{3}$ using a line.



$\frac{3}{4}$ Mixed Number Number-Line Relay Mat $\frac{2}{5}$

+

TEAM:

CARD:

START:	STEP SIZE:	TARGET:



MY MIXED NUMBER:

IMPROPER FRACTION:

EXPLANATION:

CHECK:

☐

equal intervals

☐

correct label

☐

clear reason

 $\frac{1}{3}$

+

Pass the marker. Rotate roles. Try a new card.

+

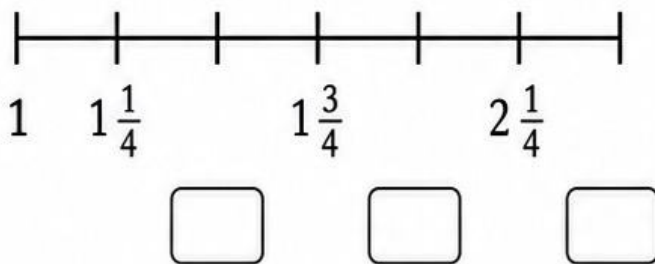
 $\frac{4}{7}$

Counting in Fraction Steps

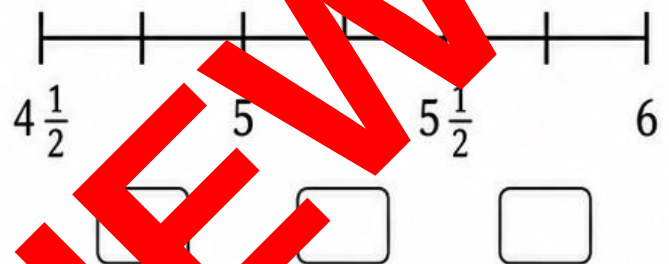
Name: _____ Date: _____

Write the missing mixed numbers. Check that every step is equal.

A.



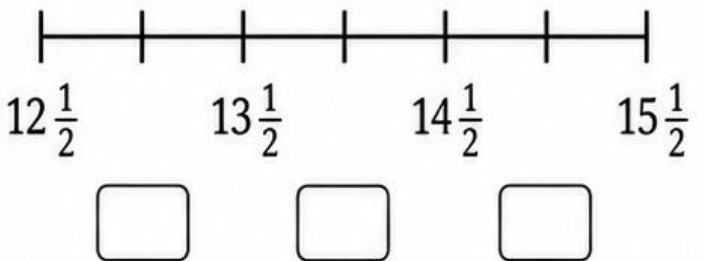
B.



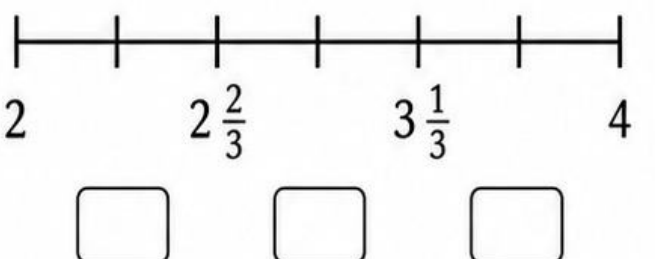
C.



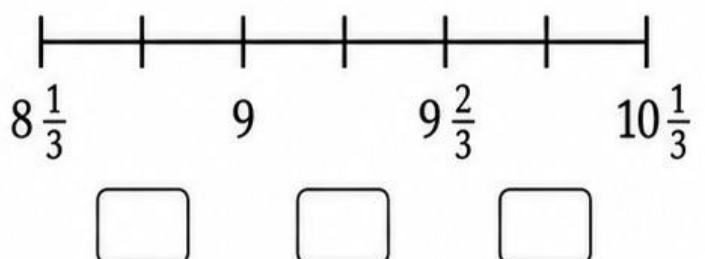
D.



E.



F.



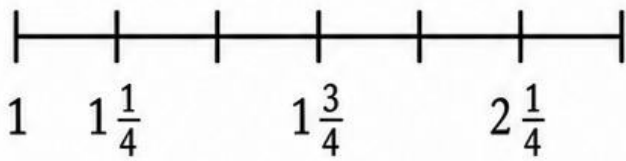
Equal intervals first. Count one fractional step at a time.

Counting in Fraction Steps

Name: _____ **ANSWERS** Date: _____

Write the missing mixed numbers. Check that every step is equal.

A.



$1\frac{1}{2}$

2

$2\frac{1}{2}$

B.



$4\frac{3}{4}$

$5\frac{3}{4}$

$5\frac{3}{4}$

C.

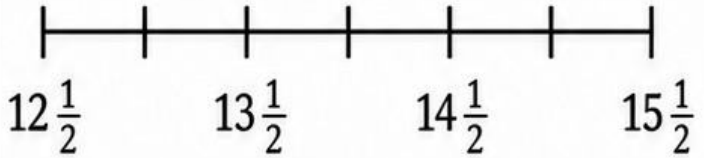


$7\frac{1}{2}$

$8\frac{1}{2}$

$9\frac{1}{2}$

D.

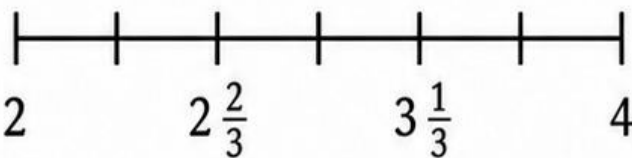


13

14

15

E.

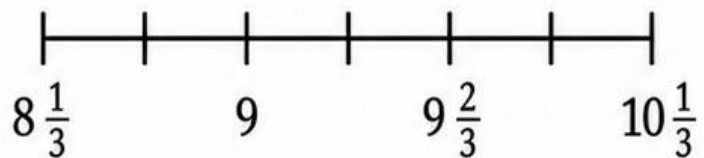


$2\frac{1}{3}$

3

$3\frac{2}{3}$

F.



$8\frac{2}{3}$

$9\frac{1}{3}$

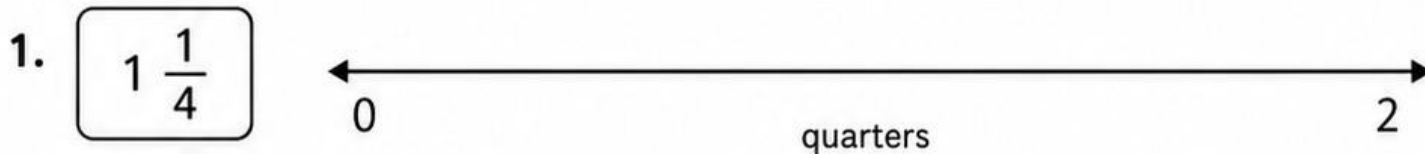
10

Equal intervals first. Count one fractional step at a time.

Locating Fractions and Mixed Numbers

Name: _____ Date: _____

Partition each line into equal intervals. Mark the target point with a dot and label it.



My check:



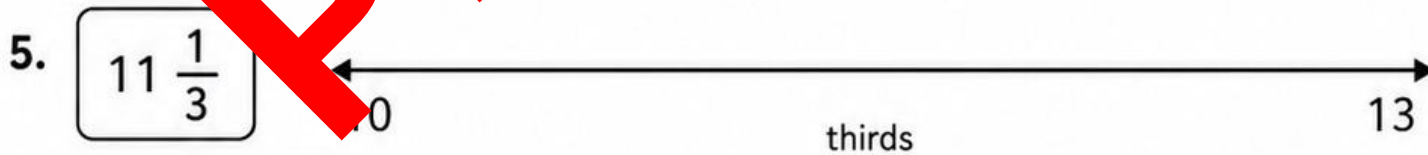
My check:



My check:



My check:



My check:



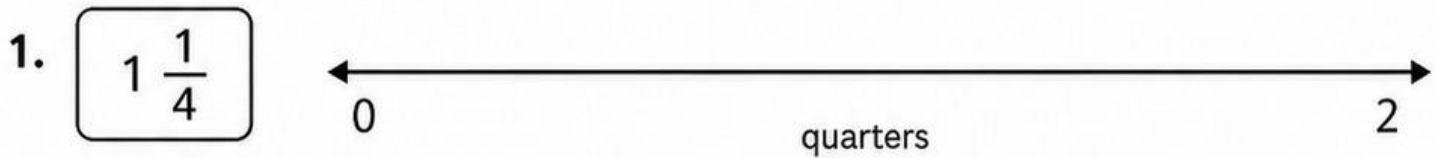
My check:

The denominator tells how many equal parts belong in each whole.

Locating Fractions and Mixed Numbers

Name: ANSWERS Date: _____

Partition each line into equal intervals. Mark the target point with a dot and label it.



My check: 5^{th} of 8



My check: 3^{rd} of 6



My check: 5^{th} of 6



My check: 3^{rd} of 9



My check: 4^{th} of 9



My check: 5^{th} of 6

The denominator tells how many equal parts belong in each whole.

Partition, Label and Compare

Name: _____ Date: _____

Use equal intervals to locate each pair. Then compare.

A. Partition and label.

1. $\xleftarrow{\hspace{10cm}} \xrightarrow{\hspace{10cm}}$ 0 quarters 2

$\frac{3}{4}$

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

$1\frac{1}{2}$

2. $\xleftarrow{\hspace{10cm}} \xrightarrow{\hspace{10cm}}$ 2 thirds 4

$2\frac{2}{3}$

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

$3\frac{1}{3}$

3. $\xleftarrow{\hspace{10cm}} \xrightarrow{\hspace{10cm}}$ 5 halves 7

$5\frac{1}{2}$

$5\frac{1}{2}$ $6\frac{1}{2}$

$6\frac{1}{2}$

B. Compare using $<$, $>$ or $=$.

4. $2\frac{3}{4}$ $2\frac{1}{2}$	5. $4\frac{1}{3}$ $4\frac{2}{3}$	6. $6\frac{1}{2}$ $6\frac{1}{4}$
7. $3\frac{2}{3}$ 4	8. $8\frac{1}{4}$ $8\frac{1}{3}$	9. $11\frac{1}{2}$ $11\frac{2}{3}$

C. Explain.

How do equal intervals help you decide which fraction is greater?

Read from left to right: farther right means greater.

Partition, Label and Compare

Name: ANSWERS Date: _____

Use equal intervals to locate each pair. Then compare.

A. Partition and label.

1. $0 \xrightarrow{\text{quarters}} 2$ $3/4 = 3\text{rd of } 8; 1 \frac{1}{2} = 6\text{th of } 8$

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

2. $2 \xrightarrow{\text{thirds}} 4$ $2 \frac{2}{3} = 2\text{nd of } 6; 3 \frac{1}{3} = 4\text{th of } 6$

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

3. $5 \xrightarrow{\text{halves}} 7$ $\text{First target} = 1\text{st of } 2; \text{second target} = 3\text{rd of } 4$

$5 \frac{1}{2} < 6 \frac{1}{2}$

B. Compare and write <, > or =.

4. $2 \frac{3}{4} < 2 \frac{1}{2}$	5. $4 \frac{1}{3} < 4 \frac{2}{3}$	6. $6 \frac{1}{2} > 6 \frac{1}{4}$
7. $3 \frac{2}{3} < 4$	8. $8 \frac{1}{4} < 8 \frac{1}{3}$	9. $11 \frac{1}{2} < 11 \frac{2}{3}$

C. Explain.

How do equal intervals help you decide which fraction is greater?

Equal intervals make every step the same size. The value
farther right on the line is greater.

Read from left to right: farther right means greater.

Mixed Numbers and Improper Fractions

Name: _____ Date: _____

mixed $\rightarrow$ improper: whole $\times$ denominator + numerator

improper $\rightarrow$ mixed: divide numerator by denominator

A. Write each mixed number as an improper fraction.

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

2. $3\frac{2}{3} =$ _____

3. $4\frac{1}{2} =$ _____

4. $5\frac{3}{4} =$ _____

5. $6\frac{1}{3} =$ _____

6. $7\frac{1}{2} =$ _____

B. Write each improper fraction as a mixed number.

7. $\frac{7}{2} =$ _____

8. $\frac{11}{5} =$ _____

9. $\frac{13}{4} =$ _____

10. $\frac{17}{3} =$ _____

11. $\frac{21}{4} =$ _____

12. $\frac{23}{2} =$ _____

Sketch a model to check one answer.

Question number: _____

Mixed Numbers and Improper Fractions

Name: ANSWERS Date: _____

mixed $\rightarrow$ improper: whole $\times$ denominator + numerator

improper $\rightarrow$ mixed: divide numerator by denominator

A. Write each mixed number as an improper fraction.

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

2. $3 \frac{2}{3} = \frac{11}{3}$

3. $4 \frac{1}{2} = \frac{9}{2}$

4. $5 \frac{3}{4} = \frac{23}{4}$

5. $6 \frac{1}{3} = \frac{19}{3}$

6. $7 \frac{1}{2} = \frac{15}{2}$

B. Write each improper fraction as a mixed number.

7. $\frac{7}{2} = 3 \frac{1}{2}$

8. $\frac{11}{3} = 3 \frac{2}{3}$

9. $\frac{13}{4} = 3 \frac{1}{4}$

10. $\frac{17}{3} = 5 \frac{2}{3}$

11. $\frac{21}{4} = 5 \frac{1}{4}$

12. $\frac{23}{2} = 11 \frac{1}{2}$

Sketch a model to check one answer.

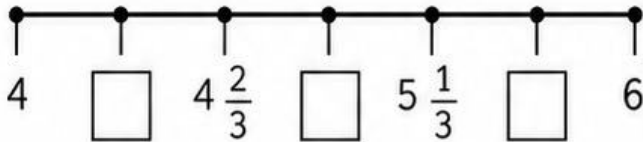
Question number: Question 1

Fraction Number Line Challenge

Name: _____ Date: _____

Show your partitions, labels and reasoning.

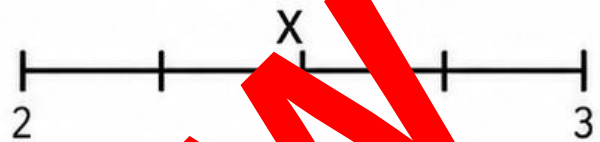
1. Complete the pattern.



thirds

2. Error detective.

Mia partitioned 2 to 3 into quarters. She marked $2 \frac{3}{4}$ at the second tick after 2.



Explain the error and circle the correct tick.

3. Order and locate.

$5 \frac{1}{2}$, $5 \frac{1}{4}$, $5 \frac{3}{4}$, 6



Partition the line, mark the four values, then write them from least to greatest.

4. Convert and locate.

Write $\frac{13}{4}$ as a mixed number, then locate it on the line.

$$\frac{13}{4} = \underline{\hspace{2cm}}$$



5. Which is greater?

$7 \frac{1}{2}$ $\frac{23}{3}$

Use a number line or conversion to justify your symbol.

6. Create your own.

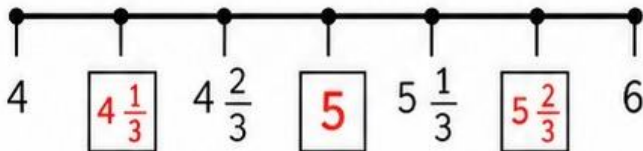
Draw a number line challenge that uses halves, thirds or quarters and crosses a whole number. Include an answer on the back.

Fraction Number Line Challenge

Name: **ANSWERS** Date: _____

Show your partitions, labels and reasoning.

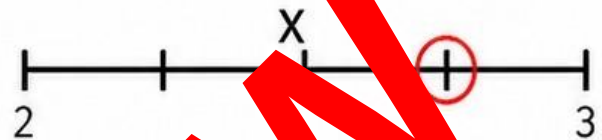
1. Complete the pattern.



thirds

2. Error detective.

Mia partitioned 2 to 3 into quarters. She marked $2\frac{3}{4}$ at the second tick after 2.



Explain the error and circle the correct tick.

The second tick is $2\frac{1}{2}$. The correct point for $2\frac{3}{4}$ is the third tick.

3. Order and locate.

$5\frac{1}{2}$, $5\frac{1}{4}$, $5\frac{3}{4}$, 6



Partition the line, mark the four values, then write them from least to greatest.

$5\frac{1}{4}$ $5\frac{1}{2}$ $5\frac{3}{4}$ 6

4. Convert and locate.

Write $\frac{13}{4}$ as a mixed number, then locate it on the line.

$$\frac{13}{4} = 3\frac{1}{4}$$



5th quarter-step after 2

5. Which is greater?

$7\frac{1}{2}$ $<$ $\frac{23}{3}$

Use a number line or conversion to justify your symbol.

$\frac{23}{3} = 7\frac{2}{3}$, so $7\frac{1}{2} < 7\frac{2}{3}$.

6. Create your own.

Draw a number line challenge that uses halves, thirds or quarters and crosses a whole number. Include an answer on the back.

Answers will vary. Check equal intervals, a whole-number crossing and a matching answer.

Community Garden Fraction Trail

Assessment — Page 1 of 2

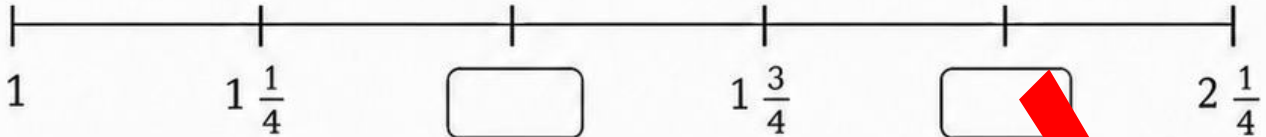


Name: _____ Date: _____

INDEPENDENT WORK: Show equal intervals and label every answer.

1. Count along the garden trail.

a. Quarter-step sequence



Fill the two missing labels.

b. Third-step sequence



Fill the two missing labels.

How did you check the intervals were equal?



2. Locate the garden spots.

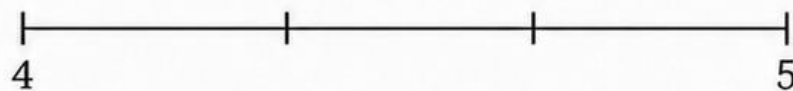
Place and label each target point.

c. Berry Bed:



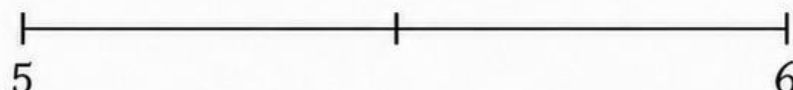
$2 \frac{3}{4}$

d. Herb Patch:



$4 \frac{1}{3}$

e. Compost Bay:



$5 \frac{1}{2}$

3. Read the signs.

f. $6 \frac{1}{4}$ $6 \frac{3}{4}$

g. $8 \frac{2}{3}$ $8 \frac{1}{2}$

h. $9 \frac{1}{2}$ 10



Community Garden Fraction Trail



Assessment — Page 1 of 2



Name: **ANSWERS** Date: _____

INDEPENDENT WORK: Show equal intervals and label every answer.

1. Count along the garden trail.

a. Quarter-step sequence



Fill the two missing labels.

b. Third-step sequence



Fill the two missing labels.

How did you check the intervals were equal?

Each adjacent tick is one equal quarter-step or third-step.



2. Locate the garden spots.

Place and label each target point.

c. Berry Bed:



$2 \frac{3}{4}$

d. Herb Patch:



$4 \frac{1}{3}$

e. Compost Bay:



$5 \frac{1}{2}$

3. Read the signs.

f. $6 \frac{1}{4}$ $<$ $6 \frac{3}{4}$

$\frac{1}{4}$ is left of $\frac{3}{4}$.

g. $8 \frac{2}{3}$ $>$ $8 \frac{1}{2}$

$\frac{2}{3}$ is right of $\frac{1}{2}$.

h. $9 \frac{1}{2}$ $<$ 10

$9 \frac{1}{2}$ is before 10.



Community Garden Fraction Trail

Assessment — Page 2 of 2

Name: _____ Date: _____

Show your working and explain your thinking.

4. Connect mixed and improper fractions.

Convert each value to the other form.

i. $2\frac{3}{4} =$ _____	j. $\frac{13}{3} =$ _____
k. $5\frac{1}{2} =$ _____	l. $\frac{23}{4} =$ _____

5. Plan the garden route.

m. Order from least to greatest: $4\frac{1}{4}$, $4\frac{3}{4}$, $4\frac{1}{2}$

→ →

n. Partition the line into thirds. Mark and label $6\frac{2}{3}$.



o. Use a number line or equal fractions to explain why $8\frac{1}{4} < 8\frac{1}{3}$.

6. Solve the trail problems.

p. Water stations are placed every $\frac{1}{2}$ km. Starting after 2 km, list the next four station positions up to 4 km.

— — —

q. The tool shed is at $7\frac{3}{4}$ km. Write this position as an improper fraction and explain your conversion.

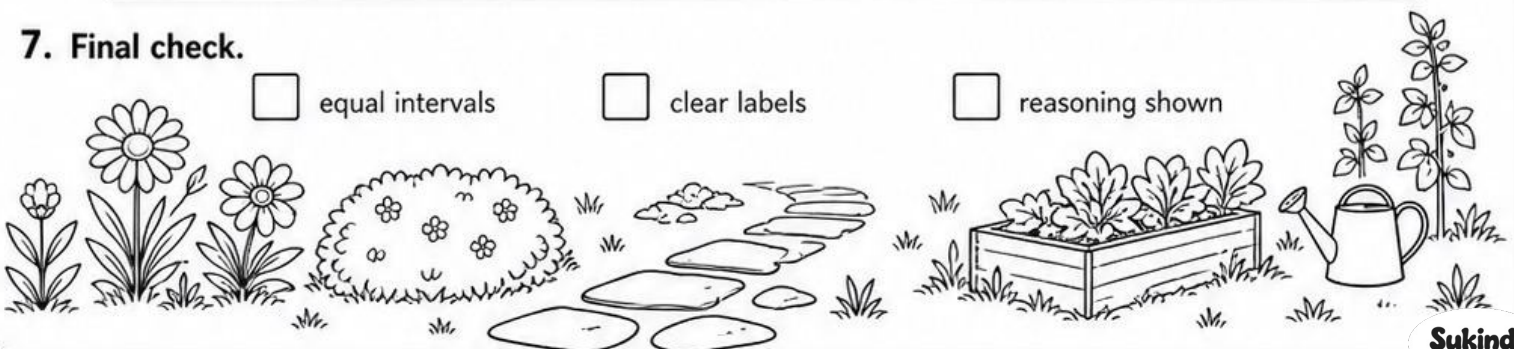
$$7\frac{3}{4} =$$

7. Final check.

☐ equal intervals

☐ clear labels

☐ reasoning shown



Community Garden Fraction Trail

Assessment — Page 2 of 2

Name: ANSWERS Date: _____

Show your working and explain your thinking.

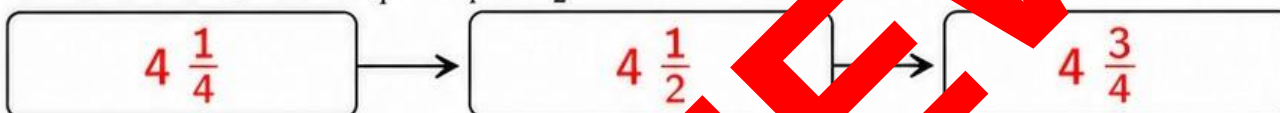
4. Connect mixed and improper fractions.

Convert each value to the other form.

i. $2 \frac{3}{4} = \underline{\underline{\frac{11}{4}}}$	j. $\frac{13}{3} = \underline{\underline{4 \frac{1}{3}}}$
k. $5 \frac{1}{2} = \underline{\underline{\frac{11}{2}}}$	l. $\frac{23}{4} = \underline{\underline{5 \frac{3}{4}}}$

5. Plan the garden route.

m. Order from least to greatest: $4 \frac{1}{4}$, $4 \frac{3}{4}$, $4 \frac{1}{2}$



n. Partition the line into thirds. Mark and label $6 \frac{2}{3}$.



o. Use a number line or equal fractions to explain why $8 \frac{1}{4} < 8 \frac{1}{3}$.

$$\frac{1}{4} = \frac{3}{12} \text{ and } \frac{1}{3} = \frac{4}{12} \text{ so } 8 \frac{3}{12} < 8 \frac{4}{12}$$

6. Solve the trail problem.

p. Water station are spaced every $\frac{1}{2}$ km. Starting after 2 km, list the next four station positions up to 4 km.



q. The tool shed is at $7 \frac{3}{4}$ km. Write this position as an improper fraction and explain your conversion.

$$7 \frac{3}{4} = \underline{\underline{\frac{31}{4}}}$$

$$7 \times 4 + 3 = 31, \text{ so } 7 \frac{3}{4} = \frac{31}{4}$$

7. Final check.



equal intervals

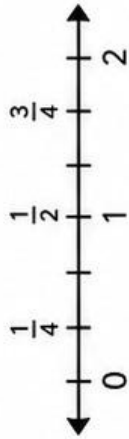


clear labels

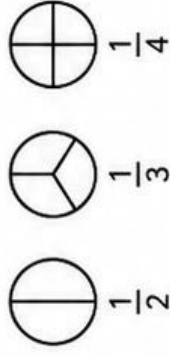


reasoning shown





Fractions on a Number Line Rubric



Student: _____ Date: _____

Circle or highlight one descriptor in each row.

CRITERIA	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
Count fractional steps	Needs support to continue halves, thirds or quarters.	Continues a familiar sequence with some errors.	Accurately counts in halves, thirds and quarters.	Counts across whole numbers and checks each step.	Creates and explains complex fractional sequences.
Partition and label lines	Partitions are unequal or labels are missing.	Makes mostly equal parts with some support.	Partitions wholes equally and labels key points.	Builds accurate lines across several wholes.	Selects efficient scales and explains the denominator.
Locate and compare	Needs support to place or compare values.	Locates familiar values with occasional errors.	Locates and compares fractions and mixed numbers.	Justifies comparisons using position and intervals.	Connects multiple representations to prove comparisons.
Convert fraction forms	Needs support to connect mixed and improper forms.	Converts simple examples with prompts.	Converts mixed and improper fractions accurately.	Explains conversions using multiplication or division.	Uses models and equations to justify general methods.
Reason and apply	Gives limited working or explanation.	Shows some working in familiar tasks.	Applies skills and gives a clear reason.	Applies skills to unfamiliar tasks and checks reasonableness.	Creates, solves and critiques number-line challenges.

Overall judgement: _____

Teacher comment: _____

Fractions on a Number Line

PREVIEW



Learning intention

We are learning to count in fractional steps, locate fractions and mixed numbers on number lines, and connect mixed numbers with improper fractions.

Success means we can partition accurately, label clearly and explain our reasoning.



Equal distances, equal values

A number line shows numbers in order.

- The same horizontal distance must represent the same amount.
- Mark the whole numbers first.
- Divide each whole into equal parts before adding fraction labels.



The denominator sets the step size

Denominator 2 → divide each whole into 2 equal parts: halves.

Denominator 3 → divide each whole into 3 equal parts: thirds.

Denominator 4 → divide each whole into 4 equal parts: quarters.

The numerator counts how many equal steps we move.



Counting by halves

$0 \rightarrow \frac{1}{2} \rightarrow 1 \rightarrow 1\frac{1}{2} \rightarrow 2 \rightarrow 2\frac{1}{2} \rightarrow 3$

Each move adds $\frac{1}{2}$. Two halves make one whole, so the pattern continues smoothly across whole numbers.



Guided check – halves

Start at 4.

Count forward by $\frac{1}{2}$ for six steps.

Write every landing point including the whole numbers.



Halves check – answer

$4 \frac{1}{2} \rightarrow 5 \rightarrow 5 \frac{1}{2} \rightarrow 6 \rightarrow 6 \frac{1}{2}$

Check: every neighbouring pair differs by exactly $\frac{1}{2}$.



Counting by quarters

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

Each move adds $\frac{1}{4}$. Four quarter-steps make one whole.



Guided check – quarters

Start at $6 \frac{1}{2}$.

Count forward by $\frac{1}{4}$ for six steps.

Which two landing points are whole numbers or half numbers?



Quarters check – answer

$6 \frac{3}{4} \rightarrow 7 \rightarrow 7 \frac{1}{4} \rightarrow 7 \frac{1}{2} \rightarrow 7 \frac{3}{4} \rightarrow 8$

Whole numbers appear after enough quarter-steps have completed a whole.



Counting by thirds

$2 \rightarrow 2 \frac{1}{3} \rightarrow 2 \frac{2}{3} \rightarrow 3 \rightarrow 3 \frac{1}{3} \rightarrow 3 \frac{2}{3} \rightarrow$

Each move adds $\frac{1}{3}$. The three steps make one whole.



Guided check – thirds

Start at $8 \frac{1}{3}$.

Count forward by $\frac{1}{3}$ for six steps.

Keep the denominator 3 and name completed wholes when needed.



Thirds check – answer

$8 \frac{2}{3} \rightarrow 9 \rightarrow 9 \frac{1}{3} \rightarrow 9 \frac{2}{3} \rightarrow 10 \rightarrow 10 \frac{1}{3}$

Equal intervals keep the pattern across 9 and 10.



Mixed numbers

A mixed number combines whole units and a fraction.

$2\frac{3}{4}$ means 2 complete wholes and 3 of the 4 equal parts in the next whole.

It lies between 2 and 3, closer to 3.



Locate a mixed number

1. Identify the two surrounding whole numbers.
2. Use the denominator to partition the interval equally.
3. Count the number of steps from the lower whole.
4. Mark and label the exact point.



Guided location example

Locate $5 \frac{2}{3}$.

Which whole numbers surround it?

How many equal parts along between those wholes?

How many steps do you count from 5?



Location answer and reasoning

$5 \frac{2}{3}$ lies between 5 and 6.

Divide 5 to 6 into three equal intervals.

Count two third-steps from 5.

The point is the second interval and is closer to 6.



Improper fractions

An improper fraction has a numerator greater than or equal to its denominator.

$11/4$ means eleven quarter-pieces.

Eight quarters make 2 wholes, with 3 quarters remaining.

Therefore $11/4 = 2 \frac{3}{4}$.



Mixed to improper

Keep the denominator.

Multiply the whole number by the denominator.

Add the numerator.

$\text{whole} \times \text{denominator} + \text{numerator} = \text{new numerator}$



Worked example – mixed to improper

Convert $4\frac{2}{3}$.

$4 \times 3 = 12$ thirds

$12 + 2 = 14$ thirds

Therefore $4\frac{2}{3} = \frac{14}{3}$



Improper to mixed

Divide the numerator by the denominator.

The quotient is the whole number.

The remainder is the new numerator.

Keep the same denominator.



Worked example – improper to mixed

Convert $17/4$.

$$17 \div 4 = 4 \text{ remainder } 1$$

Therefore $17/4 = 4 \frac{1}{4}$.

Check: $4 \times 4 + 1 = 17$



Compare mixed number

Place both values on the same accurately partitioned number line.
The point farther right is greater.

Compare $8\frac{1}{4}$ and $8\frac{1}{5}$. Both have 8 wholes, so compare the fractional parts.



Comparison answer

$\frac{1}{4} = \frac{3}{12}$ and $\frac{1}{3} = \frac{4}{12}$.

Therefore $\frac{1}{4} < \frac{1}{3}$.

So $8\frac{1}{4} < 8\frac{1}{3}$ and $8\frac{1}{4}$ appears further right on the number line.



Independent final check

1. Complete by thirds: $9 \frac{1}{3}$, __, __, $10 \frac{2}{3}$
2. Convert $6 \frac{1}{4}$ to an improper fraction.
3. Which is greater: $12 \frac{1}{2}$ or $12 \frac{2}{3}$? Explain.



Final-check answers and summary

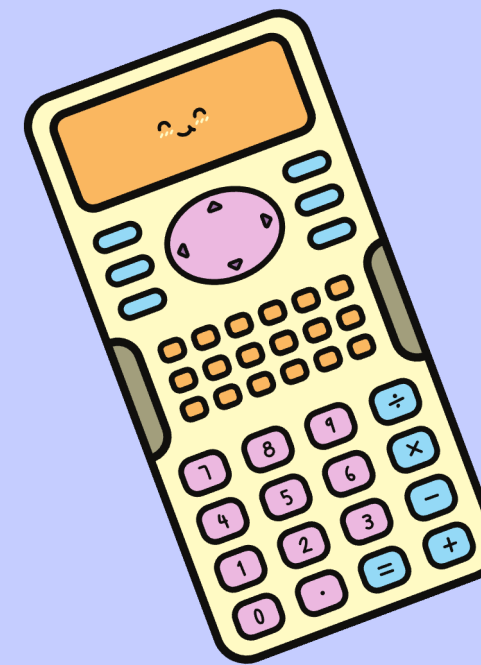
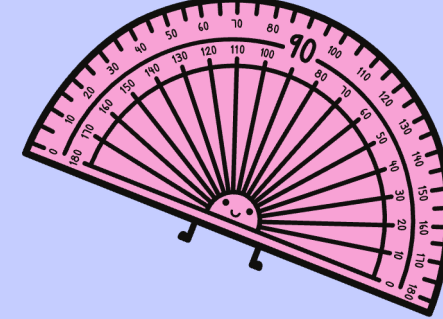
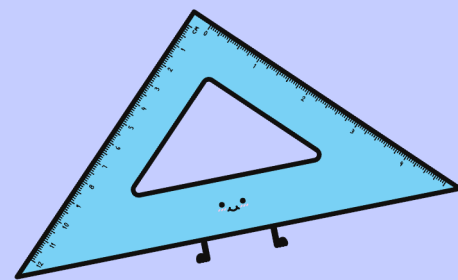
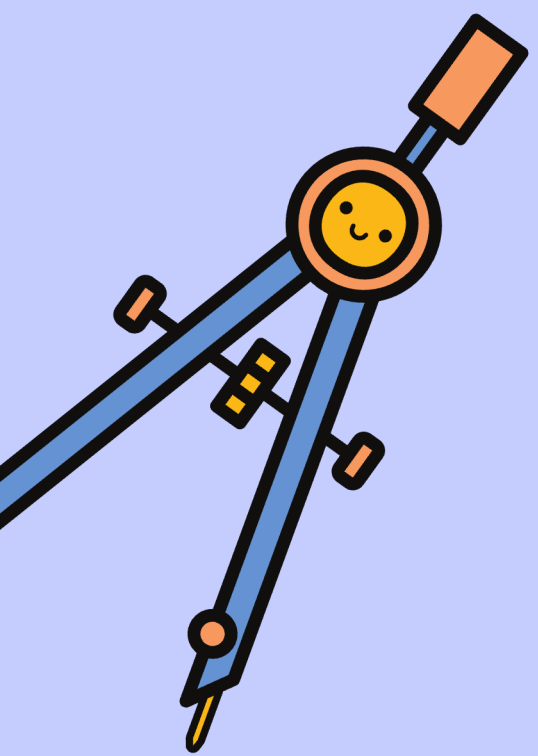
1. Missing values: $9 \frac{2}{3}$ and $10 \frac{1}{3}$.

2. $6 \frac{1}{4} = \frac{25}{4}$.

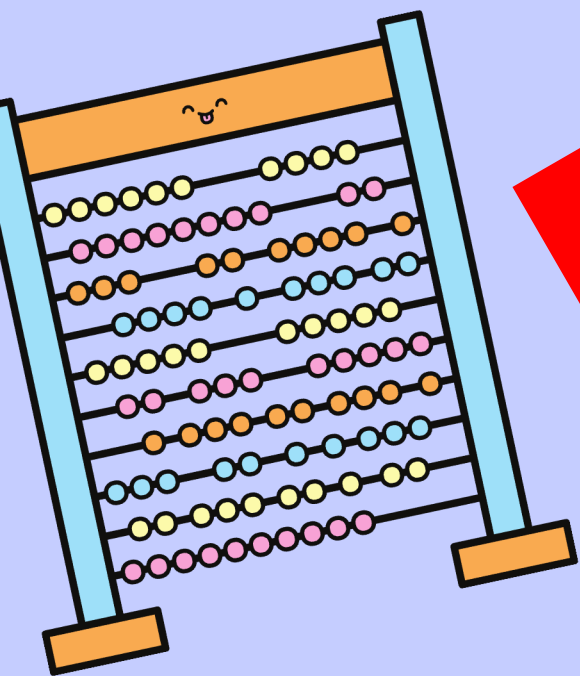
3. $12 \frac{2}{3}$ is greater because $\frac{2}{3} > \frac{1}{3}$.

Equal intervals; left; further right means greater; conversion connects two names for the same amount.

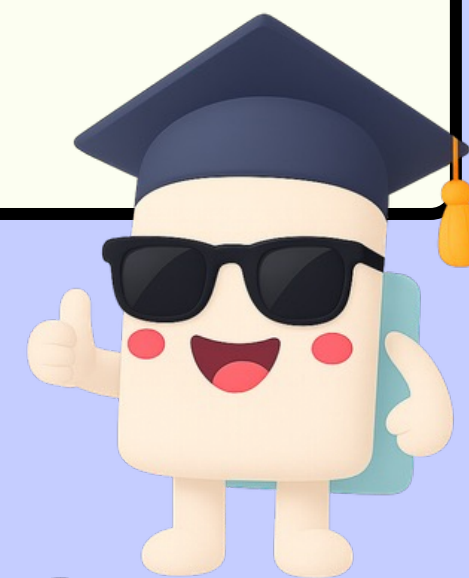
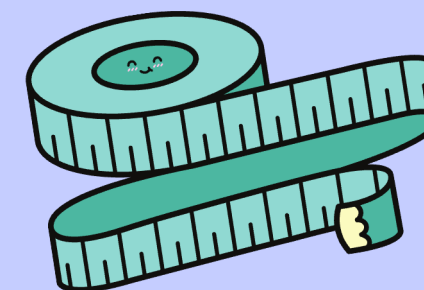
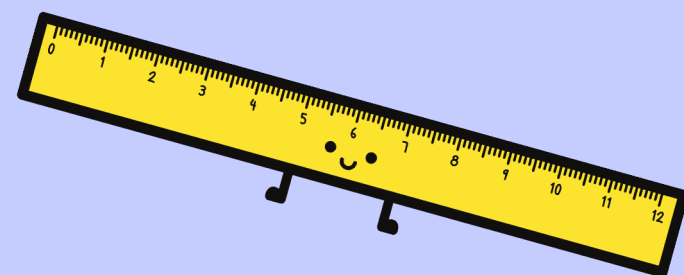




Well Done!



PREVIEW



Fractions on a Number Line Quiz

PREVIEW



Question 1 – True or false

$2\frac{1}{2}$ is halfway between 2 and

True or false?



Answer 1

True.

The interval from 2 to 3 has length 1, and $2\frac{1}{2}$ is one half-step from either endpoint.



Question 2 – Multiple choice

On a number line counting by quarters from 4, what is the fourth tick after 4?

A. $4 \frac{1}{4}$

B. $4 \frac{1}{2}$

C. $4 \frac{3}{4}$

D. 5



Answer 2

D. 5

Four quarter-steps make one whole: $4 \times \frac{1}{4}$, $4 \frac{1}{2}$, $4 \frac{3}{4}$, 5.



Question 3 – Short answers

Continue the sequence by third

$6 \frac{2}{3}$, _____



Answer 3

7

One more third step completes the whole: $6 \frac{2}{3} + \frac{1}{3} = 7$.



Question 4 – Multiple choice

Where is $3\frac{3}{4}$ between 3 and 4?

- A. First quarter tick
- B. Second quarter tick
- C. Third quarter tick
- D. Midpoint



Answer 4

C. Third quarter tick

Count three equal quarters – starting from 2



Question 5 – True or false

$5 \frac{1}{3}$ is greater than $5 \frac{1}{2}$.

True or false?



Answer 5

False.

Both values have 5 as the integer part, but $\frac{1}{3} < \frac{1}{2}$, so $5\frac{1}{3}$ lies to the left of $5\frac{1}{2}$.



Question 6 – Short answers

Convert $4\frac{3}{4}$ to an improper fraction...

PREVIEW



Answer 6

$19/4$

$4 \times 4 + 3 = 19$, and the denominator remains 4.



Question 7 – Multiple choice

Convert $17/3$ to a mixed number.

A. $5 \frac{1}{3}$

B. $5 \frac{2}{3}$

C. $6 \frac{1}{3}$

D. 3



Answer 7

B. $5 \frac{2}{3}$

$17 \div 3 = 5$ remainder 2.



Question 8 – Short answer

What fraction or mixed number is the midpoint between 8 and 9?



Answer 8

$8 \frac{1}{2}$

A midpoint divides the interval into two equal halves.



Question 9 – Multiple choice

Which value is closer to 10?

A. $9 \frac{3}{4}$

B. $10 \frac{1}{3}$

C. They are equally close

D. Neither value



Answer 9

A. $9 \frac{3}{4}$

Its distance from $10 \frac{1}{4}$ is $\frac{1}{4}$ while the distance from $10 \frac{1}{3}$ to 10 is $\frac{1}{3}$. Since $\frac{1}{4} < \frac{1}{3}$, $9 \frac{3}{4}$ is closer.



Question 10 – Reasoning

Explain how to partition the interval from 12 to 18 into thirds. Include the labels for the two interior ticks.



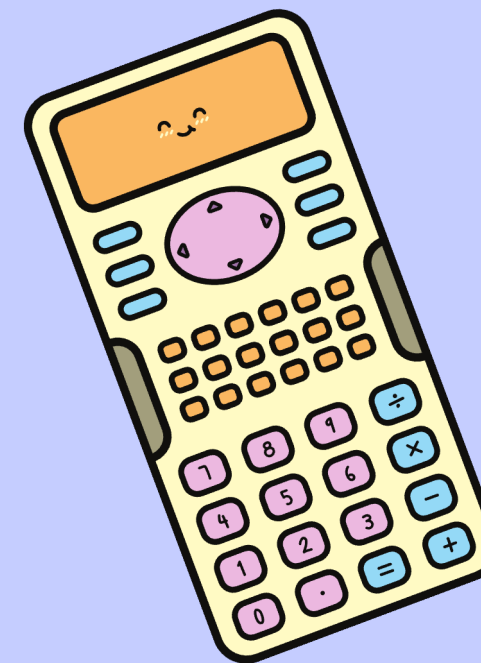
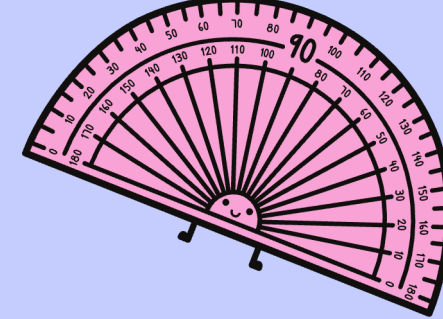
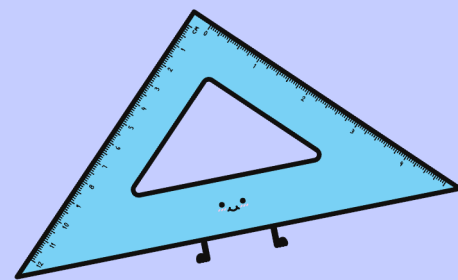
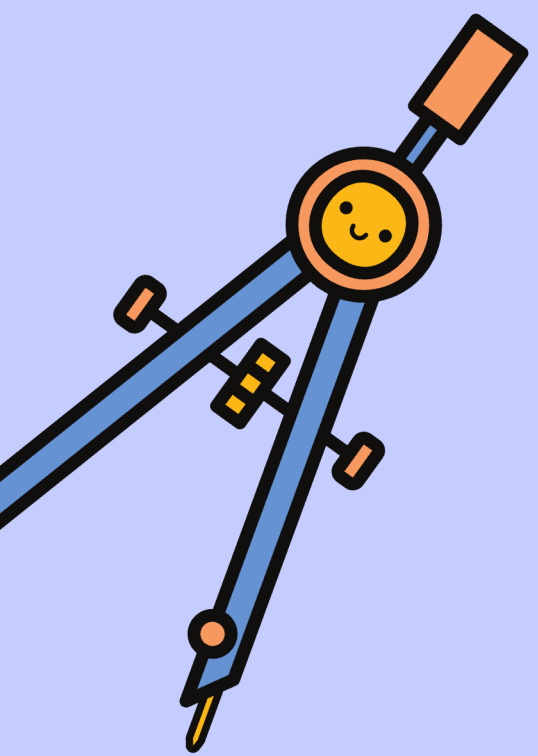
Answer 10

Make three equal intervals.

Label the first interior tick $1\frac{1}{3}$ and the second $2\frac{2}{3}$.

The endpoints remain 1 and





Well Done!

PREVIEW

