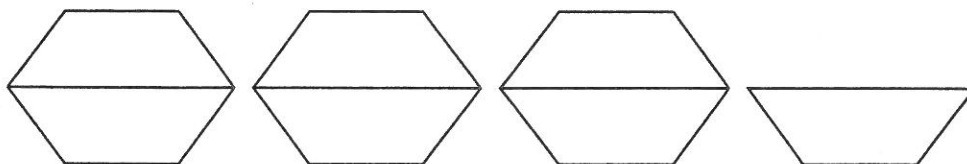


Mixed Numbers



Quick Review

Tyla arranged 7 trapezoids.



Her arrangement shows 7 halves of a hexagon: $\frac{7}{2}$

It also shows 3 whole hexagons plus 1 half: $3\frac{1}{2}$

$\frac{7}{2}$ and $3\frac{1}{2}$ represent the same amount.

They are equivalent. $\frac{7}{2} = 3\frac{1}{2}$

An **improper fraction** shows an amount greater than 1 whole.

$\frac{7}{2}$ is an improper fraction.

A **mixed number** has a whole number part and a fraction part.

$3\frac{1}{2}$ is a mixed number.

Try These

1. Write an improper fraction and a mixed number for each picture.

a) _____

b) _____

c) _____

Practice

1. Draw pictures to show each improper fraction.
Write the mixed number.

$\frac{5}{2}$ _____	$\frac{7}{3}$ _____
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2. Draw pictures to show each mixed number.
Write the improper fraction.

$4\frac{1}{4}$ _____	$2\frac{6}{8}$ _____
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3. Sofia took piano lessons for 18 months.
How many years is that? Show your work.

Stretch Your Thinking

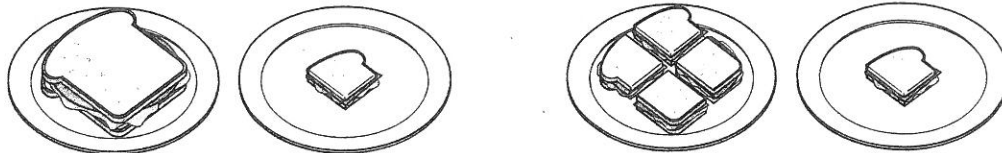
Henry drank 4 glasses of juice. Ethan drank $\frac{9}{2}$ glasses of juice.
Who drank more juice? Explain how you know.

Converting between Mixed Numbers and Improper Fractions



Quick Review

- These plates have $1\frac{1}{4}$ sandwiches. These plates have $\frac{5}{4}$ sandwiches.



$1\frac{1}{4}$ and $\frac{5}{4}$ represent the same amount.

$1\frac{1}{4}$ is a **mixed number**.

$\frac{5}{4}$ is an **improper fraction**.

- To write $2\frac{7}{8}$ as an improper fraction, multiply the whole number by the denominator and add the numerator.
- To write $\frac{13}{2}$ as a mixed number, divide the numerator by the denominator.

$$2 \times 8 = 16$$

$$16 + 7 = 23$$

So, $\frac{23}{8} = 2\frac{7}{8}$

$$13 \div 2 = 6 \text{ R}1$$

So, $6\frac{1}{2} = \frac{13}{2}$

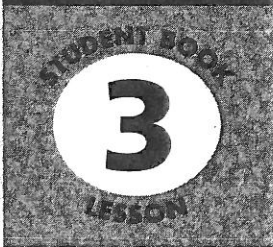
Try These

1. Write each mixed number as an improper fraction.

- a) $3\frac{7}{9} = \underline{\hspace{2cm}}$ b) $4\frac{3}{4} = \underline{\hspace{2cm}}$ c) $7\frac{6}{11} = \underline{\hspace{2cm}}$ d) $1\frac{19}{20} = \underline{\hspace{2cm}}$

2. Write each improper fraction as a mixed number.

- a) $\frac{8}{5} = \underline{\hspace{2cm}}$ b) $\frac{39}{7} = \underline{\hspace{2cm}}$ c) $\frac{48}{9} = \underline{\hspace{2cm}}$ d) $\frac{16}{3} = \underline{\hspace{2cm}}$



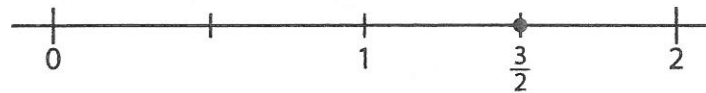
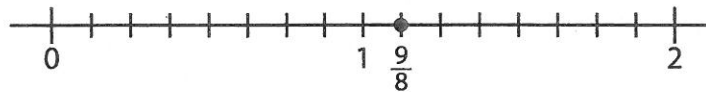
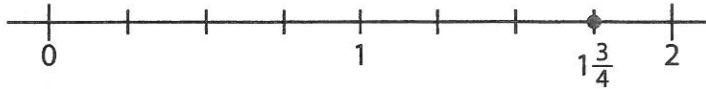
Comparing Mixed Numbers and Improper Fractions



Quick Review

You can compare and order mixed numbers and improper fractions.

- Order $1\frac{3}{4}$, $\frac{9}{8}$, and $\frac{3}{2}$ from least to greatest. Use number lines of equal length.



The order from least to greatest is $\frac{9}{8}$, $\frac{3}{2}$, $1\frac{3}{4}$.

- Compare $3\frac{3}{4}$ and $\frac{17}{12}$.

Write $3\frac{3}{4}$ as an improper fraction: $\frac{15}{4}$

Write $\frac{15}{4}$ as an equivalent fraction with denominator 12:

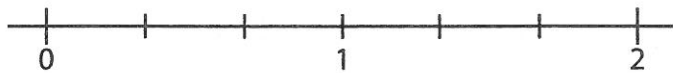
$$\frac{15}{4} = \frac{45}{12}$$

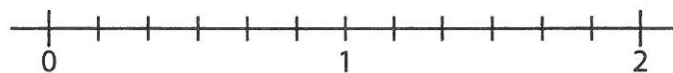
Compare $\frac{45}{12}$ and $\frac{17}{12}$: $\frac{45}{12} > \frac{17}{12}$

So, $3\frac{3}{4} > \frac{17}{12}$

Try These

- Use these number lines to order $\frac{5}{3}$, $1\frac{1}{6}$, and $\frac{3}{2}$ from least to greatest.







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

a) $1\frac{7}{8}$ _____ $\frac{7}{4}$

b) $\frac{21}{5}$ _____ $4\frac{1}{5}$

c) $\frac{13}{4}$ _____ $3\frac{5}{6}$

Practice

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

a) $\frac{11}{7}$ _____ $\frac{10}{9}$

b) $\frac{21}{8}$ _____ $\frac{31}{12}$

c) $\frac{17}{7}$ _____ $2\frac{3}{4}$

d) $1\frac{1}{2}$ _____ $\frac{24}{16}$

e) $\frac{24}{5}$ _____ $\frac{48}{10}$

f) $3\frac{4}{5}$ _____ $\frac{78}{25}$

2. Use a mixed number to complete each question.

a) $\frac{9}{4} =$ _____

b) $\frac{19}{11} >$ _____

c) $\frac{25}{12} <$ _____

d) $\frac{41}{3} <$ _____

e) $\frac{30}{10} <$ _____

f) $\frac{14}{3} >$ _____

3. Order the numbers in each set from greatest to least.

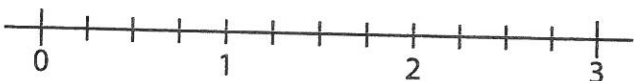
a) $\frac{8}{3}, 1\frac{11}{12}, \frac{7}{4}$ _____

b) $\frac{10}{6}, \frac{8}{8}, 1\frac{1}{3}$ _____

c) $\frac{9}{5}, \frac{11}{10}, 1\frac{7}{20}$ _____

d) $2\frac{8}{12}, \frac{13}{6}, \frac{9}{8}$ _____

4. Use these number lines to order $\frac{5}{2}$, $2\frac{1}{4}$, and $\frac{6}{3}$ from greatest to least.



5. Write each time period as a mixed number and as an improper fraction.

a) 3 h 30 min: _____ h; _____ h

b) 1 h 20 min: _____ h; _____ h

c) 2 h 45 min: _____ h; _____ h

d) 7 h 10 min: _____ h; _____ h

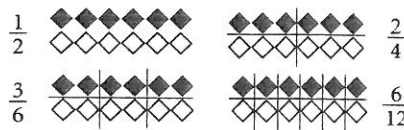
Stretch Your Thinking

Jeremiah thinks $27\frac{8}{9}$ is equivalent to $\frac{251}{8}$. Is he correct?
Explain how you know.

Activating Prior Knowledge

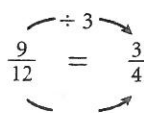
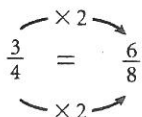
Equivalent Fractions

$\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, and $\frac{6}{12}$ are equivalent fractions.



They name the same fractional parts.

- To find equivalent fractions, multiply or divide the numerator and denominator by the same number.

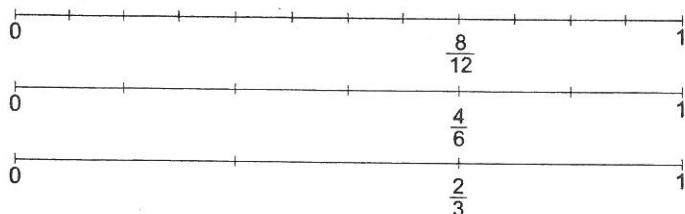


$\frac{6}{8}$ is equivalent to $\frac{3}{4}$. $\frac{3}{4}$ is equivalent to $\frac{9}{12}$.
So, $\frac{3}{4}$, $\frac{6}{8}$, and $\frac{9}{12}$ are all equivalent fractions.

HINT

When you multiply the numerator and denominator by the same number, you do not change the value of the fraction. The same is true when you divide.

- You can use number lines to find equivalent fractions.

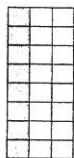


$\frac{2}{3}$, $\frac{4}{6}$, and $\frac{8}{12}$ align vertically; they are equivalent fractions.

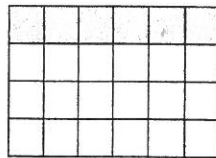
Check

- Write 3 equivalent fractions to represent each shaded part.

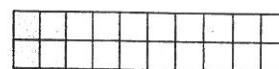
a) _____



b) _____



c) _____



- Write 3 equivalent fractions for each fraction.

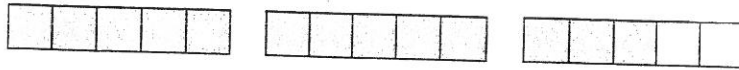
a) $\frac{10}{8}$ _____

b) $\frac{2}{5}$ _____

c) $\frac{10}{60}$ _____

Relating Mixed Numbers and Improper Fractions

- This diagram models the mixed number $2\frac{3}{5}$:



The diagram shows 2 wholes and 3 fifths.

Two wholes are the same as 10 fifths.

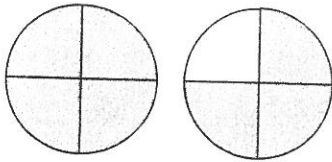
Ten-fifths and 3 fifths are 13 fifths.

$$2\frac{3}{5} = \frac{10}{5} + \frac{3}{5} = \frac{13}{5}$$

$\frac{13}{5}$ is an **improper fraction**.

It represents the same amount as $2\frac{3}{5}$.

- To write the improper fraction $\frac{7}{4}$ as a mixed number, picture 7 fourths.



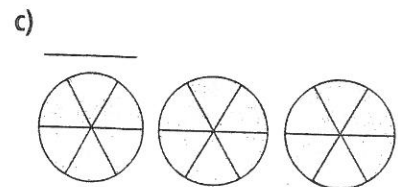
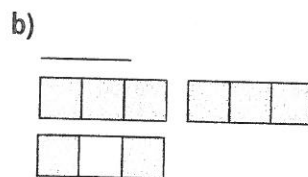
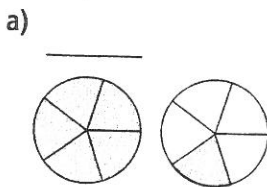
There are 4 fourths in 1 whole.

So, $\frac{7}{4}$ is 1 whole and 3 fourths.

So, $\frac{7}{4}$ is the same as $1\frac{3}{4}$.

Check

3. Write an improper fraction and a mixed number to represent each diagram.



4. Write each mixed number as an improper fraction.

a) $2\frac{3}{8}$ _____

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

c) $3\frac{4}{5}$ _____

5. Write each improper fraction as a mixed number.

a) $\frac{20}{9}$ _____

b) $\frac{18}{12}$ _____

c) $\frac{20}{8}$ _____