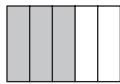


11. [Fractions]

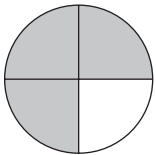
Skill 11.1 Illustrating proper fractions.

MM5 1 1 2 2 3 3 4 4
MM6 1 1 2 2 3 3 4 4



$\frac{3}{5}$
 3 - numerator - how many parts count
 5 - denominator - how many equal parts in one whole

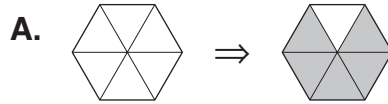
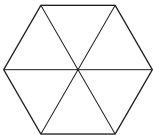
Q. What fraction of the circle is shaded?



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

The circle is divided into 4 equal parts so the denominator of the fraction is 4. Only 3 parts of the circle are shaded so the numerator is 3. The fraction of the circle that is shaded is three fourths or $\frac{3}{4}$.

Q. Shade in $\frac{5}{6}$ of the hexagon.



$\frac{5}{6}$ → The hexagon is divided into 6 equal parts.
 → The numerator tells us to shade 5 parts.

a) What fraction of the bar is shaded?

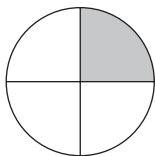


$\frac{2}{5}$

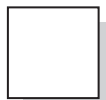
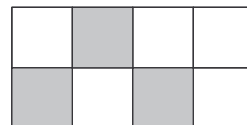
b) What fraction of the bar is shaded?



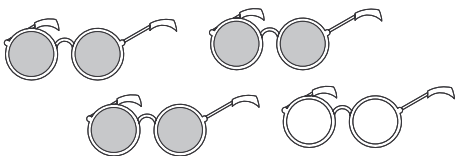
c) What fraction of the circle is shaded?



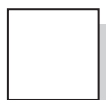
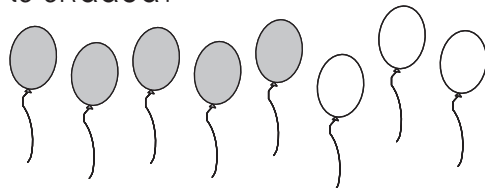
d) What fraction of the rectangle is shaded?



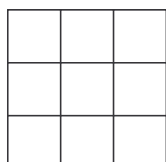
e) What fraction of the sunglasses is shaded?



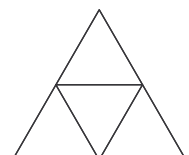
f) What fraction of the balloons is shaded?

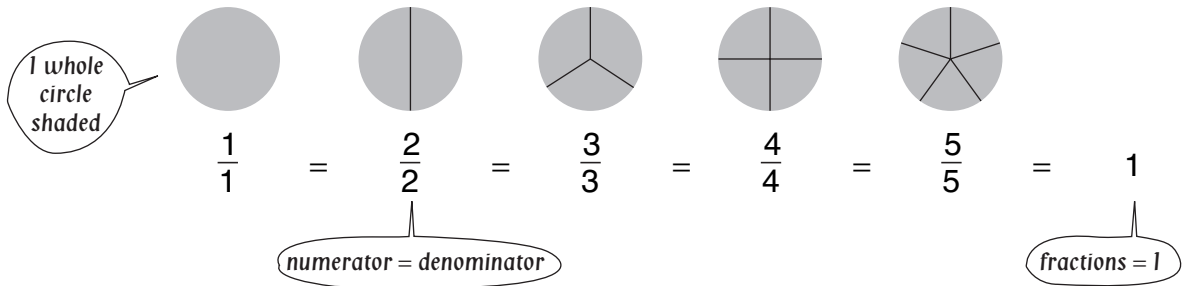


g) Shade in $\frac{5}{9}$ of the square.



h) Shade in $\frac{1}{4}$ of the triangle.





Q. Which of the following equal 1?

- A) $\frac{3}{3}$ B) $\frac{4}{3}$ C) $\frac{2}{3}$ D) $\frac{4}{4}$

A. **A and D**

The only fractions in which the numerator is the same as the denominator are $\frac{3}{3}$ and $\frac{4}{4}$

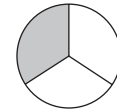
$\frac{3}{3} = 1$ (three thirds make a whole)

$\frac{4}{4} = 1$ (four fourths or quarters make a whole)

Q. If one third of the birthday cake was eaten, what fraction of the cake remains?

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

Three thirds make the whole cake. If one third was eaten, there are two thirds left.



a) Write a fraction equal to 1 that has a denominator of 8.

$\frac{8}{8}$

b) Write a fraction equal to 1 that has a denominator of 12.

c) Which of the following equal 1?

- A) $\frac{3}{3}$ B) $\frac{1}{8}$ C) $\frac{8}{8}$ D) $\frac{3}{8}$

and

d) Which of the following equal 1?

- A) $\frac{5}{2}$ B) $\frac{2}{2}$ C) $\frac{1}{2}$ D) $\frac{5}{5}$

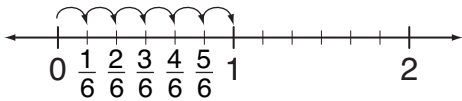
and

e) Luke has spent one sixth of his pocket money. What fraction of the money is left?

f) If three fifths of the show is over, what fraction of the performance is left?

- Count the number of spaces between two consecutive whole numbers. The number of spaces tells you the value of the denominator.

Example: If there are 6 spaces between the whole numbers, then each space equals $\frac{1}{6}$.

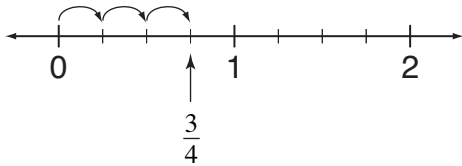


6 spaces \Rightarrow denominator $\frac{1}{6}$

- Q.** Name the fraction shown by the arrow on this number line.

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

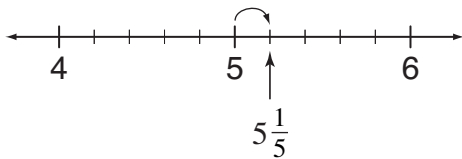
There are four spaces between 0 and 1. Each space equals $\frac{1}{4}$. The arrow points to $\frac{3}{4}$.



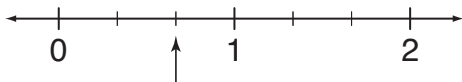
- Q.** Name the mixed number shown by the arrow on this number line.

A. $5\frac{1}{5}$

There are five spaces between 5 and 6. Each space equals $\frac{1}{5}$. The arrow points to $5\frac{1}{5}$.



- a)** Name the fraction shown by the arrow on this number line.

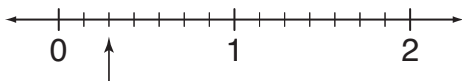


$\frac{2}{3}$

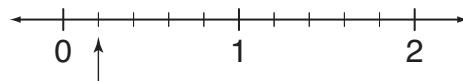
- b)** Name the fraction shown by the arrow on this number line.



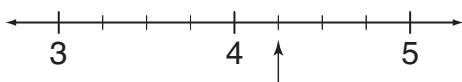
- c)** Name the fraction shown by the arrow on this number line.



- d)** Name the fraction shown by the arrow on this number line.

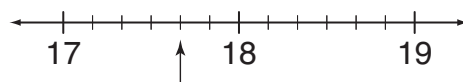


- e)** Name the mixed number shown by the arrow on this number line.




$4\frac{1}{4}$

- f)** Name the mixed number shown by the arrow on this number line.



Skill 11.4 Adding and subtracting fractions with the same denominators.

- Add or subtract the whole numbers first.
Hint: For subtractions you may need to convert 1 whole number to an equivalent fraction.

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

- Then add or subtract the numerators (top numbers of the fractions).
Don't change the denominators.

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

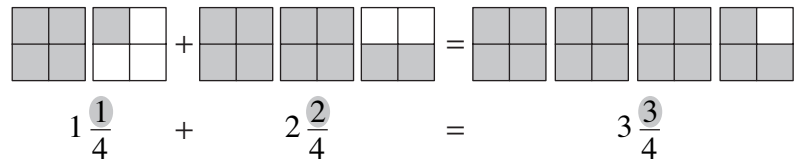
A. $3\frac{3}{4}$

Add the whole numbers first:

$$1 + 2 = 3$$

Add the fractions:

One fourth plus two fourths is three fourths. Add only the top numbers.

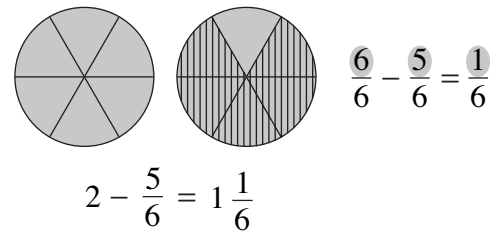


Q. $2 - \frac{5}{6} =$

A. $1\frac{1}{6}$

The two can be seen as one whole and six sixths.

Six sixths minus five sixths is one sixth.



a) $\frac{1}{3} + \frac{1}{3} =$

b) $\frac{2}{7} + \frac{3}{7} =$

c) $\frac{2}{5} + \frac{2}{5} =$

d) $\frac{2}{3} - \frac{1}{3} =$

e) $\frac{4}{5} - \frac{1}{5} =$

f) $\frac{6}{9} - \frac{2}{9} =$

g) $2\frac{3}{7} + 3\frac{3}{7} =$

h) $2\frac{2}{8} + 1\frac{5}{8} =$

i) $2\frac{3}{10} + 2\frac{4}{10} =$

j) $2 - \frac{1}{3} =$

k) $4 - \frac{1}{2} =$

l) $3 - \frac{2}{7} =$

Consider the mixed number as two bits:

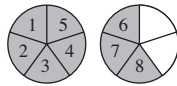
A whole number.

A fraction.

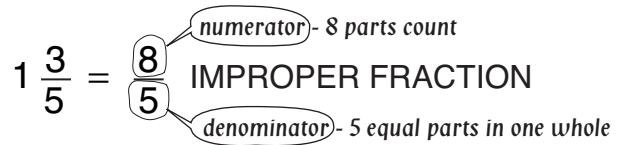
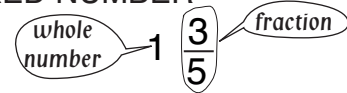
Draw and shade both bits.

Count the total parts shaded.

Write this total over the same denominator.

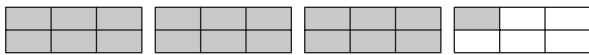


MIXED NUMBER



Q. Name the mixed number represented by these shaded rectangles.

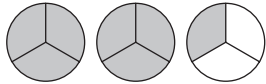
A. $3\frac{1}{6}$



Three whole rectangles are shaded and one sixth of another rectangle is shaded. The total number of rectangles shaded is three and one sixth, or $3\frac{1}{6}$.

Q. Shade the circles to show that $2\frac{1}{3} = \frac{7}{3}$

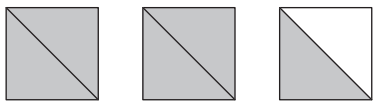


A.  Shade two whole circles and a third of the remaining circle. In total 7 thirds have been shaded. This shows that $2\frac{1}{3} = \frac{7}{3}$

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

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

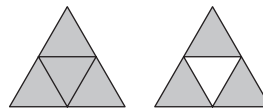
a) Name the mixed number represented by these shaded squares.



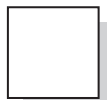
$$1 + 1 + \frac{1}{2}$$

$2\frac{1}{2}$

b) Name the mixed number represented by these shaded triangles.



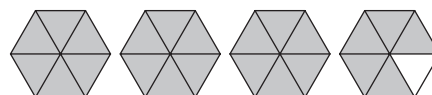
$$1 + \frac{3}{4}$$



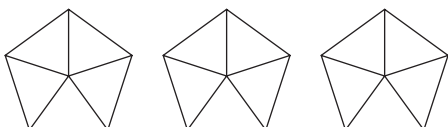
c) Name the mixed number represented by these shaded squares.



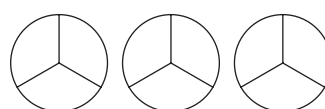
d) Name the mixed number represented by these shaded hexagons.

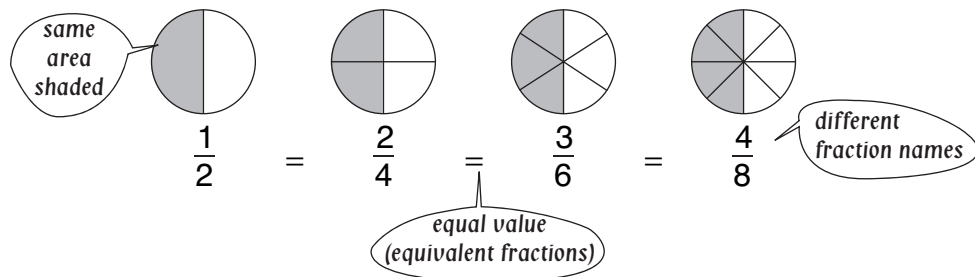


e) Shade the pentagons to show that $3 = \frac{15}{5}$



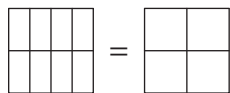
f) Shade the circles to show that $2\frac{2}{3} = \frac{8}{3}$



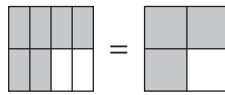


Q. Shade the squares to show

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



A.



Shade six eighths inside the first square.

Shade three fourths inside the second square.

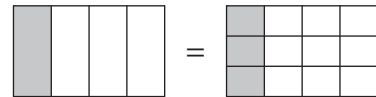
The same area of each square has been shaded.

This shows that $\frac{6}{8} = \frac{3}{4}$

Q. Complete to form equivalent fractions:

$$\frac{1}{4} = \frac{\square}{12}$$

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



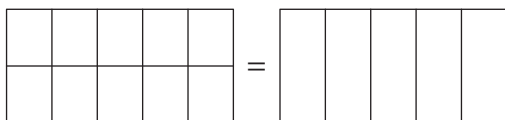
The rectangle on the left has 4 equal parts. Shade one part.

The rectangle on the right has 12 equal parts. Shade the same area as in the first rectangle. Three out of twelve parts have been shaded. One fourth is the same as three twelfths.

$\frac{1}{4} = \frac{3}{12}$ are equivalent fractions.

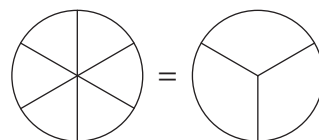
a) Shade the rectangles to show

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



b) Shade the circles to show

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



c) Complete to form equivalent fractions:

$$\frac{4}{5} = \frac{16}{\square}$$

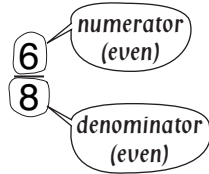
d) Complete to form equivalent fractions:

$$\frac{6}{12} = \frac{\square}{2}$$

Decide if the fraction can be simplified.

If both numbers, top (numerator) and bottom (denominator), can be divided by the same number then the fraction can be simplified.

Hint: If the numbers are both even then you can start with dividing by 2.



Divide both the numerator and the denominator by the same number.

$$\frac{6}{8} \begin{matrix} 2 \\ 2 \end{matrix} = \frac{3}{4}$$

Q. Simplify: $\frac{6}{10}$

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

Both 6 and 10 are even numbers. They can be divided by 2. The fraction can be simplified.

$$\frac{6}{10} = \frac{6}{10} \begin{matrix} 2 \\ 2 \end{matrix} = \frac{3}{5}$$

a) Simplify: $\frac{12}{18}$

$$\frac{12}{18} \begin{matrix} 2 \\ 2 \end{matrix} = \frac{6}{9} \begin{matrix} 3 \\ 3 \end{matrix} = \frac{2}{3}$$

b) Simplify: $\frac{4}{6}$

.....

c) Simplify: $\frac{9}{12}$

.....

d) Simplify: $\frac{3}{15}$

.....

e) Simplify: $\frac{8}{10}$

.....

f) Simplify: $\frac{6}{18}$

.....

g) Simplify: $\frac{4}{20}$

.....

h) Simplify: $\frac{10}{25}$

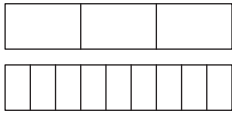
.....

i) Simplify: $\frac{20}{70}$

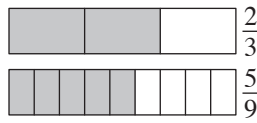
.....

- First shade each fraction on the identical shapes.
- Then compare the shaded areas to decide which is the largest.

Q. Shade the diagrams below to compare $\frac{2}{3}$ and $\frac{5}{9}$.
Which fraction is larger?

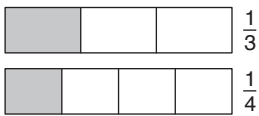


A. $\frac{2}{3}$



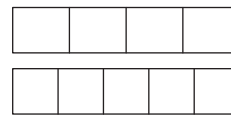
Shade two thirds of the first rectangle.
Shade five ninths of the second rectangle.
The fractions are close in value however $\frac{2}{3}$ is slightly greater than $\frac{5}{9}$.

a) Shade the diagrams below to compare $\frac{1}{3}$ and $\frac{1}{4}$.
Which fraction is larger?

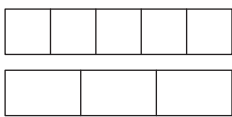


$\frac{1}{3}$

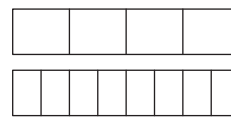
b) Shade the diagrams below to compare $\frac{3}{4}$ and $\frac{3}{5}$.
Which fraction is larger?



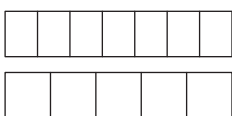
c) Shade the diagrams below to compare $\frac{2}{5}$ and $\frac{1}{3}$.
Which fraction is smaller?



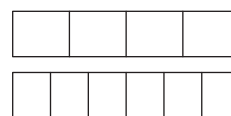
d) Shade the diagrams below to compare $\frac{3}{4}$ and $\frac{7}{8}$.
Which fraction is larger?



e) Shade the diagrams below to compare $\frac{4}{7}$ and $\frac{4}{5}$.
Which fraction is larger?



f) Shade the diagrams below to compare $\frac{3}{4}$ and $\frac{5}{6}$.
Which fraction is smaller?



First find one fraction of the number by dividing by the denominator.
Then multiply the number of fractions you need by the result.

Example: Three fifths of 10?

First find one fifth of 10 by dividing 10 by 5.

$$10 \div 5 = 2$$

Then find three fifths of 10 by multiplying 3 by 2.

$$3 \times 2 = 6$$

So three fifths of 10 is 6.

Q. Eric kicked two thirds of his team's 12 goals. How many goals did he kick?

A. 8

Find one third of 12.

Divide 12 by 3.

$$12 \div 3 = 4$$

Find two thirds of 12.

Multiplying 2 by 4.

$$2 \times 4 = 8$$

a) Three fourths of the 28 students in the class are boys. How many boys are in the class?

$$\text{one fourth of } 28 = 28 \div 4 = 7$$

$$\text{three fourths of } 28 = 3 \times 7 = \boxed{21}$$

b) Two fifths of the 50 children at the nursery had the flu. How many children were ill?

$$\text{one fifth of } 50 =$$

$$\text{two fifths of } 50 = \boxed{}$$

c) Ian scored five eighths of the 40 points on the test. How many points did he score?

$$\text{one eighth of } 40 =$$

$$\text{five eighths of } 40 = \boxed{}$$

d) Of the 24 students in a class, one third are chosen for the school play. How many students are chosen for the play?

$$\text{one third of } 24 = \boxed{}$$

e) Five sixths of the 30 horses in the race jumped over the first hurdle. How many horses passed the first hurdle?

$$\text{one sixth of } 30 =$$

$$\text{five sixths of } 30 = \boxed{}$$

f) Of the 100 cakes at a party, seven tenths were eaten in the first hour. How many cakes were eaten in the first hour?

$$\text{one tenth of } 100 =$$

$$\text{seven tenths of } 100 = \boxed{}$$