

11. [Fractions]

Skill 11.1 Simplifying fractions.

MM7 1 1 2 2 3 3 4 4
MM8 1 1 2 2 3 3 4 4

To simplify a fraction divide both the numerator and denominator by the same number. A fraction is in its simplest form when the common factor of the numerator and the denominator is 1. To express a fraction in its simplest form divide the numerator and denominator by their Highest Common Factor (HCF).

OR

You can divide by any common factor, and if necessary divide again by another common factor, till the common factor of the numerator and denominator is 1.

Q. Simplify $\frac{25}{50}$

A. $\frac{25 \div 25}{50 \div 25} = \frac{1}{2}$ or $\frac{25}{50} = \frac{25^1}{50^1} = \frac{1}{2}$

OR
 $\frac{25 \div 5}{50 \div 5} = \frac{5 \div 5}{10 \div 5} = \frac{1}{2}$ or $\frac{25^{5^1}}{50^{10^2}} = \frac{1}{2}$

The HCF of 25 and 50 is 25.
Divide both the numerator and denominator by 25.
OR
Divide both the numerator and denominator by 5, and again by 5, till the common factor of the numerator and denominator is 1.

a) Simplify $\frac{6}{8}$

$\frac{6 \div 2}{8 \div 2} = \frac{3}{4}$

b) Simplify $\frac{4}{12}$

$\frac{4 \div 4}{12 \div 4} =$

c) Simplify $\frac{9}{15}$

$\frac{9 \div 3}{15 \div 3} =$

d) Simplify $\frac{8}{10}$

$\frac{8}{10} =$

e) Simplify $\frac{4}{16}$

$\frac{4}{16} =$

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

$\frac{6}{18} =$

g) Simplify $\frac{15}{25}$

$\frac{15}{25} =$

h) Simplify $\frac{18}{24}$

$\frac{18}{24} =$

i) Simplify $\frac{24}{27}$

$\frac{24}{27} =$

j) Simplify $\frac{90}{120}$

$\frac{90}{120} =$

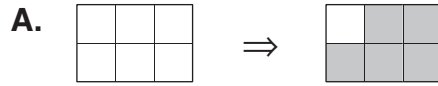
k) Simplify $\frac{28}{42}$

$\frac{28}{42} =$

l) Simplify $\frac{30}{48}$

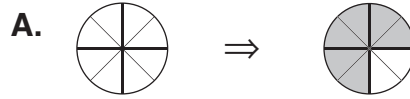
$\frac{30}{48} =$

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



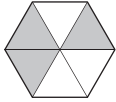
$\frac{5}{6}$ The denominator tells us to divide the rectangle into 6 equal parts.
The numerator tells us to shade 5 of these equal parts.

Q. Shade in $\frac{3}{4}$ of the circle shown.



The circle is divided into 8 equal parts (eighths). Combine 2 eighths together to divide the circle into quarters. Shade 3 of the quarters.

Q. What fraction of the hexagon has been shaded?

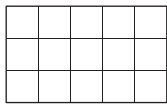


A. $\frac{3}{6}$ or $\frac{1}{2}$

The hexagon is divided into 6 equal parts, so the denominator of the fraction is 6. Only three parts are shaded, so the numerator is 3.

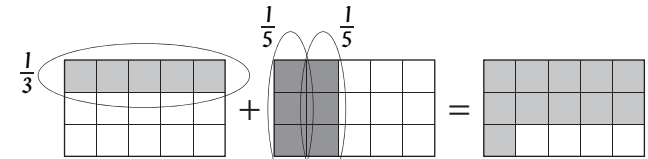
$\frac{3}{6}$ can be simplified to $\frac{1}{2}$.

Q. Shade $\frac{1}{3} + \frac{2}{5}$ of all squares. What fraction of the rectangle have you shaded?



A. $\frac{11}{15}$

The rectangle is divided into 15 equal squares.



$$\frac{1}{3} = \frac{5}{15}$$

$$\frac{2}{5} = \frac{6}{15}$$

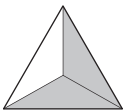
$$\frac{5}{15} + \frac{6}{15} = \frac{11}{15}$$

Shade 5 squares Shade 6 squares. 11 squares.

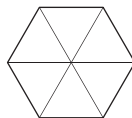
OR

$$\frac{1}{3} + \frac{2}{5} = \frac{5}{15} + \frac{6}{15} = \frac{11}{15}$$

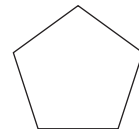
a) Shade in $\frac{2}{3}$ of the triangle.



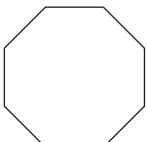
b) Shade in $\frac{5}{6}$ of the hexagon.



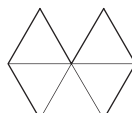
c) Shade in $\frac{3}{5}$ of the pentagon.



d) Shade in $\frac{4}{8}$ of the octagon.



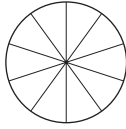
e) Shade in $\frac{3}{5}$ of the shape.



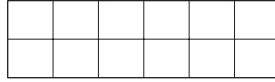
f) Shade in $\frac{1}{4}$ of the triangle.



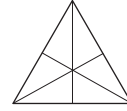
g) Shade in $\frac{2}{5}$ of the circle.



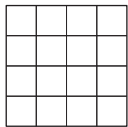
h) Shade in $\frac{3}{4}$ of the rectangle.



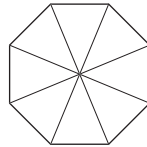
i) Shade in $\frac{1}{3}$ of the larger triangle.



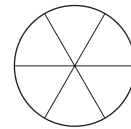
j) Shade in $\frac{5}{8}$ of the larger square.



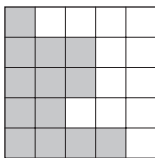
k) Shade in $\frac{3}{4}$ of the octagon.



l) Shade in $\frac{2}{3}$ of the circle.

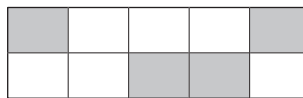


m) What fraction of the larger square has been shaded?

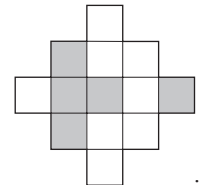


$$\frac{13}{25}$$

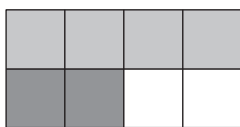
n) What fraction of the larger rectangle has been shaded?



o) What fraction of the diagram has been shaded?

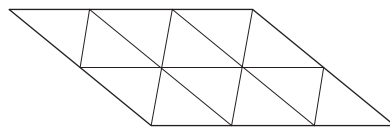


p) Shade $\frac{1}{2} + \frac{1}{4}$ of all squares shown. What fraction of the rectangle have you shaded?

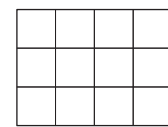


$$\frac{3}{4}$$

q) Shade $\frac{1}{2} + \frac{1}{6}$ of all triangles shown. What fraction of the parallelogram have you shaded?



r) Shade $\frac{2}{3} + \frac{1}{4}$ of all squares shown. What fraction of the rectangle have you shaded?



According to the grid:

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

An improper fraction has a larger numerator than denominator. It is greater than 1 and therefore can be turned into a mixed number.

A mixed number is made up of a whole number and a proper fraction.

A proper fraction has a smaller numerator than denominator. It is less than 1.

Q. Convert $\frac{7}{3}$ to a mixed number.

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

Think of $\frac{7}{3}$ as $7 \div 3$.

This gives 2 with 1 remainder.

First write the whole number (2). Then write the remainder 1 as a fraction with denominator 3.

OR

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

a) Convert $\frac{9}{4}$ to a mixed number.

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

b) Convert $\frac{17}{5}$ to a mixed number.

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

c) Convert $\frac{18}{3}$ to a mixed number.

$$\frac{18}{3} =$$

d) Convert $\frac{20}{6}$ to a mixed number.

$$\frac{20}{6} =$$

e) Convert $\frac{27}{12}$ to a mixed number.

$$\frac{27}{12} =$$

f) Convert $\frac{8}{5}$ to a mixed number.

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

g) Convert $\frac{21}{3}$ to a mixed number.

$$\frac{21}{3} =$$

h) Convert $\frac{37}{8}$ to a mixed number.

$$\frac{37}{8} =$$

i) Convert $\frac{42}{4}$ to a mixed number.

$$\frac{42}{4} =$$

j) Convert $\frac{25}{10}$ to a mixed number.

$$\frac{25}{10} =$$

k) Convert $\frac{28}{12}$ to a mixed number.

$$\frac{28}{12} =$$

l) Convert $\frac{36}{11}$ to a mixed number.

$$\frac{36}{11} =$$

An improper fraction has a larger numerator than denominator. It is greater than 1.

A mixed number is made up of a whole number and a proper fraction.

A proper fraction has a smaller numerator than denominator. It is less than 1.

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

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

OR

$$2\frac{3}{4} = 1 + 1 + \frac{3}{4} = \frac{4}{4} + \frac{4}{4} + \frac{3}{4} = \frac{11}{4}$$

Multiply the whole number by the denominator: $2 \times 4 = 8$
 Add 8 to the numerator: $8 + 3 = 11$
 Rewrite the total over the denominator: $\frac{11}{4}$

a) Convert $3\frac{1}{2}$ to an improper fraction.

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

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

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

c) Convert $2\frac{8}{11}$ to an improper fraction.

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

d) Convert $11\frac{5}{6}$ to an improper fraction.

$$11\frac{5}{6} =$$

e) Convert $2\frac{4}{9}$ to an improper fraction.

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

f) Convert $5\frac{3}{4}$ to an improper fraction.

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

g) Convert $2\frac{7}{12}$ to an improper fraction.

$$2\frac{7}{12} =$$

h) Convert $15\frac{2}{5}$ to an improper fraction.

$$15\frac{2}{5} =$$

i) Convert $4\frac{6}{7}$ to an improper fraction.

$$4\frac{6}{7} =$$

j) Convert $8\frac{5}{8}$ to an improper fraction.

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

k) Convert $1\frac{9}{15}$ to an improper fraction.

$$1\frac{9}{15} =$$

l) Convert $5\frac{7}{10}$ to an improper fraction.

$$5\frac{7}{10} =$$

Fractions that are equal to each other are equivalent fractions. Every fraction has a never ending number of equivalent fractions. You can find equivalent fractions by multiplying the numerator and the denominator of a fraction by the same number.

$$\frac{2}{3} \times \frac{2}{2} = \frac{4}{6} \quad \frac{2}{3} \times \frac{3}{3} = \frac{6}{9} \quad \frac{2}{3} \times \frac{4}{4} = \frac{8}{12} \quad \frac{2}{3} \times \frac{5}{5} = \frac{10}{15} \quad \frac{2}{3} \times \frac{6}{6} = \frac{12}{18}$$

These fractions are all equivalent to $\frac{2}{3}$ and each other.

Q. Complete to form equivalent fractions:

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

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

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

Check if you need to multiply or divide the first denominator to reach the second denominator.

To get from 3 to 6 you need to multiply by 2.

Do the same operation to the numerator:

$$1 \times 2 = 2$$

Q. Complete to form equivalent fractions:

$$\frac{3}{4} = \frac{\dots}{16} = \frac{21}{\dots}$$

A. $\frac{3}{4} = \frac{3 \times 4}{4 \times 4} = \frac{12}{16}$

$$\frac{3}{4} = \frac{3 \times 7}{4 \times 7} = \frac{21}{28}$$

$$\frac{3}{4} = \frac{12}{16} = \frac{21}{28}$$

To get from 4 to 16 you need to multiply by 4.

Do the same operation to the numerator:

$$3 \times 4 = 12$$

To get from 3 to 21 you need to multiply by 7.

Do the same operation to the denominator:

$$4 \times 7 = 28$$

a) Complete to form equivalent fractions:

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

b) Complete to form equivalent fractions:

$$\frac{3}{10} \times \frac{3}{3} = \frac{9}{\dots}$$

c) Complete to form equivalent fractions:

$$\frac{3}{7} = \frac{\dots}{28}$$

d) Complete to form equivalent fractions:

$$\frac{2}{3} = \frac{\dots}{18}$$

e) Complete to form equivalent fractions:

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

f) Complete to form equivalent fractions:

$$\frac{8}{15} = \frac{\dots}{60}$$

g) Complete to form equivalent fractions:

$$\frac{7}{12} = \frac{\dots}{84}$$

h) Complete to form equivalent fractions:

$$\frac{5}{6} = \frac{60}{\dots}$$

i) Complete to form equivalent fractions:

$$\frac{5}{12} = \frac{\dots}{60} = \frac{50}{\dots}$$

j) Complete to form equivalent fractions:

$$\frac{5}{9} = \frac{30}{\dots} = \frac{\dots}{63}$$

k) Complete to form equivalent fractions:

$$\frac{3}{4} = \frac{\dots}{64} = \frac{90}{\dots}$$

l) Complete to form equivalent fractions:

$$\frac{5}{8} = \frac{\dots}{32} = \frac{50}{\dots}$$

Skill 11.6

Finding equivalent fractions by dividing both the numerator and denominator by the same number.

You can find equivalent fractions by dividing the numerator and denominator of a fraction by the same number (except zero).

$$\frac{12}{18} \begin{smallmatrix} +2 \\ +2 \end{smallmatrix} = \frac{6}{9} \begin{smallmatrix} +3 \\ +3 \end{smallmatrix} = \frac{2}{3} \quad \text{So } \frac{12}{18}, \frac{6}{9} \text{ and } \frac{2}{3} \text{ are equivalent fractions.}$$

Q. Complete to form equivalent fractions:

$$\frac{40}{64} = \frac{5}{\dots}$$

A. $\frac{40}{64} = \frac{40 \div 8}{64 \div 8} = \frac{5}{8}$

$$\frac{40}{64} = \frac{5}{8}$$

Check if you need to multiply or divide the first numerator to reach to the second numerator.

To get from 40 to 5 you need to divide by 8.

Do the same operation to the denominator: $64 \div 8 = 8$

Q. Which fraction has no equivalent pair?

$$\frac{1}{3}, \frac{4}{16}, \frac{2}{3}, \frac{3}{9} \text{ or } \frac{1}{4}$$

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

Starting with the first fraction, find a few equivalent fractions by multiplying both the numerator and denominator by the same number.

See if you can find a matching fraction among the rest.

$$\frac{1 \times 2}{3 \times 2} = \frac{2}{6} \quad \frac{1 \times 3}{3 \times 3} = \frac{3}{9} \quad \text{so } \frac{1}{3} = \frac{3}{9} \text{ is a pair of equivalent fractions.}$$

$$\frac{4 \div 2}{16 \div 2} = \frac{2}{8} \quad \frac{4 \div 4}{16 \div 4} = \frac{1}{4} \quad \text{so } \frac{4}{16} = \frac{1}{4} \text{ is a pair of equivalent fractions.}$$

This leaves $\frac{2}{3}$ as the fraction with no equivalent pair.

a) Complete to form equivalent fractions:

$$\frac{2}{8} \begin{smallmatrix} +2 \\ +2 \end{smallmatrix} = \frac{1}{4}$$

b) Complete to form equivalent fractions:

$$\frac{25}{50} \begin{smallmatrix} +5 \\ +5 \end{smallmatrix} = \frac{\dots}{10}$$

c) Complete to form equivalent fractions:

$$\frac{42}{63} = \frac{6}{\dots}$$

d) Complete to form equivalent fractions:

$$\frac{24}{36} = \frac{2}{\dots}$$

e) Complete to form equivalent fractions:

$$\frac{63}{72} = \frac{\dots}{24} = \frac{7}{\dots}$$

f) Complete to form equivalent fractions:

$$\frac{18}{24} = \frac{\dots}{8} = \frac{3}{\dots}$$

g) Which fraction has no equivalent pair?

$$\frac{1}{6}, \frac{3}{4}, \frac{2}{12}, \frac{4}{8} \text{ or } \frac{1}{2}$$

$$\frac{1 \times 2}{6 \times 2} = \frac{2}{12} \quad \frac{4 \div 4}{8 \div 4} = \frac{1}{2}$$

$\frac{3}{4}$ is the fraction with no equivalent pair.

h) Which fraction is not equivalent to $\frac{3}{4}$?

A) $\frac{15}{20}$ **B)** $\frac{9}{16}$ **C)** $\frac{6}{8}$

i) Which fraction has no equivalent pair?

$$\frac{1}{5}, \frac{1}{3}, \frac{3}{15}, \frac{2}{5} \text{ or } \frac{5}{15}$$

Q. Which fraction has the greater value?

$$\frac{3}{5} \text{ or } \frac{8}{15}$$

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

OR

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

$$\text{So } \frac{9}{15} > \frac{8}{15} \text{ or } \frac{3}{5} > \frac{8}{15}$$

Shading diagrams of the same size is one way to show which fraction is larger.



From these two diagrams it can be seen that the two fractions are close in value however $\frac{3}{5}$ has greater value because more is shaded.

Write both fractions with the same denominator.

The fraction with a larger numerator is greater.

Q. Place in order from smallest to largest:

$$\frac{5}{6}, \frac{2}{3}, \frac{5}{12}$$

A. $\frac{5}{12}, \frac{2}{3}, \frac{5}{6}$

Write the three fractions with the same denominator. The LCM of 3, 6 and 12 is 12, so the fractions become:

$$\frac{5 \times 2}{6 \times 2} = \frac{10}{12}, \quad \frac{2 \times 4}{3 \times 4} = \frac{8}{12}, \quad \frac{5}{12}$$

The order from smallest to largest is then decided by the amount of the numerators: $5 < 8 < 10$

$$\text{So } \frac{5}{12} < \frac{8}{12} < \frac{10}{12} \text{ or } \frac{5}{12} < \frac{2}{3} < \frac{5}{6}$$

a) Which fraction has the greater value?

$$\frac{1}{5} \text{ or } \frac{1}{4} \quad \frac{1}{4}$$

The LCM of 4 and 5 is 20.

$$\frac{1 \times 4}{5 \times 4} = \frac{4}{20}$$

$$\frac{1 \times 5}{4 \times 5} = \frac{5}{20}$$

$$\frac{5}{20} > \frac{4}{20}$$

b) Which fraction has the greater value?

$$\frac{3}{4} \text{ or } \frac{3}{5}$$

c) Which fraction has the greater value?

$$\frac{2}{7} \text{ or } \frac{1}{2}$$

d) Place in order from smallest to largest:

$$\frac{3}{4}, \frac{7}{9}, \frac{2}{3} \quad \frac{2}{3} < \frac{3}{4} < \frac{7}{9}$$

The LCM of 3, 4, 9 is 36.

$$\frac{3 \times 9}{4 \times 9} = \frac{27}{36}$$

$$\frac{7 \times 4}{9 \times 4} = \frac{28}{36}$$

$$\frac{2 \times 12}{3 \times 12} = \frac{24}{36}$$

e) Place in order from smallest to largest:

$$\frac{3}{10}, \frac{8}{25}, \frac{1}{5}$$

f) Place in order from smallest to largest:

$$\frac{1}{3}, \frac{3}{4}, \frac{5}{8}$$

Q. Find $\frac{2}{3}$ of 18.

A. $\frac{2}{3} \times 18$

$$= \frac{2}{3} \times \frac{18}{1}$$

$$= \frac{36}{3}$$

$$= 12$$

OR

$$\frac{2}{3} \times 18$$

$$= \frac{2}{\cancel{3}} \times \frac{18^{\cancel{6}}}{1}$$

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

$$= 12$$

Because "of" means \times , $\frac{2}{3}$ of 18 can be written as: $\frac{2}{3} \times 18$

Then multiply the numerators together and the denominators together.

Simplify by dividing 36 and 3 by their HCF, which is 3.

You can also simplify before multiplying the numerators together and the denominators together.

Divide 3 and 18 by their HCF which is 3. This is shown by crossing off 3 and 18 and writing the results of the divisions.

Then you multiply the numerators together and the denominators together.

a) Find $\frac{1}{6}$ of 12.

$$= \frac{1}{6} \times \frac{12}{1}$$

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

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

b) Find $\frac{1}{5}$ of 45.

$$= \frac{1}{\cancel{5}} \times \frac{45^{\cancel{9}}}{1}$$

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

$$= 9$$

c) Find $\frac{1}{8}$ of 880.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

d) Find $\frac{3}{5}$ of 40.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

e) Find $\frac{5}{6}$ of 60.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

f) Find $\frac{3}{4}$ of 32.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

g) Find $\frac{2}{7}$ of 14.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

h) Find $\frac{3}{8}$ of 48.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

i) Find $\frac{1}{4}$ of \$220.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

j) Find $\frac{1}{2}$ of \$120.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

k) Find $\frac{1}{3}$ of \$180.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

l) Find $\frac{1}{5}$ of \$90.

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$= \dots\dots\dots$$

$$\text{Q. } 5 \times \frac{8}{15} =$$

$$\begin{aligned} \text{A. } 5 \times \frac{8}{15} &= \\ &= \frac{5}{1} \times \frac{8}{15} \\ &= \frac{40}{15} \\ &= \frac{8}{3} \\ &= 2\frac{2}{3} \end{aligned}$$

5 can be written as an improper fraction over 1.

We can then multiply the numerators together and the denominators together.

OR

Simplify before multiplying.

Simplify by dividing 40 and 15 by their HCF, which is 5.

Convert the improper fraction to a mixed number, by completing $8 \div 3 = 2$ with 2 remainder.

$$\text{a) } 4 \times \frac{1}{9} =$$

$$\begin{aligned} &= \frac{4}{1} \times \frac{1}{9} \\ &= \frac{4}{9} \end{aligned}$$

$$\text{b) } 3 \times \frac{1}{5} =$$

$$\begin{aligned} &= \dots\dots\dots \\ &= \dots\dots\dots \end{aligned}$$

$$\text{c) } 2 \times \frac{1}{13} =$$

$$\begin{aligned} &= \dots\dots\dots \\ &= \dots\dots\dots \end{aligned}$$

$$\text{d) } 2 \times \frac{1}{11} =$$

$$\begin{aligned} &= \dots\dots\dots \\ &= \dots\dots\dots \end{aligned}$$

$$\text{e) } 9 \times \frac{3}{7} =$$

$$\begin{aligned} &= \frac{9}{1} \times \frac{3}{7} \\ &= \frac{27}{7} \\ &= 3\frac{6}{7} \end{aligned}$$

$$\text{f) } 6 \times \frac{2}{3} =$$

$$\begin{aligned} &= \dots\dots\dots \\ &= \dots\dots\dots \\ &= \dots\dots\dots \end{aligned}$$

$$\text{g) } 6 \times \frac{5}{12} =$$

$$\begin{aligned} &= \dots\dots\dots \\ &= \dots\dots\dots \\ &= \dots\dots\dots \end{aligned}$$

$$\text{h) } 5 \times \frac{9}{20} =$$

$$\begin{aligned} &= \dots\dots\dots \\ &= \dots\dots\dots \\ &= \dots\dots\dots \end{aligned}$$

$$\text{i) } 8 \times \frac{5}{6} =$$

$$\begin{aligned} &= \frac{8}{1} \times \frac{5}{6} \\ &= \frac{20}{3} \\ &= 6\frac{2}{3} \end{aligned}$$

$$\text{j) } 2 \times \frac{3}{8} =$$

$$\begin{aligned} &= \dots\dots\dots \\ &= \dots\dots\dots \\ &= \dots\dots\dots \end{aligned}$$

$$\text{k) } 8 \times \frac{5}{12} =$$

$$\begin{aligned} &= \dots\dots\dots \\ &= \dots\dots\dots \\ &= \dots\dots\dots \end{aligned}$$

$$\text{l) } 6 \times \frac{7}{10} =$$

$$\begin{aligned} &= \dots\dots\dots \\ &= \dots\dots\dots \\ &= \dots\dots\dots \end{aligned}$$

Q. $\frac{6}{9} \div 3 =$

A. $\frac{6}{9} \div 3$

Dividing by 3 is the same as finding a third of the original number.
So, \div by 3 (which is equal to $\frac{3}{1}$) is the same as \times by $\frac{1}{3}$ (inverse of $\frac{3}{1}$).

$= \frac{6}{9} \times \frac{1}{3}$

Multiply the numerators together and denominators together.

NOTE: $\div 2$ is the same as $\times \frac{1}{2}$

$= \frac{6}{27} \div 3$

Simplify if possible.

$\div 3$ is the same as $\times \frac{1}{3}$

$= \frac{2}{9}$

$\div 4$ is the same as $\times \frac{1}{4}$

$\div 5$ is the same as $\times \frac{1}{5}$

a) $\frac{8}{9} \div 2 =$

$= \frac{8}{9} \times \frac{1}{2}$

$= \frac{8}{18} \div 2$

$= \frac{4}{9}$

b) $\frac{6}{7} \div 3 =$

$=$

$=$

$=$

c) $\frac{10}{11} \div 5 =$

$=$

$=$

$=$

d) $\frac{27}{30} \div 9 =$

$=$

$=$

$=$

e) $\frac{4}{5} \div 2 =$

$=$

$=$

$=$

f) $\frac{15}{17} \div 5 =$

$=$

$=$

$=$

g) $\frac{16}{21} \div 8 =$

$=$

$=$

$=$

h) $\frac{24}{27} \div 6 =$

$=$

$=$

$=$

i) $\frac{14}{15} \div 7 =$

$=$

$=$

$=$

j) $\frac{20}{30} \div 4 =$

$=$

$=$

$=$

k) $\frac{24}{25} \div 8 =$

$=$

$=$

$=$

l) $\frac{36}{40} \div 6 =$

$=$

$=$

$=$

Q. $10 \div \frac{5}{20} =$

A. $10 \div \frac{5}{20}$

$= \frac{10}{1} \times \frac{20}{5}$

$= \frac{200}{5}$

$= \frac{40}{1}$

$= 40$

Dividing by a fraction is the same as multiplying by its inverse form (the numerator and denominator are interchanged).

So, $\div \frac{5}{20}$ is the same as $\times \frac{20}{5}$.

Simplify by dividing 200 and 5 by their HCF, which is 5.

Write the improper fraction as a whole number: $40 \div 1 = 40$

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

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

$= \frac{4}{1}$

$= 4$

b) $8 \div \frac{2}{3} =$

$=$

$=$

$=$

c) $9 \div \frac{6}{7} =$

$=$

$=$

$=$

d) $15 \div \frac{8}{10} =$

$=$

$=$

$=$

e) $6 \div \frac{3}{5} =$

$=$

$=$

$=$

f) $4 \div \frac{2}{3} =$

$=$

$=$

$=$

g) $9 \div \frac{3}{4} =$

$=$

$=$

$=$

h) $20 \div \frac{4}{10} =$

$=$

$=$

$=$

i) $12 \div \frac{4}{5} =$

$=$

$=$

$=$

j) $25 \div \frac{5}{6} =$

$=$

$=$

$=$

k) $36 \div \frac{4}{5} =$

$=$

$=$

$=$

l) $35 \div \frac{5}{10} =$

$=$

$=$

$=$

To divide any decimal number by 10, move the decimal point one place to the left.
To divide any decimal number by 100, move the decimal point two places to the left.

Q. Write $\frac{3}{10}$ as a decimal.

A. $\frac{3}{10} = 3 \div 10$
 $= 03.0 \div 10$
 $= \overset{\frown}{0}3.0 \div 10$
 $= 0.3$

*Adding 0's either end of a decimal number does not change the number.
3 can also be written as 3.0 or 3.00 or 03.00*

To divide 3 by 10, move the decimal point one place to the left.

a) Write $\frac{6}{10}$ as a decimal.

$$\frac{6}{10} = \overset{\frown}{0}6.0 \div 10$$

$$= 0.6$$

b) Write $\frac{9}{10}$ as a decimal.

c) Write $\frac{7}{10}$ as a decimal.

d) Write $\frac{26}{100}$ as a decimal.

e) Write $\frac{8}{100}$ as a decimal.

f) Write $\frac{1}{10}$ as a decimal.

g) Write $\frac{50}{100}$ as a decimal.

h) Write $\frac{2}{100}$ as a decimal.

i) Write $\frac{2}{10}$ as a decimal.

j) Write $\frac{43}{100}$ as a decimal.

k) Write $\frac{79}{100}$ as a decimal.

l) Write $\frac{8}{10}$ as a decimal.

To write a decimal as a fraction, use the place value of the last digit of the decimal number to determine the size of the denominator. Remember to simplify the fraction to its simplest form.

Q. Write 0.7 as a fraction.

A. $0.7 = \frac{7}{10}$

7 is the last digit of the decimal number.
It is in the tenths' place so the denominator is 10.
7 tenths can also be written as $\frac{7}{10}$.

Q. Write 0.15 as a fraction in its simplest form.

A. $0.15 =$
 $= \frac{15}{100}$
 $= \frac{3}{20}$

5 is the last digit of the decimal number.
It is in the hundredths' place so the denominator is 100.
15 hundredths can also be written as $\frac{15}{100}$.
Simplify the numerator and the denominator of the fraction by dividing both 15 and 100 by their HCF, which is 5.

a) Write 0.3 as a fraction.

$0.3 = \frac{3}{10}$
.....
.....

b) Write 0.09 as a fraction.

.....
.....

c) Write 0.43 as a fraction.

.....
.....

d) Write 0.07 as a fraction.

.....
.....

e) Write 0.1 as a fraction.

.....
.....

f) Write 0.17 as a fraction.

.....
.....

g) Write 0.8 as a fraction in its simplest form.

$0.8 = \frac{8}{10}$
 $= \frac{4}{5}$
.....
.....

h) Write 0.2 as a fraction in its simplest form.

.....
.....

i) Write 0.75 as a fraction in its simplest form.

.....
.....

j) Write 0.05 as a fraction in its simplest form.

.....
.....

k) Write 0.5 as a fraction in its simplest form.

.....
.....

l) Write 0.04 as a fraction in its simplest form.

.....
.....