12. [Decimals / Fractions / Percentages]

Skill 12.1 Illustrating fractions and percentages.

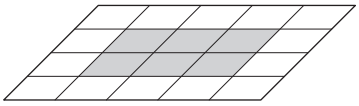
To recognise a shaded fraction of a shape

- Count the total number of equal parts in which the shape is divided.
- Use this number as the denominator of the fraction.
- Count the number of shaded parts.
- Use this number as the numerator of the fraction.
- Simplify the resulting fraction.
  (see skill 9.1, page 41)

To recognise a shaded percentage of a shape

- Count the shaded parts.
- Relate the amount shaded to out of 100, by dividing the number of total parts into 100.
  Hints: A percentage is a fraction out of 100. Compare to common fractions, like one half equals 50%, one quarter equals 25% or one tenth equals 10%.

Q. What percentage of the shape is shaded?

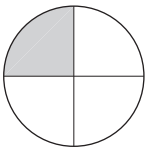


A. *6 out of 20 parts* = *30 out of 100 parts* = ***30%***

(×5 and ×5)

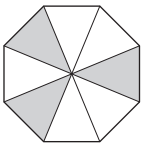
6 out of 20 parts are shaded. There are 5 lots of 20 in 100 so multiply 6×5 to get the percentage shaded.

a) What fraction of the shape is shaded?



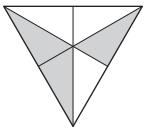
1 out of 4 parts = $\frac{1}{4}$

b) What fraction of the shape is shaded?



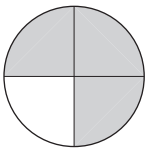
= ☐

c) What fraction of the shape is shaded?



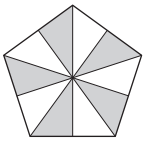
= ☐

d) What fraction of the shape is shaded?



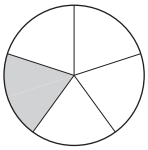
= ☐

e) What percentage of the shape is shaded?



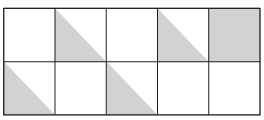
= ☐

f) What percentage of the shape is shaded?



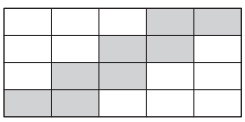
= ☐

g) What percentage of the shape is shaded?



= ☐

h) What percentage of the shape is shaded?



= ☐

Skill 12.2 Simplifying fractions (1).

EITHER
- Divide both the numerator and the denominator by their Highest Common Factor (HCF).

OR
- Divide both the numerator and the denominator by any common factor.
- Divide again by another common factor, until the common factor of the numerator and the denominator is 1.

Hints: The fraction is in simplest form when it cannot be simplified.
If the numbers are both even then you can start with dividing by 2.

How to find the Highest Common Factor (HCF) of two numbers
- Write all the factors of each number (the factors must divide exactly into the number).
- Find the largest number that appears on both lists.

Hint: The Highest Common Factor is the largest number that divides evenly in both numbers.

HCF for Identical numbers

5	5
1	1
5	5

GCF of 5 and 5

Hint: 5 is the HCF of 5 and 5 because 5 is the largest number that divides into 5 and 5.

HCF when one number divides evenly into the other number

4	12
1	1
2	2
4	3
	4
	6
	12

HCF of 4 and 12

Hint: 4 is the HCF of 4 and 12 because 4 is the largest number that divides into 4 and 12.

HCF when numbers have other common factors

6	10
1	1
2	2
3	5
6	10

HCF of 6 and 10

Hint: 2 is the HCF of 6 and 10 because 2 is the largest number that divides into 6 and 10.

Q. Simplify $\frac{20}{30}$

A. $\frac{20}{30} =$ (HCF of 20 and 30 is 10)
$= \frac{20^{\div 10}}{30_{\div 10}}$ (Divide by 10)
$= \frac{2}{3}$

OR

A. $\frac{20^{\div 2}}{30_{\div 2}} =$ (Divide by 2)
$= \frac{10^{\div 5}}{15_{\div 5}}$ (Divide by 5)
$= \frac{2}{3}$

a) Simplify $\frac{4}{10}$ (HCF of 4 and 10 is 2)

$= \frac{4^{\div 2}}{10_{\div 2}} = \boxed{\frac{2}{5}}$

b) Simplify $\frac{3}{6}$

$= \quad = \boxed{\quad}$

c) Simplify $\frac{4}{6}$

$= \quad = \boxed{\quad}$

d) Simplify $\frac{3}{9}$

$= \quad = \boxed{\quad}$

e) Simplify $\frac{2}{8}$

$= \quad = \boxed{\quad}$

f) Simplify $\frac{2}{6}$

$= \quad = \boxed{\quad}$

Skill 12.2 Simplifying fractions (2).

g) Simplify $\frac{9}{18}$

$=$ ..... $=$ ☐

h) Simplify $\frac{3}{30}$

$=$ ..... $=$ ☐

i) Simplify $\frac{12}{15}$

$=$ ..... $=$ ☐

j) Simplify $\frac{8}{12}$

$=$ ..... $=$ ☐

k) Simplify $\frac{5}{15}$

$=$ ..... $=$ ☐

l) Simplify $\frac{15}{20}$

$=$ ..... $=$ ☐

m) Simplify $\frac{6}{12}$

$=$ ..... $=$ ☐

n) Simplify $\frac{4}{40}$

$=$ ..... $=$ ☐

o) Simplify $\frac{10}{30}$

$=$ ..... $=$ ☐

p) Simplify $\frac{5}{25}$

$=$ ..... $=$ ☐

q) Simplify $\frac{8}{16}$

$=$ ..... $=$ ☐

r) Simplify $\frac{14}{21}$

$=$ ..... $=$ ☐

s) Simplify $\frac{9}{24}$

$=$ ..... $=$ ☐

t) Simplify $\frac{8}{20}$

$=$ ..... $=$ ☐

u) Simplify $\frac{24}{30}$

$=$ ..... $=$ ☐

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

$=$ ..... $=$ ☐

w) Simplify $\frac{9}{81}$

$=$ ..... $=$ ☐

x) Simplify $\frac{25}{35}$

$=$ ..... $=$ ☐

y) Simplify $\frac{20}{25}$

$=$ ..... $=$ ☐

z) Simplify $\frac{8}{28}$

$=$ ..... $=$ ☐

A) Simplify $\frac{12}{20}$

$=$ ..... $=$ ☐

Skill 12.3 Reading fractions and decimals on a number line (1).

To read a fraction

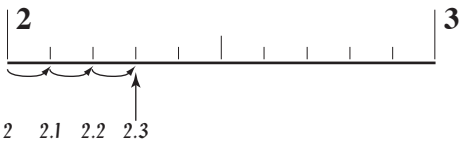
- Count the spaces between 0 and 1. (Always one more than the number of marks.)
- Write this number as the denominator of the fraction.
- Count the spaces to the dot.
- Write this number as the numerator of the fraction.

To read a mixed number

- Write the whole number from the number line in the mixed number.
- Count the spaces between two consecutive whole numbers. (Always one more than the number of marks.)
- Write this number as the denominator of the fraction.
- Count the spaces to the dot.
- Write this number as the numerator of the fraction.

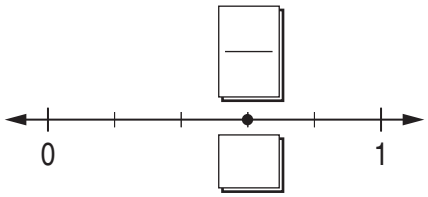
To read a decimal

- Count the spaces between two consecutive whole numbers. (Always one more than the number of marks.)
- Work out the value of each space. Examples:
  1) 10 spaces between two numbers ⇒ $1 \div 10 = 0.1$
     Each mark is further along the number line by one tenth or 0.1

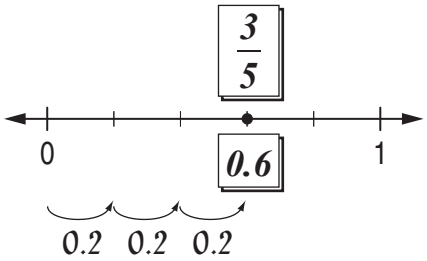


  2) 5 spaces between two numbers ⇒ $1 \div 5 = 0.2$
     Each mark is further along the number line by one tenth or 0.2
  3) 4 spaces between two numbers ⇒ $1 \div 4 = 0.25$
     Each mark is further along the number line by one tenth or 0.25
- Starting at the last whole number, count on by the value of each space. Point to each mark as you go.

Q. Name the fraction and the decimal at the marked point.

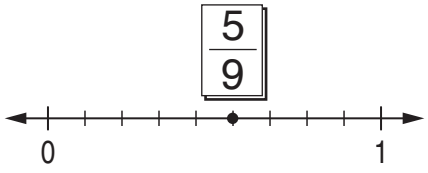


A.

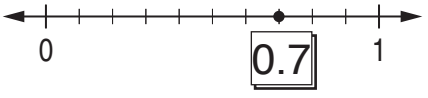


There are 5 spaces between 0 and 1.
There are 3 spaces to the dot.
Each space equals 0.2

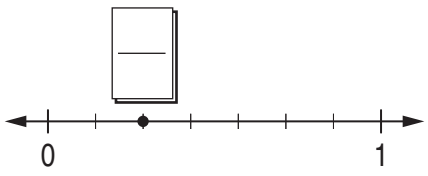
a) Name the fraction at the marked point.



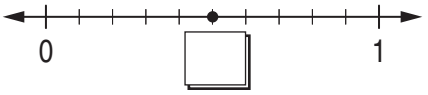
b) Name the decimal at the marked point.



c) Name the fraction at the marked point.

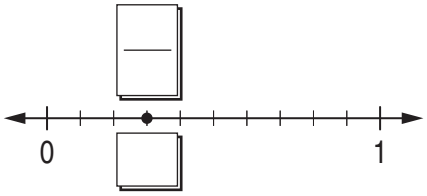


d) Name the decimal at the marked point.

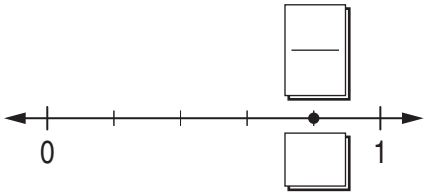


Skill 12.3 Reading fractions and decimals on a number line (2).

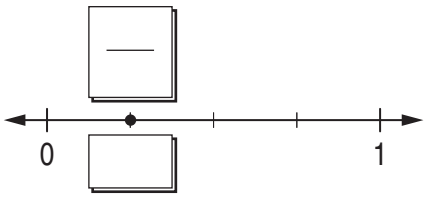
e) Name the fraction and the decimal at the marked point.



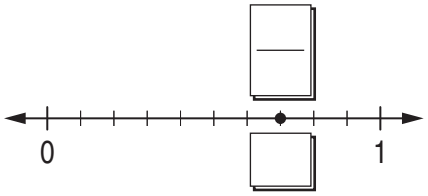
f) Name the fraction and the decimal at the marked point.



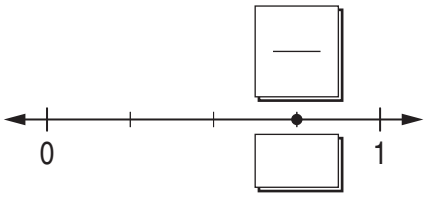
g) Name the fraction and the decimal at the marked point.



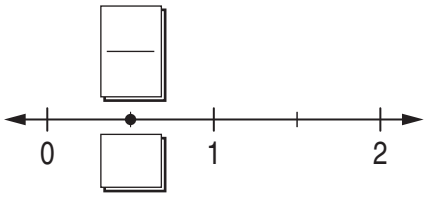
h) Name the fraction and the decimal at the marked point.



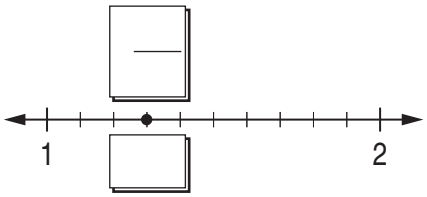
i) Name the fraction and the decimal at the marked point.



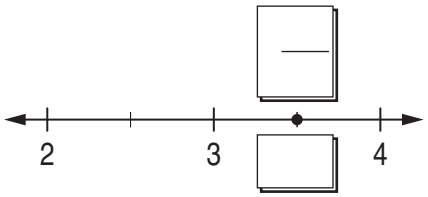
j) Name the fraction and the decimal at the marked point.



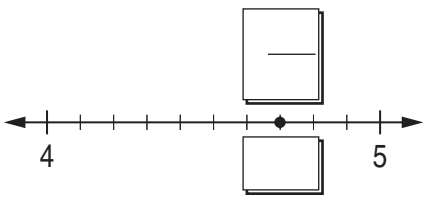
k) Name the mixed number and the decimal at the marked point.



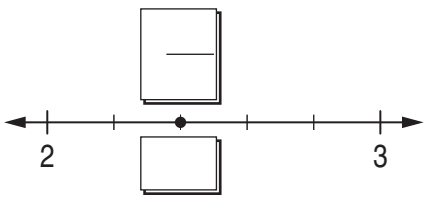
l) Name the mixed number and the decimal at the marked point.



m) Name the mixed number and the decimal at the marked point.



n) Name the mixed number and the decimal at the marked point.



Skill 12.4 Reading decimal numbers on a scale (1).

To read a scale with marks between the whole numbers

- Count the spaces between two consecutive whole numbers on the scale.
- Work out the value of each space.
  Examples:
  1) 10 spaces $\Rightarrow 1 \div 10 = \frac{1}{10} = 0.1$

     Each mark is further along the scale by one tenth or 0.1 $\frac{1}{5}$
  2) 5 spaces $\Rightarrow 1 \div 5 = \frac{1}{5} = 0.2$

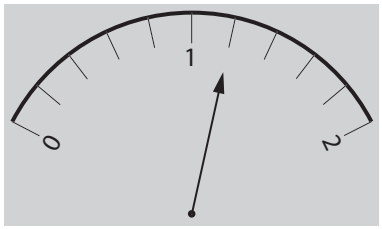
     Each mark is further along the scale by one tenth or 0.2 $\frac{1}{4}$
  3) 4 spaces $\Rightarrow 1 \div 4 = \frac{1}{4} = 0.25$

     Each mark is further along the scale by one tenth or 0.25
- Starting at the last whole number, count on by the value of each space.

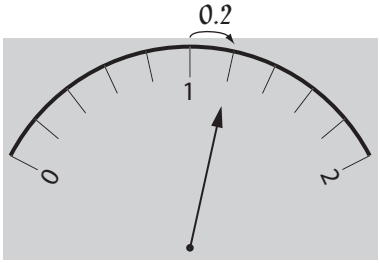
To read a scale with marks halfway between decimal numbers

Examples:
1) mark halfway between 0.1 and 0.2 $\Rightarrow 0.15$
2) mark halfway between 0.01 and 0.02 $\Rightarrow 0.015$

Q. What decimal number is shown on this meter?

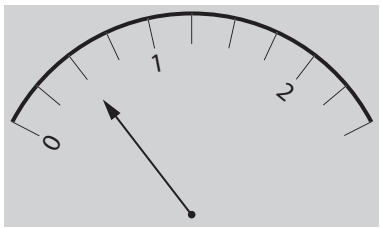


A. *1.2*



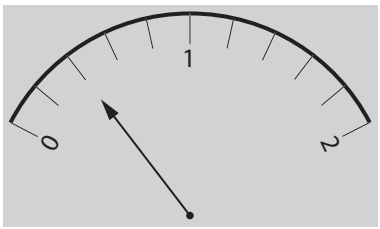
There are 5 spaces between 1 and 2.
Each space equals 0.2

a) What decimal number is shown on this meter?

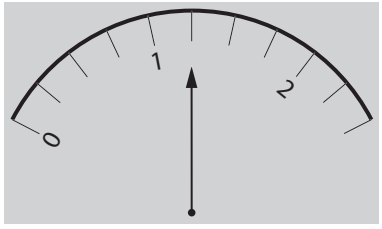


0.5

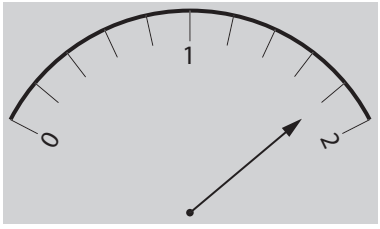
b) What decimal number is shown on this meter?



c) What decimal number is shown on this meter?

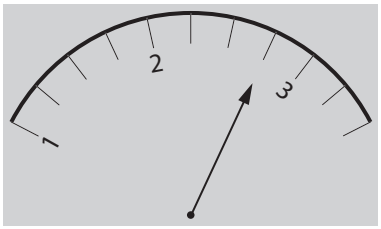


d) What decimal number is shown on this meter?

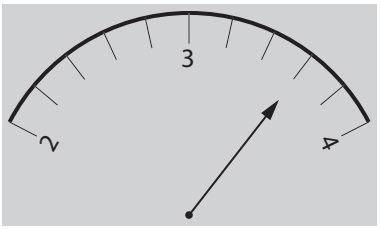


Skill 12.4 Reading decimal numbers on a scale (2).

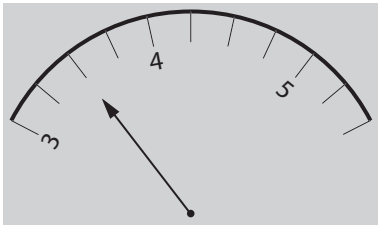
e) What decimal number is shown on this meter?



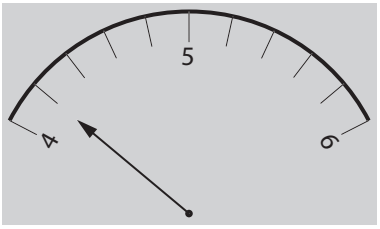
f) What decimal number is shown on this meter?



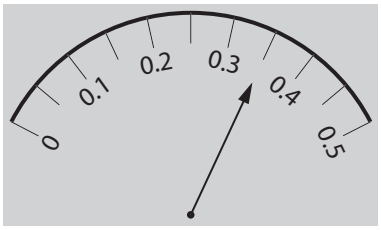
g) What decimal number is shown on this meter?



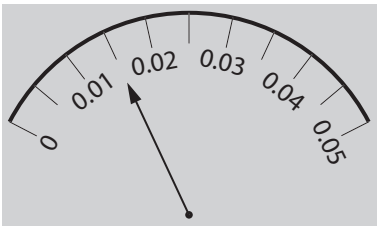
h) What decimal number is shown on this meter?



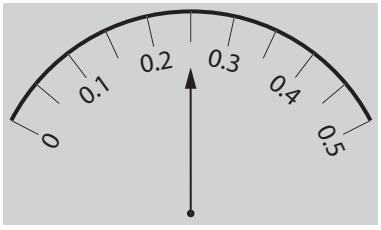
i) What decimal number is shown on this meter?



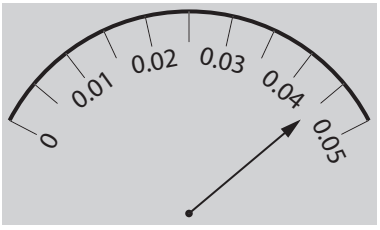
j) What decimal number is shown on this meter?



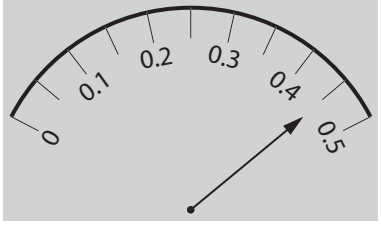
k) What decimal number is shown on this meter?



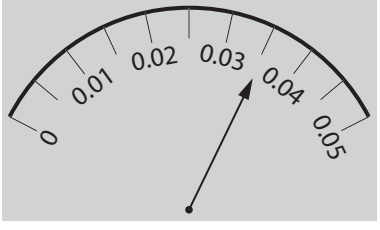
l) What decimal number is shown on this meter?



m) What decimal number is shown on this meter?



n) What decimal number is shown on this meter?



Skill 12.5 Finding equivalent fractions.

- Check if you need to multiply or divide the numerator or denominator of the first fraction to reach the numerator or denominator of the second fraction.
- Do the same operation to the top or the bottom of the fraction.

Example: $\frac{4}{5} = \frac{?}{15} \Rightarrow \frac{4}{5}\overset{\times 3}{} = \frac{12}{15}$ (×3 on the denominators)

So $\frac{4}{5}$ and $\frac{12}{15}$ are equivalent fractions.

Q. Complete the equivalent fractions:

$$\frac{3}{5} = \frac{18}{\square} = \frac{\square}{90}$$

A. $\frac{3}{5} = \frac{18}{?} \Rightarrow \frac{3}{5}\overset{\times 6}{} = \frac{18}{30}$ and $\frac{3}{5} = \frac{?}{90} \Rightarrow \frac{3}{5}\overset{\times 18}{} = \frac{54}{90}$

$$\Rightarrow \frac{3}{5} = \frac{18}{30} = \frac{54}{90}$$

a) Complete the equivalent fractions:

$$\frac{35}{42} = \frac{5}{6}$$

$\frac{?}{42} = \frac{5}{6} \Rightarrow ? \div 7 = 5 \Rightarrow ? = 35$ (÷7)

b) Complete the equivalent fractions:

$$\frac{3}{4} = \frac{27}{\square}$$

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

c) Complete the equivalent fractions:

$$\frac{2}{5} = \frac{\square}{35}$$

$\Rightarrow$ .....

d) Complete the equivalent fractions:

$$\frac{4}{\square} = \frac{28}{49}$$

$\Rightarrow$ .....

e) Complete the equivalent fractions:

$$\frac{9}{10} = \frac{\square}{60}$$

$\Rightarrow$ .....

f) Complete the equivalent fractions:

$$\frac{48}{60} = \frac{12}{\square}$$

$\Rightarrow$ .....

g) Complete the equivalent fractions:

$$\frac{2}{3} = \frac{\square}{15} = \frac{40}{\square}$$

$\Rightarrow$ .....

and $\Rightarrow$ .....

h) Complete the equivalent fractions:

$$\frac{3}{8} = \frac{12}{\square} = \frac{\square}{96}$$

$\Rightarrow$ .....

and $\Rightarrow$ .....

i) Complete the equivalent fractions:

$$\frac{3}{\square} = \frac{6}{8} = \frac{\square}{64}$$

$\Rightarrow$ .....

and $\Rightarrow$ .....

Skill 12.6 Writing a decimal number as a percentage.

- Multiply the decimal number by 100, by moving the decimal point two places to the right.
- Add the percentage sign.

Hint: Zeros can be added at the end of any decimal number: $0.4 = 0.4000$

Q. Write 0.07 as a percentage.

A. $0.07 = 0.\overset{\frown}{07} \times 100\%$ (2 zeros, 2 places to the right)
$= 7\%$

a) Write 0.4 as a percentage.

$0.4 = 0.\overset{\frown}{40} \times 100\%$ (Add a zero) $=$ 40%

b) Write 0.2 as a percentage.

..... $=$ ☐

c) Write 0.1 as a percentage.

..... $=$ ☐

d) Write 0.9 as a percentage.

..... $=$ ☐

e) Write 0.7 as a percentage.

..... $=$ ☐

f) Write 0.12 as a percentage.

..... $=$ ☐

g) Write 0.55 as a percentage.

..... $=$ ☐

h) Write 0.48 as a percentage.

..... $=$ ☐

i) Write 0.29 as a percentage.

..... $=$ ☐

j) Write 0.35 as a percentage.

..... $=$ ☐

k) Write 0.04 as a percentage.

..... $=$ ☐

l) Write 0.05 as a percentage.

..... $=$ ☐

m) Write 0.02 as a percentage.

..... $=$ ☐

n) Write 0.38 as a percentage.

..... $=$ ☐

o) Write 0.4 as a percentage.

..... $=$ ☐

p) Write 0.25 as a percentage.

..... $=$ ☐

q) Write 0.125 as a percentage.

..... $=$ ☐

r) Write 0.345 as a percentage.

..... $=$ ☐

Skill 12.7 Writing a percentage as a decimal number.

- Write the percentage as a fraction out of 100.
- Divide the numerator of the fraction by 100, by moving the decimal point two places to the left.

Hints: Fractions are divisions.
There is a decimal point and zeros which are not written, at the end of any whole number: 27 = 27.00
Zeros can be used as place holders before any whole number: 27 = 0027.00

Q. Change 8.6% to a decimal.

A. $8.6\% = \frac{8.6}{100}$
$= 8.6 \div 100$
$= 0\overset{\frown}{0}8.6 \div 100$ — 2 zeros, 2 places to the left
$= \mathbf{0.086}$

a) Change 5% to a decimal.

$5\% = \frac{5}{100} = 0\overset{\frown}{0}5.0 \div 100$ = 0.05

b) Change 2% to a decimal.

$2\% =$ =

c) Change 88% to a decimal.

=

d) Change 42% to a decimal.

=

e) Change 60% to a decimal.

=

f) Change 40% to a decimal.

=

g) Change 0.5% to a decimal.

=

h) Change 1.8% to a decimal.

=

i) In Mali 72% of people earn less than $1 each day. Write this percentage as a decimal.

=

j) In Oct 2010 the unemployment figure for Australia was 5.1%. Write this percentage as a decimal.

=

k) The percentage of Americans between 12 and 17 who play video games is 97%. Write this percentage as a decimal.

=

l) The Sun accounts for 99% of the mass of the solar system. Write this percentage as a decimal.

=

m) China has approximately 20% of the world's population. Write this percentage as a decimal.

=

n) On average Australians spend 3.8% of their day on facebook. Write this percentage as a decimal.

=

Skill 12.8 Writing a decimal number as a fraction in simplest form.

Decimal places = Zeros in the denominator $\quad 0.\underline{0}\underline{4} = \frac{4}{1\underline{0}\underline{0}}$

- Write the decimal number as the numerator of the fraction.
- Ignore any zeros at the start the number.
- Use the place value of the last digit of the decimal number to determine the size of the denominator.
  Example:

units	tenths	hundredths
0 .	0	4

= 4 hundredths = $\frac{4}{100}$ (Write the 4 as the numerator; 4 in hundredths place, denominator = 100)

- Write the fraction in simplest form. This means to divide both the numerator and the denominator by the same number.

Q. Write 0.6 as a fraction in simplest form.

A. $0.\underline{6} = \frac{6}{1\underline{0}}$ (Write 6 as the numerator; 1 zero for 1 decimal place)

$= \frac{6}{10} \overset{\div 2}{\underset{\div 2}{}}$ (Simplify: ÷ 2)

$= \frac{3}{5}$

a) Write 0.9 as a fraction.

0.9 = nine tenths = $\frac{9}{10}$

b) Write 0.11 as a fraction.

0.11 = eleven hundredths = ☐

c) Write 0.3 as a fraction.

= ☐

d) Write 0.1 as a fraction.

= ☐

e) Write 0.06 as a fraction in simplest form.

= ☐

f) Write 0.02 as a fraction in simplest form.

= ☐

g) Write 0.5 as a fraction in simplest form.

= ☐

h) Write 0.28 as a fraction in simplest form.

= ☐

i) Write 0.15 as a fraction in simplest form.

= ☐

j) Write 0.8 as a fraction in simplest form.

= ☐

Skill 12.9 Writing a fraction as a terminating decimal.

Zeros in the denominator = Decimal places $\quad \frac{4}{100} = 0.04$

When the denominator **is a power of 10**:

- Divide the numerator by the power of 10 by moving the decimal point to the left.

Example: $\frac{15}{100} = 15 \div 100$
$= 015.0 \div 100$ (2 zeros, 2 places to the left)
$= 0.15$

Hints: Fractions are just divisions.
There is a decimal point and zeros which are not written, at the end of any whole number:
27 = 27.00
Zeros can be used as place holders before any whole number: 27 = 0027.00

When the denominator **is not a power of 10**:
EITHER

- Multiply both the numerator and denominator by the same number to make the denominator a power of 10. (e.g. 10, 100 or 1000).

Example: $\frac{3}{4} = \frac{3}{4}^{\times 25}_{\times 25} = \frac{75}{100} = 0.75$ (power of 10)

OR

- Divide the numerator by the denominator.

Example: $\frac{3}{4} = 3 \div 4 = 3.00 \div 4 = 0.75$

$$4\overline{)3.00} = 0.75$$

Q. Change $\frac{3}{5}$ to a decimal.

A. $\frac{3}{5} = \frac{3}{5}^{\times 20}_{\times 20}$ (Make denominator a power of 10)
$= \frac{60}{100}$
$= 60 \div 100$
$= 060.0 \div 100$ (2 zeros, 2 places to the left)
$= 0.60 = \mathbf{0.6}$

OR

A. $\frac{3}{5} = 3 \div 5$
$= 3.0 \div 5$
$= \mathbf{0.6}$

$$5\overline{)3.0} = 0.6$$

a) Change $\frac{3}{10}$ to a decimal.

$\frac{3}{10}^{\times 10}_{\times 10} = \frac{30}{100}$

$= 030.0 \div 100 =$ 0.3

b) Change $\frac{7}{20}$ to a decimal.

$=$ ..... $=$ ☐

c) Change $\frac{9}{25}$ to a decimal.

$=$ ..... $=$ ☐

d) Change $\frac{1}{2}$ to a decimal.

$=$ ..... $=$ ☐

e) Change $1\frac{2}{5}$ to a decimal.

$=$ ..... $=$ ☐

f) Change $2\frac{3}{4}$ to a decimal.

$=$ ..... $=$ ☐

g) In 2008 a quarter of the Australian wheat exports went to Indonesia. Write this fraction as a decimal.

$=$ ..... $=$ ☐

h) Approximately 9 out 10 Nigerians attend church regularly. Write this fraction as a decimal.

$=$ ..... $=$ ☐

i) People have the smelling ability of one-twentieth of that of a dog. Write this fraction as a decimal.

$=$ ..... $=$ ☐

Skill 12.10 Writing a percentage as a fraction in simplest form.

- Write the percentage as a fraction with the denominator of 100.
- Simplify the fraction by dividing both the numerator and the denominator by the same number.

Hints: Percent means "per hundred" or "out of a hundred".
A percentage is another way of writing a fraction out of one hundred.
Example: 25% is said "25 percent" and means 25 out of 100.

Q. USA accounts for 24% of the European Union exports. Write this percentage as a fraction in simplest form.

A. $24\% = \frac{24}{100} \overset{\div 4}{\underset{\div 4}{}}$ (Simplify: ÷ 4)
$= \frac{6}{25}$

a) Write 47% as a fraction.

$47\% = \frac{47}{100}$

b) Write 9% as a fraction.

$= \square$

c) Write 15% as a fraction in simplest form.

$15\% = \frac{15}{100} \overset{\div 5}{\underset{\div 5}{}}$ (Simplify: ÷ 5) $= \frac{3}{20}$

d) Write 30% as a fraction in simplest form.

$= \square$

e) Write 4% as a fraction in simplest form.

$= \square$

f) Write 6% as a fraction in simplest form.

$= \square$

g) The common metal for medals is 84% copper. Write this percentage as a fraction in simplest form.

$= \square$

h) About 67 percent of all New Zealand males aged between 18 and 45 served in WWII. Write this percentage as a fraction in simplest form.

$= \square$

i) India is home to 40% of the world's poor. Write this percentage as a fraction in simplest form.

$= \square$

j) In Belgium, 55% of government ministers are female. Write this percentage as a fraction in simplest form.

$= \square$

k) The average person's left hand does 56% of the typing. Write this percentage as a fraction in simplest form.

$= \square$

l) The pupil of the eye expands up to 45% when a person looks at something pleasing. Write this percentage as a fraction in simplest form.

$= \square$

Skill 12.11 Writing a fraction as a percentage.

$$\frac{\text{Number}}{100} = \text{Number \%}$$

$$\text{Fraction} \times \frac{100}{1}\% = \text{Percentage}$$

EITHER

- Find the equivalent fraction which has a denominator of 100.
- The numerator of this fraction is the equivalent percentage.

Example: $\frac{7}{10}{}^{\times 10}_{\times 10} = \frac{70}{100} = 70\%$

OR

- Multiply the fraction by $\frac{100}{1}\%$

Example: $\frac{7}{10} = \frac{7}{1\cancel{0}} \times \frac{10\cancel{0}}{1}\%$ (Simplify: ÷ 10)

$= 70\%$

Q. Change $\frac{11}{20}$ to a percentage.

A. $\frac{11}{20} = \frac{11^{\times 5}}{20_{\times 5}}$

$= \frac{55}{100}$

$= \mathbf{55\%}$

OR

A. $\frac{11}{20} = \frac{11}{1\cancel{20}} \times \frac{\cancel{100}^{5}}{1}\%$ (Simplify: ÷ 20)

$= 11 \times 5\%$

$= \mathbf{55\%}$

a) Change $\frac{1}{10}$ to a percentage.

$= \frac{1}{10}{}^{\times 10}_{\times 10} = \frac{10}{100} =$ 10%

b) Change $\frac{9}{50}$ to a percentage.

$=$ ..... $=$ ☐

c) Change $\frac{7}{25}$ to a percentage.

$=$ ..... $=$ ☐

d) Change $\frac{86}{100}$ to a percentage.

$=$ ..... $=$ ☐

e) Change $\frac{1}{2}$ to a percentage.

$=$ ..... $=$ ☐

f) Change $\frac{2}{5}$ to a percentage.

$=$ ..... $=$ ☐

g) Change $\frac{3}{5}$ to a percentage.

$=$ ..... $=$ ☐

h) Change $\frac{3}{4}$ to a percentage.

$=$ ..... $=$ ☐

i) Change $\frac{1}{3}$ to a percentage.

$=$ ..... $=$ ☐

j) Change $\frac{13}{20}$ to a percentage.

$=$ ..... $=$ ☐

k) Change $\frac{1}{100}$ to a percentage.

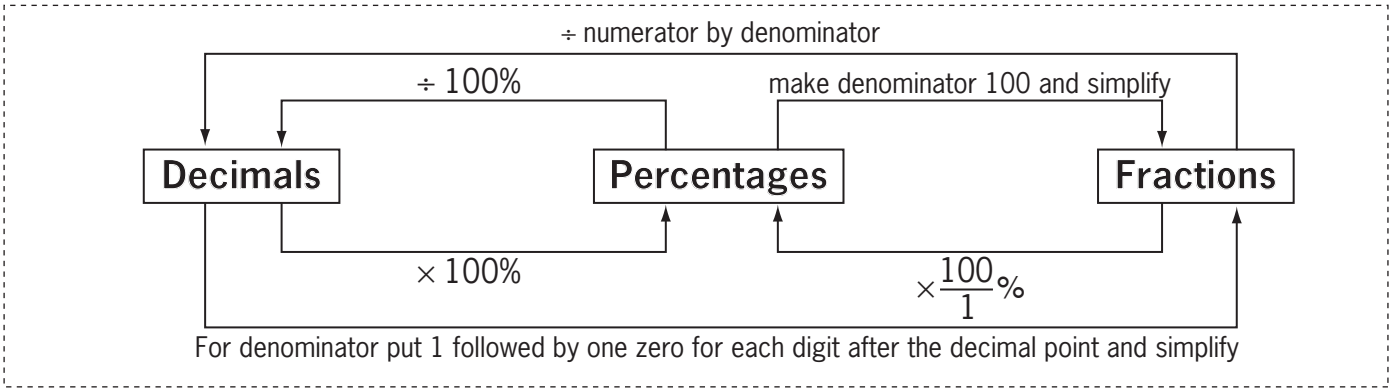
$=$ ..... $=$ ☐

l) Change $\frac{2}{3}$ to a percentage.

$=$ ..... $=$ ☐

Skill 12.12 Converting between decimals, fractions and percentages (1).

- Convert between decimals, fractions and percentages.
(see skills 12.4 to 12.9, pages 84 to 90)



Q. Complete the table:

Decimal	Fraction	Percentage
	$\frac{13}{50}$	

A.

$\frac{13}{50} = \frac{13 \times 2}{50 \times 2} = \frac{26}{100}$ (Make denominator a power of 10)

$= 26 \div 100$

$= \mathbf{0.26}$

Decimal

$\frac{13}{50} = \frac{13}{50} \times \frac{100^{2}}{1}\%$ (Simplify: ÷ 50)

$= 13 \times 2\%$

$= \mathbf{26\%}$

Percentage

Decimal	Fraction	Percentage
0.26	$\frac{13}{50}$	26%

a) Complete the table:

Decimal	Fraction	Percentage
0.05	$\frac{1}{20}$	5%

$0.05 = \frac{5}{100} \overset{\div 5}{} = \frac{1}{20}$ (Simplify: ÷ 5)

$0.05 = 0.05 \times 100\% = 5\%$

b) Complete the table:

Decimal	Fraction	Percentage
		45%

c) Complete the table:

Decimal	Fraction	Percentage
0.6		

d) Complete the table:

Decimal	Fraction	Percentage
	$\frac{7}{20}$	

Skill 12.12 Converting between decimals, fractions and percentages (2).

e) Complete the table:

Decimal	Fraction	Percentage
0.07		

.....

.....

f) Complete the table:

Decimal	Fraction	Percentage
		70%

.....

.....

g) Complete the table:

Decimal	Fraction	Percentage
0.1		

.....

.....

h) Complete the table:

Decimal	Fraction	Percentage
	$\frac{3}{10}$	

.....

.....

i) Complete the table:

Decimal	Fraction	Percentage
0.4		

.....

.....

j) Complete the table:

Decimal	Fraction	Percentage
		55%

.....

.....

k) Complete the table:

Decimal	Fraction	Percentage
		90%

.....

.....

l) Complete the table:

Decimal	Fraction	Percentage
	$\frac{17}{50}$	

.....

.....

Skill 12.13 Comparing decimals, fractions and percentages (1).

- Convert the decimals, fractions and percentages to the same form, by writing all as decimals, or as fractions, or as percentages. (see skill 12.12, page 93)
- Compare the decimals, or the fractions, or the percentages.

Hint: The most convenient form is the decimal form. Write the fractions and percentages as decimals.

Q. Which is greater?

$\frac{1}{4}$ or 30%

A.

Fraction

$\frac{1}{4} = \frac{1 \times 25}{4 \times 25}$ — Write the fraction as a decimal

$= \frac{25}{100}$ — Make denominator a power of 10

$= 25 \div 100$

$= \mathbf{0.25}$

Percentage

$30\% = \frac{30}{100}$ — Write the percentage as a decimal

$= 30 \div 100$

$= \mathbf{0.3}$

0.3 is greater than 0.25, so 30% > $\frac{1}{4}$

***30%** is greater.*

a) Which is greater?
0.07 or 70%

$70\% = \frac{70}{100} = 70 \div 100 = 0.7$

$0.7 > 0.07$

70%

b) Which is greater?
20% or 0.25

c) Which is greater?
$\frac{9}{10}$ or 9%

d) Which is greater?
$\frac{4}{5}$ or 45%

e) Which is greater?
$\frac{1}{10}$ or 1%

f) Which is greater?
$\frac{2}{5}$ or 25%

g) Which is greater?
0.6 or $\frac{5}{6}$

h) Which is greater?
0.4 or $\frac{1}{4}$

Skill 12.13 Comparing decimals, fractions and percentages (2).

i) Which is greater?
0.75 or 7.5%

.....

.....

j) Which is greater?
0.5 or 5%

.....

.....

k) Which is greater?
$\frac{3}{100}$ or 30%

.....

.....

l) Which is greater?
$\frac{3}{5}$ or 35%

.....

.....

m) Which is greater?
$\frac{8}{10}$ or 8%

.....

.....

n) Which is greater?
$\frac{1}{3}$ or 30%

.....

.....

o) Which is greater?
0.7 or $\frac{7}{8}$

.....

.....

p) Which is greater?
0.9 or $\frac{4}{5}$

.....

.....

q) Which is greater?
$\frac{3}{4}$ or 65%

.....

.....

r) Which is greater?
$\frac{1}{5}$ or 15%

.....

.....

s) Which is greater?
0.23 or $\frac{3}{20}$

.....

.....

t) Which is greater?
0.03 or $\frac{3}{10}$

.....

.....