YR 7 UNIT 11 PERIMETER AND AREA

What do I need to be able to do?

- Calculate the perimeter of a shape
- Calculate the perimeter of a polygon
- Calculate the area of rectangles and parallelogram
- Calculate the area of triangles
- Calculate the area of: a trapezium,
- Convert between metric units of length

Keywords:

Perimeter: the distance around a shape

Area: the space contained within the perimeter

Rectangle: a quadrilateral with two pairs of equal sides and four right angles

Triangle: three sided shape

Parallelogram: a quadrilateral with two pairs of equal sides and angles

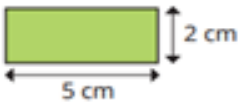
Trapezium: a quadrilateral with one pair of parallel

Find the perimeter of a shape:

Add up the dis- tances around a shape.

P = 5 + 2 + 5 + 2

P = 14cm

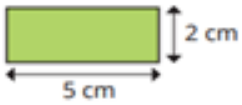


Find the area of a rectangle:

Area = length x width

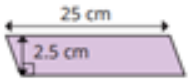
A = 5cm x 2cm

A 10cm²



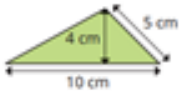
Find the area of a parallelogram:

Area = base x vertical height



A = 25cm x 2.5cm = 62.5cm

Find the area of a triangle:



Area = $\frac{\text{(base x vertical height)}}{2}$

b = 10 A = $\frac{10 \times 4}{2}$

h = 4

A = 20cm²

Find the area of a compound shape:

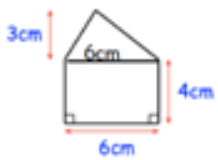
Break into rectangles and/or triangles.

Calculate the area of these shapes.

Add them together.

Area Triangle = $\frac{(6 \times 3)}{2}$ = 9cm² Area Rectangle = 6 x 3 = 18cm²

Total Area = 18 + 9 = 27cm²



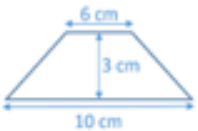
Find the area of a trapezium: a and b are the

Area = $\frac{(a + b) \times \text{vertical height}}{2}$

a = 6 A = $\frac{(6 + 10) \times 3}{2}$

b = 10

h = 3 A = $\frac{16 \times 3}{2}$ = 24cm²



APPLICATION OF NUMBER

Fractions and Percentages of amounts

What do I need to be able to do?

By the end of this unit you should be able to:

- Find a fraction of a given amount
- Use a given fraction to find the whole or other fractions
- Find the percentage of an amount using mental methods
- Find the percentage of a given amount using a calculator

Keywords

Fraction: how many parts of a whole we have
Equivalent: of equal value
Whole: a number with no fractional or decimal part
Percentage: parts per 100 (uses the / symbol)
Place Value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right
Convert: change into an equivalent representation, often fraction to decimal to a percentage cycle

Fraction of a given amount

Find $\frac{2}{5}$ of £205

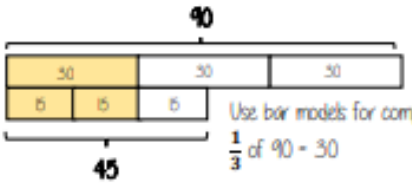
The bar represents the whole amount

2 out of the 5 equal parts

2 x £41 = **£82**

£205 ÷ 5 = £41

Each part of the bar model represents £41



Use bar models for comparisons

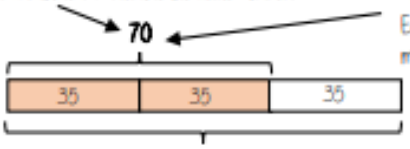
$\frac{1}{3}$ of 90 = 30

$\frac{2}{3}$ of 45 = 30

$\therefore \frac{1}{3}$ of 90 = $\frac{2}{3}$ of 45

Use a fraction of amount

$\frac{2}{3}$ of a value is 70. What is the whole number?



70 ÷ 2 = 35

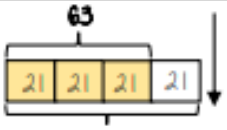
Each part of the bar model represents 35

35 x 3 = **105**

The whole number is 105

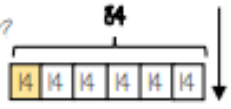
The wording of the question is important to setting up the bar model

$\frac{3}{4}$ of a number is 63



Find the whole

What is $\frac{1}{6}$ of the number?

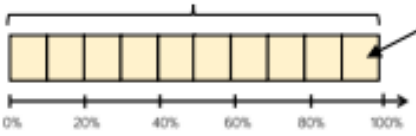


Use the whole to find a given part

= 14

Find the percentage of an amount (Mental methods)

The **whole** represents 100/



10/ = $\frac{1}{10}$ of the whole

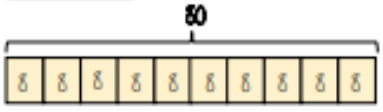
10/ = $\frac{1}{10}$ of the whole

50/ = $\frac{5}{10}$ = $\frac{1}{2}$ of the whole

20/ = $\frac{2}{10}$ = $\frac{1}{5}$ of the whole

5/ = $\frac{1}{20}$ of the whole

Find 65/ of 80



For bigger percentages it is sometimes easier to take away from 100/

Method 1
65/ = 10/ x 6 + 5/
= (8 x 6) + 4
= 52

Method 2
65/ = 50/ + 10/ + 5/
= 40 + 8 + 4
= 52

Find the percentage of an amount (Calculator methods)

Using a multiplier

Find 65/ of 80

Fraction, decimal, percentage conversion

65/ = $\frac{65}{100}$ = 0.65 ← The multiplier

0.65 x 80 = **52**

Using the percent button

Find 65/ of 80

This brings up the / button on screen
You will see 65/

Type **65**

Press SHIFT ((%)

Press × **80** and then press =

You can also use the calculator to support non calculator methods and find 1/ or 10/ then add percentages together

"of" can represent "x" in calculator methods