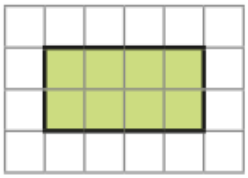
Year 5: Measurement

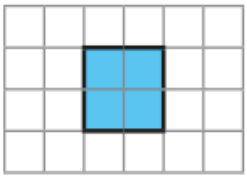
Area

- In Year 5, children are introduced to the square centimetre (cm2) by counting squares on a centimetre squared grid.
- They learn to multiply the length by the width to calculate the area of a rectangle.

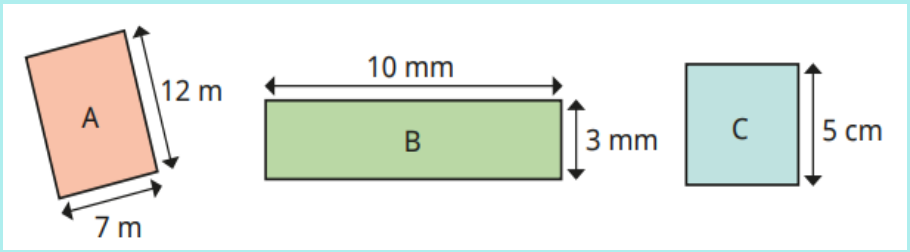
On the grid, the area of each square is 1 cm^2

Find the area of each shape.

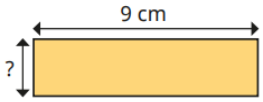




8 cm^2 4 cm^2



The area of the rectangle is 18 cm²

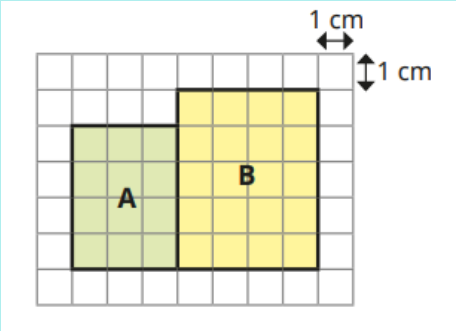


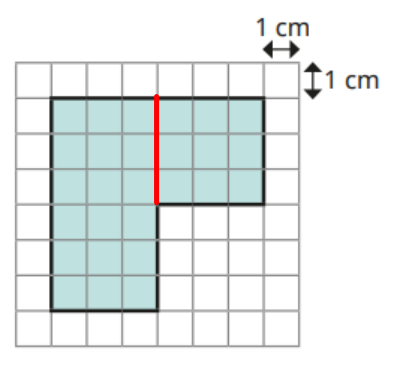
What is the width of the rectangle?

Multiply the length by the width.

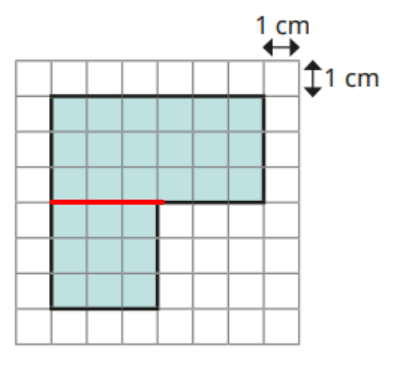
Compound Shapes

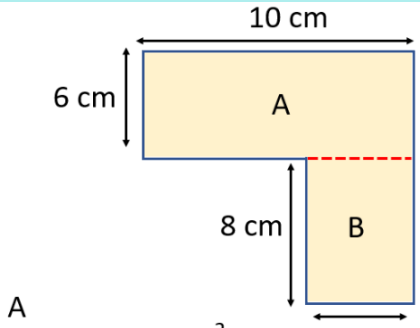
Shapes which are made up of two or more other shapes.





Compound shapes can be split different ways to work out the area.



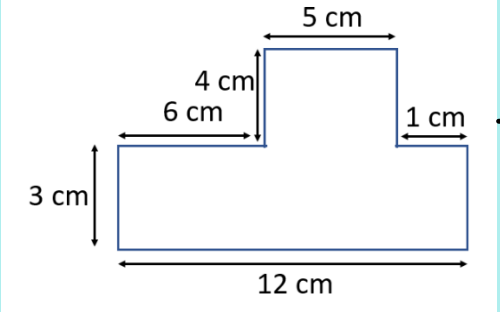


A
$6 \times 10 = 60\ cm^2$

B
$8 \times 7 = 56\ cm^2$

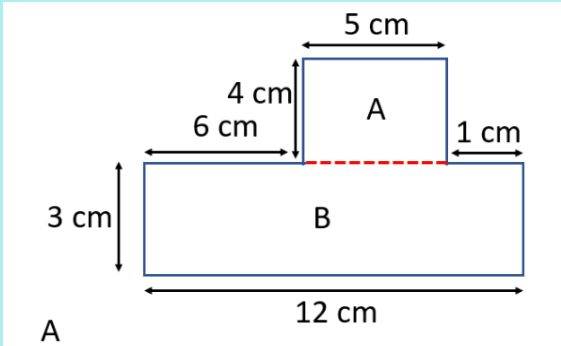
$60\ cm^2 + 56\ cm^2 = 116\ cm^2$

The area of the compound shape can be found by finding the area of both shapes and adding them together.



The compound shape is split into A and B.

Find the area of both shapes and add them together.



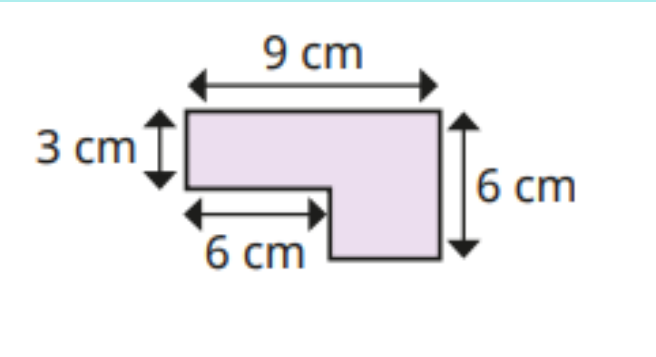
A

$4 \times 5 = \quad 20\ cm^2$

B

$3 \times 12 = 36\ cm^2$

$20\ cm^2 + 36\ cm^2 = 56\ cm^2$



This compound shape has not been split.

We do not have the measurement of one of the sides.

Work out the missing side first.

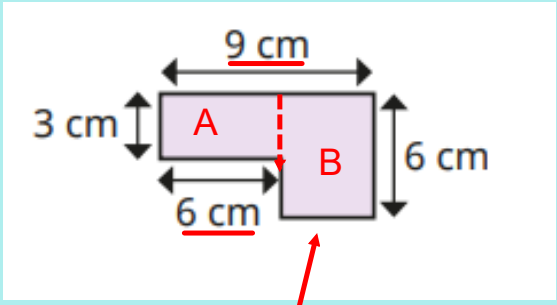
Spilt the shape into A and B.

Work out the area.

$A = 6 \times 3 = 18$

$B = 6 \times 3 = 18$

$18 + 18 = 36cm^2$



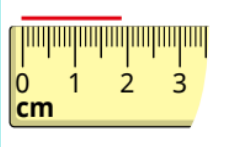
3cm

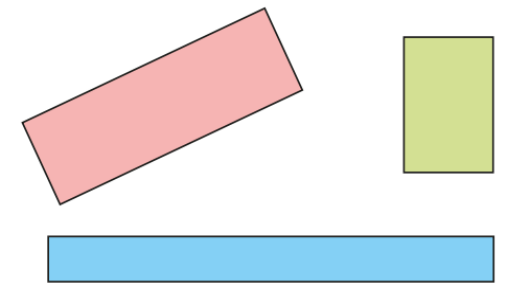
9cm - 6cm = 3cm

Perimeter

Year 5

- Find the perimeters of rectangles by measuring the sides and by calculation.
- Explore different methods of finding the perimeter eg add all four sides, add length and width and then double the answer.
- Use an efficient method to find the perimeter.

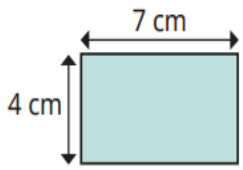




Use a ruler accurately to measure the sides.

Different methods to calculate the perimeter.

Rosie and Eva are finding the perimeter of this rectangle.

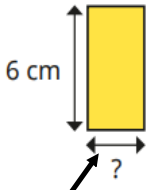


Rosie 7 cm + 4 cm + 7 cm + 4 cm = 22 cm

Eva 7 cm + 4 cm = 11 cm 11 cm × 2 = 22 cm

The perimeter of this rectangle is 18 cm.

What is the width of the rectangle?



This side is also 6cm.

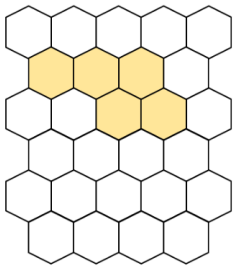
6 + 6 = 12

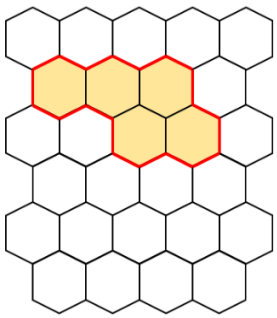
18 - 12 = 6

6 ÷ 2 = 3cm

We build on our knowledge of regular polygons from Year 4.

Each regular hexagon has a side length of 2 cm.
What is the perimeter of the shaded shape?





The shape has 18 sides.

Each side is 2 cm long.

$18 \times 2 = 36$ cm

$P = 36$ cm

Year 5 - applying our knowledge to word problems

16 x 3 = 48

Tom wants to find the perimeter of a swimming pool.

The length of the pool is three times the width.

The width is 16 m.

What is the length of the swimming pool?

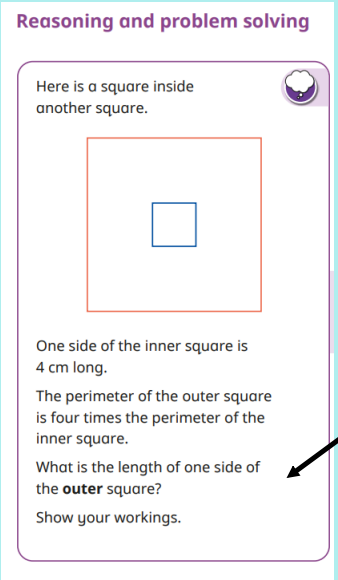
48m

What is the perimeter of the swimming pool?

Perimeter = 48 + 16 + 48 + 16

48 x 2 = 96 16 x 2 = 32 96 + 32 = 128m

Year 5 RPS - Perimeter



perimeter of inner square = 16

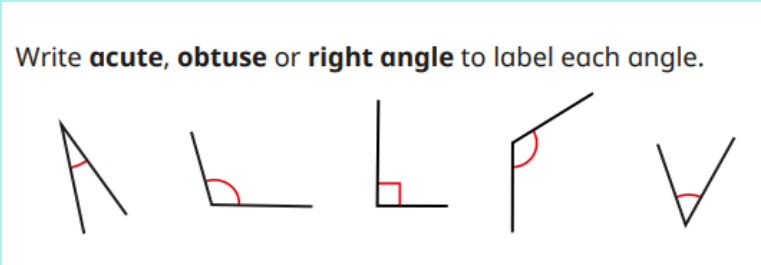
perimeter of outer square = 16 x 4 = 64

64 ÷ 4 = 16

Year 5: Geometry

- Introduce degrees as a unit of measure for turn and the degree symbol is introduced.
- 360° in a full turn, 180° in half a turn, 90° in a quarter turn (or right angle) and 270° in a three-quarter turn.
- Children will use a protractor to measure angles up to 180°
- Angles around a point and on a straight line.

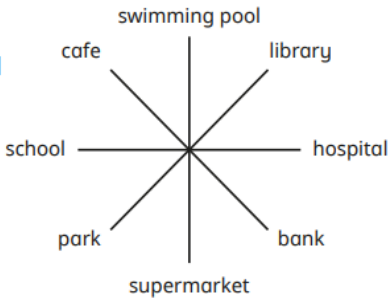
Example of a question the children could be asked:



Year 5 - using our knowledge of turns and angles.

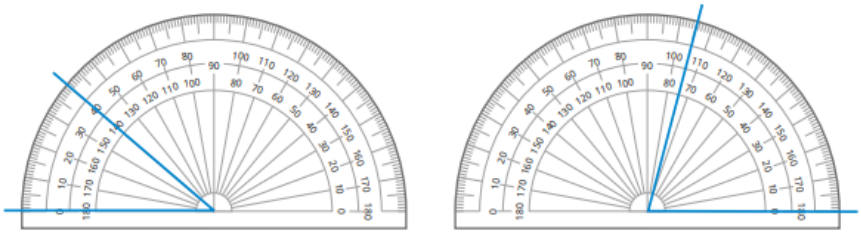
Aisha, Scott, Huan and Dani are standing in the centre.

- Work out what each child is facing after their turn.
  - Aisha is facing the hospital and turns 90° clockwise.
  - Scott is facing the supermarket and turns 270° anticlockwise.
  - Huan is facing the cafe and turns 180°.
  - Dani is facing the library and turns 360°.



Reading the size of angles

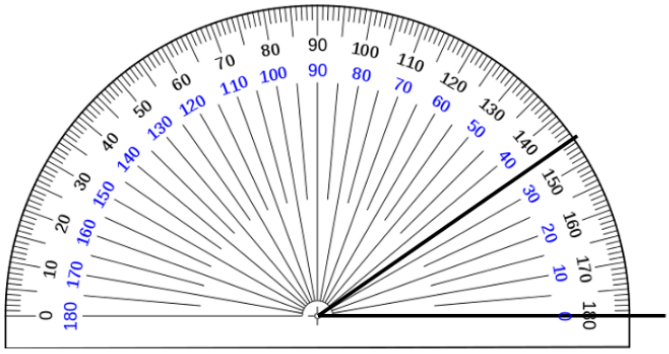
- Is each angle acute or obtuse?



What is the size of each angle?

What is the same and what is different about the angles?

Measuring angles



35°

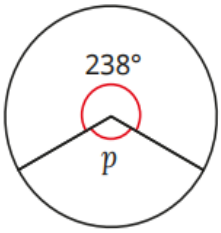
The **origin** is on the vertex of the angle.

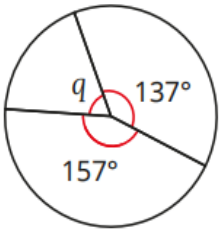
The **baseline** is on one of the lines that make the angle.

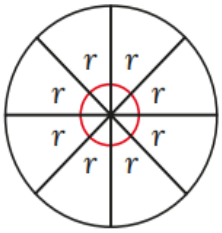
angles around a point add up to 360°

a full turn is 360°

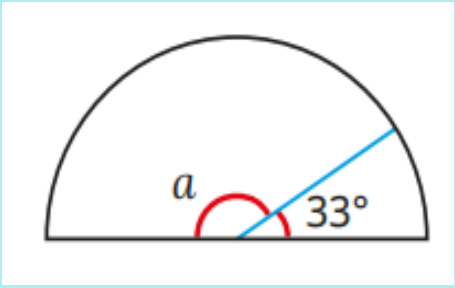
- Work out the missing angles.



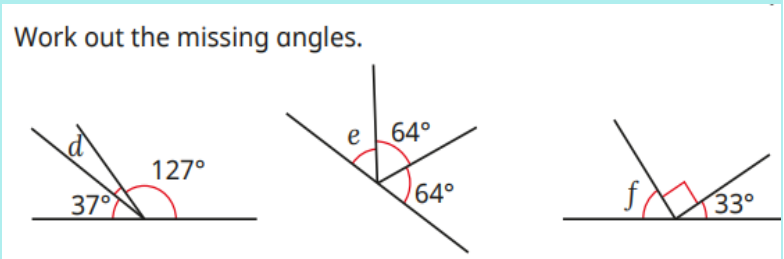




Angles on a straight line (half turn) equal 180°



180 - 33 = 147



Use addition and subtraction knowledge to work out the missing angles.

RPS

Year 4

Alex and Jack are both facing the same direction.

Alex

Jack

Alex turns two acute angles clockwise.

Jack turns three acute angles clockwise.

Do you agree with Tiny?

Explain your answer.

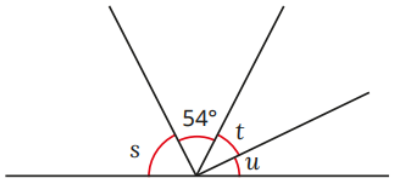
No

Both children could have turned small acute angles, still totalling an acute angle.

RPS - Year 5

Geometry - Angles

The angles are on a straight line.



- Angle s is 9° greater than the size of the given angle.
- Angle t is 11° greater than angle u.

Work out the sizes of the angles.

$s = 63°$

$t = 37°$

$u = 26°$

Position and direction Year 5

- Recap on reading and plotting coordinates.
- Solve problems with coordinates
- Translate (from year 4) and reflect

Plot the points on the coordinate grid.

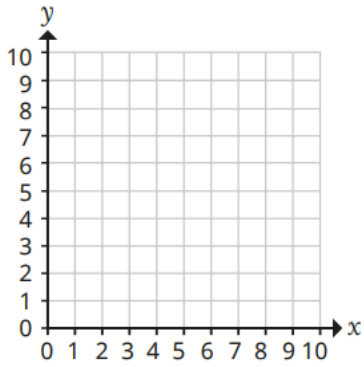
(3, 6)

(7, 3)

(7, 6)

(5, 0)

(3, 3)



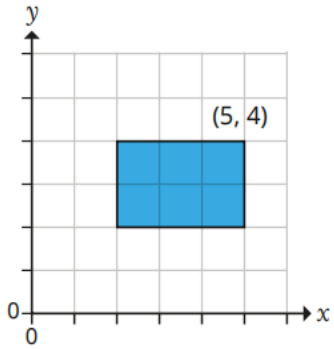
Join the points to make a polygon.

What polygon have you drawn?

Read and plot the x-value of the coordinates first.

Using knowledge of coordinates in Year 5

A rectangle has been drawn on a coordinate grid.

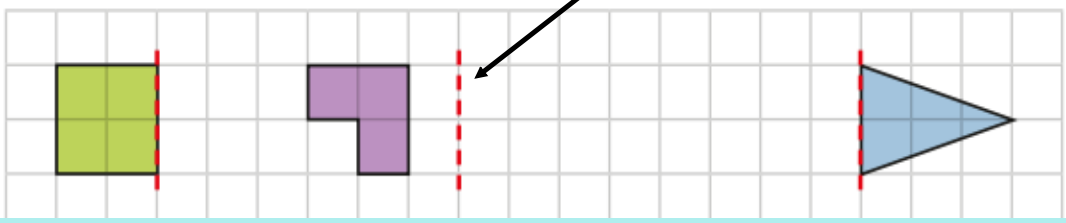


How can you use the given coordinates to work out the coordinates of the other three vertices?

Reflection

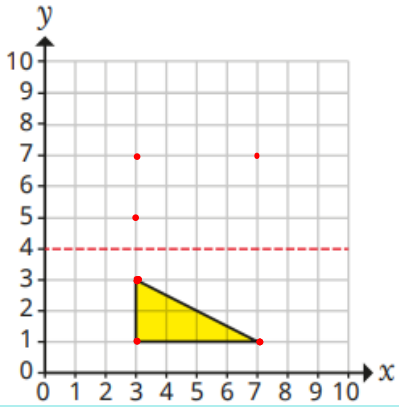
mirror line

Reflect each shape in its mirror line.



Reflect the triangle in the mirror line.

Write the coordinates of the vertices of the reflected triangle



Look at each vertex.

How far away from the mirror line are they?

Plot the new coordinates.

Draw the shape.

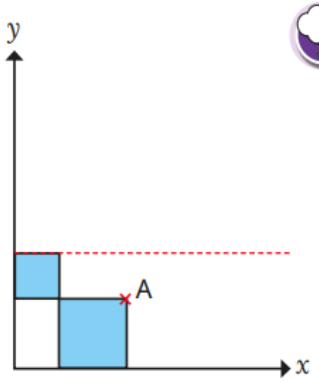
RPS - Year 5 Position and Direction

The area of the small square is 4 squares.

The area of the large square is 9 squares.

Both squares are reflected in the mirror line.

What are the new coordinates of vertex A?



(5, 7)

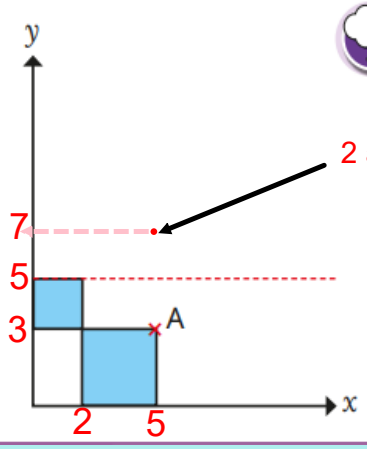
RPS - Year 5 Position and Direction

The area of the small square is 4 squares. 2 x 2

The area of the large square is 9 squares. 3 x 3

Both squares are reflected in the mirror line.

What are the new coordinates of vertex A?



2 away from the mirror line

Answer

(5, 7)