

8300

GCSE MATHEMATICS

Foundation and Higher tier – Questions by Topic

Geometry

Area and perimeter – Mixed problems: Finding the area and perimeter of simple shapes

v1.0

Name _____

Materials

For this paper you must have:

- Mathematical instruments

Information

- The marks for questions are shown in brackets

Advice

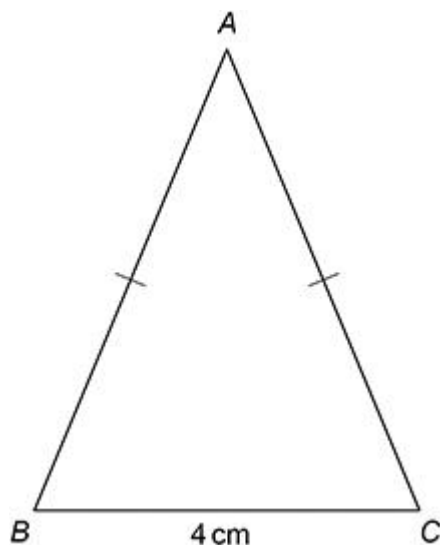
- In all calculations, show clearly how you work out your answer

For questions 1 to 5, you must **NOT** use a calculator.



Q1.

In this isosceles triangle,
 $AB = AC$



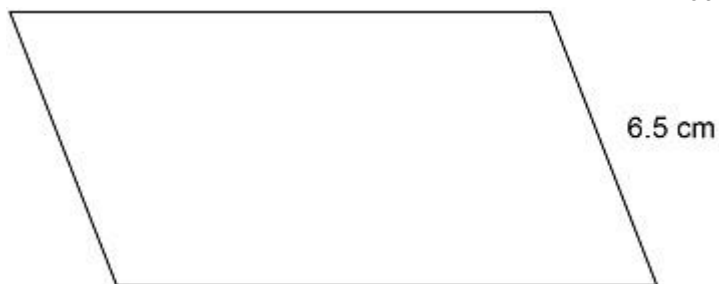
Not drawn
accurately

The perimeter of the triangle is 22 cm
Work out the length of AB.

(Total 3 marks)

Q2.

The shorter side of a parallelogram has length 6.5 cm



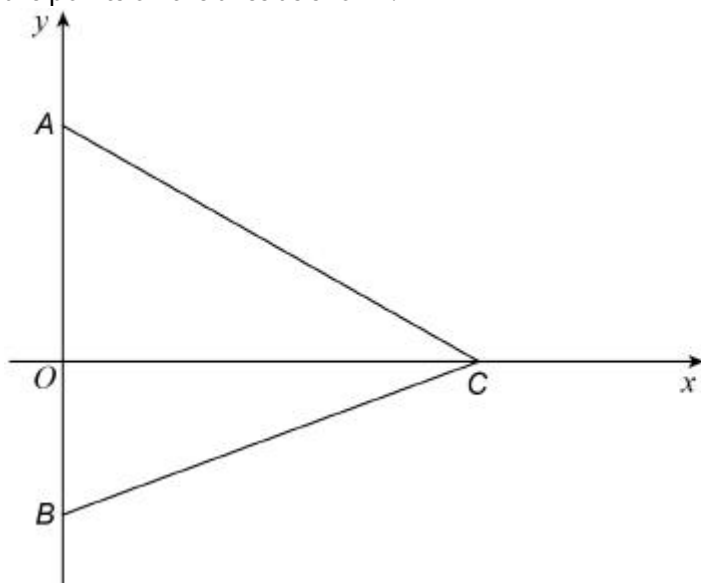
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The length of the shorter side is $\frac{1}{9}$ of the perimeter.
Work out the length of the longer side.

(Total 3 marks)

Q3.

A , B and C are points on the axes as shown.

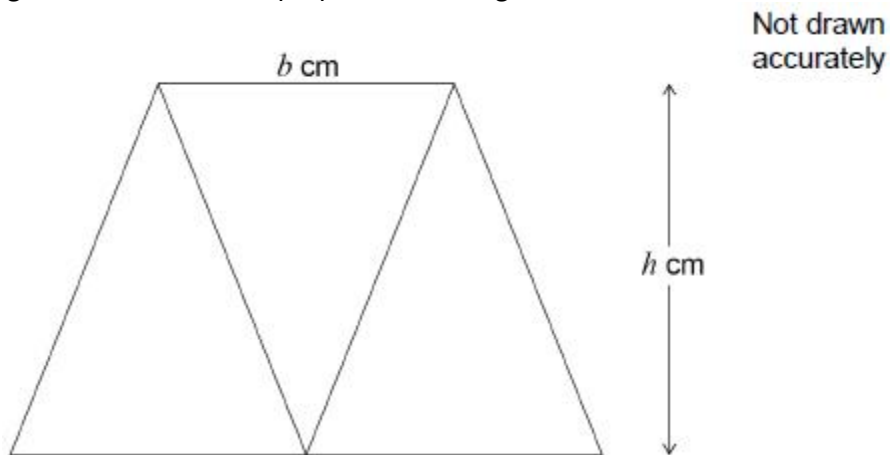


The area of triangle ABC is 28 square units.
Work out possible coordinates for A , B and C .

(Total 2 marks)

Q4.

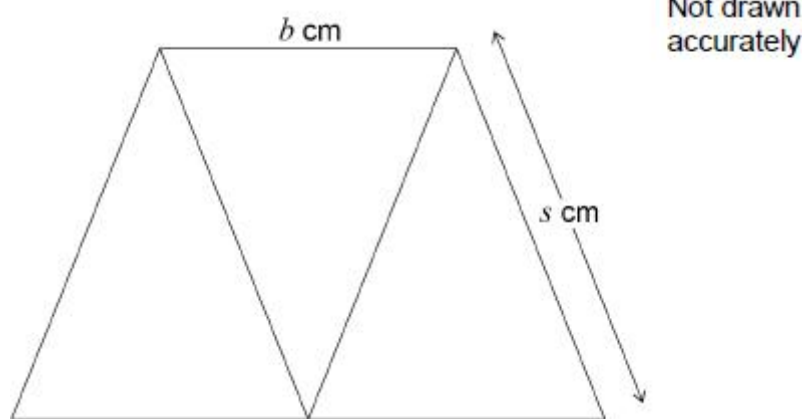
Three identical isosceles triangles are joined to make this trapezium.
Each triangle has base b cm and perpendicular height h cm



- (a) Work out an expression, in terms of b and h , for the area of the trapezium.
Give your answer in its simplest form.

(2)

- (b) This diagram shows the same trapezium.



$$b : s = 2 : 3$$

Work out an expression, in terms of b , for the perimeter of the trapezium.

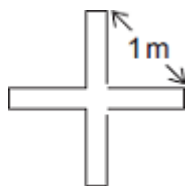
(2)

(Total 4 marks)

Q5.

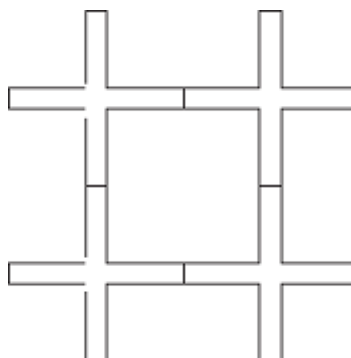
A cross has a distance of 1 metre between the ends of each arm.

Not drawn
accurately



Four of these crosses are put together as shown.

Not drawn
accurately



What is the area of the square formed in the middle?
Show clearly how you obtain your answer.

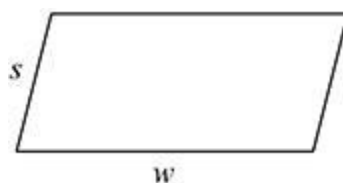
(Total 3 marks)

For the rest of the questions, you may use a calculator.



Q6.

Here is a parallelogram.



Circle the expression for the **perimeter**.

$2s + 2w$

$s + w$

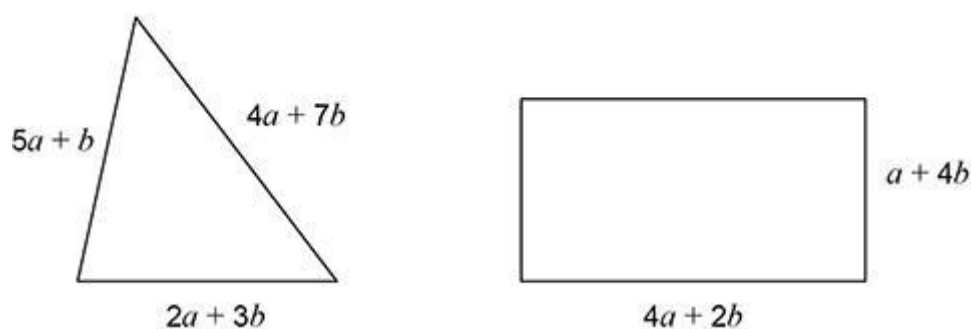
sw

$2sw$

(Total 1 mark)

Q7.

Here are a triangle and a rectangle.



Not drawn accurately
 a and b are positive numbers.

Which shape has the **larger** perimeter?
You **must** work out expressions for both perimeters.
Tick a box.

☐

triangle

☐

rectangle

☐

cannot tell

(Total 3 marks)

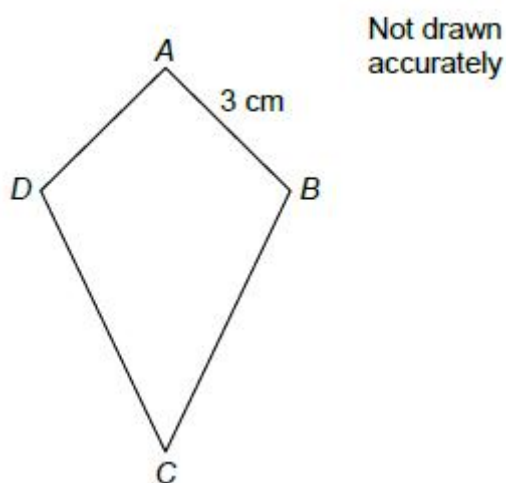
Q8.

The perimeter of an isosceles triangle is 25 cm
The length of each side, in cm, is a prime number.
Work out the lengths of the sides of the **two** possible isosceles triangles.

(Total 4 marks)

Q9.

The perimeter of kite $ABCD$ is 24 cm



The length of side AB is 3 cm
Work out the length of side CD .
Circle your answer.

3 cm

8 cm

9 cm

21 cm

(Total 1 mark)

Q10.

- (a) The length of one side of a triangle is 10 cm

Not drawn accurately



Tick the correct box for this statement.

The perimeter of the triangle is between 10 cm and 20 cm

☐

Always true

☐

Sometimes true

☐

Never true

(1)

- (b) The length of one of the diagonals of a parallelogram is 10 cm

Not drawn accurately



Tick the correct box for this statement.

The perimeter of the parallelogram is greater than 20 cm

☐

Always true

☐

Sometimes true

☐

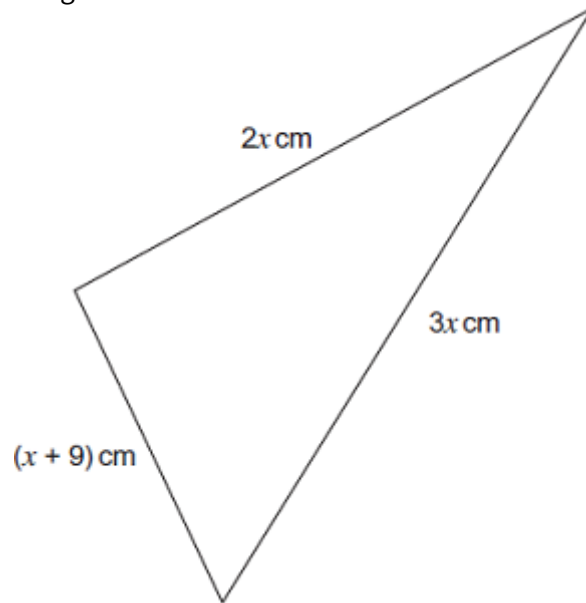
Never true

(1)

(Total 2 marks)

Q11.

The perimeter of this triangle is 48 cm.



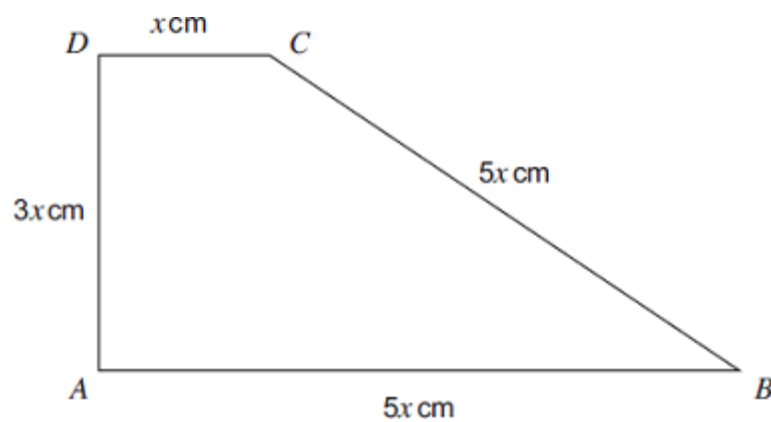
Work out the value of x .

(Total 4 marks)

Q12.

The diagram shows a trapezium.

Not drawn
accurately



(a) Write down the length of AB when $x = 6.2$

(2)

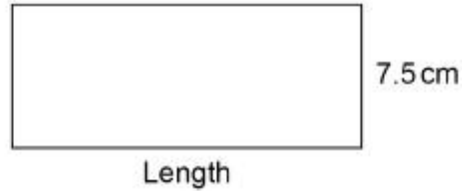
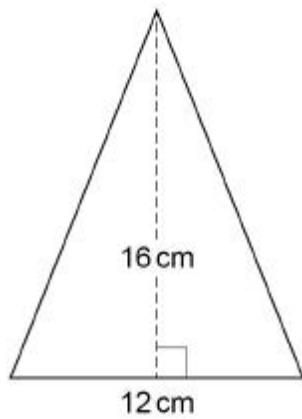
(b) Work out the perimeter when $x = 7$

(3)

(Total 5 marks)

Q13.

The rectangle and the triangle have the same area.



Not drawn accurately

Work out the length of the rectangle.

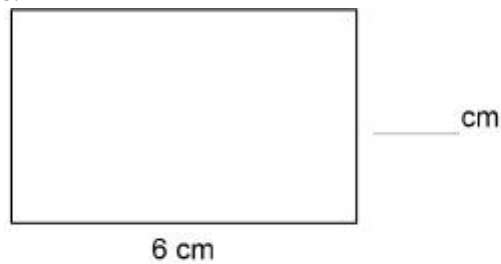
(Total 3 marks)

Q14.

Each shape below has an area of 24 cm^2

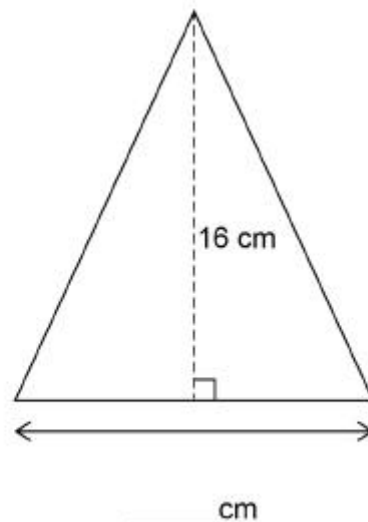
Complete the missing lengths.

Rectangle



Not drawn accurately

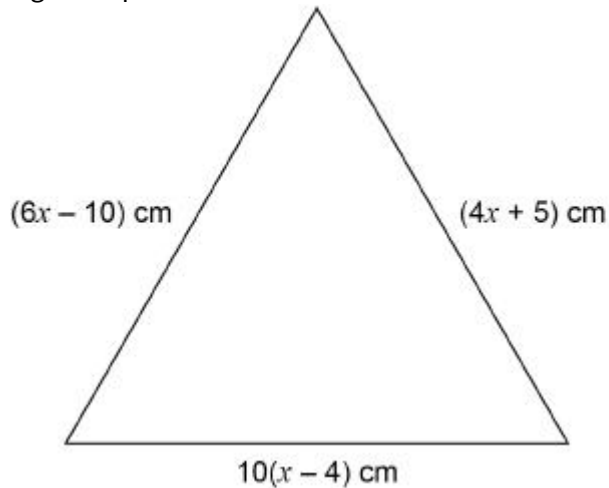
Triangle



(Total 3 marks)

Q15.

This triangle is equilateral.



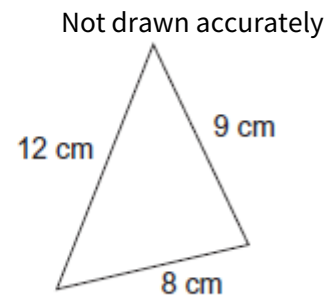
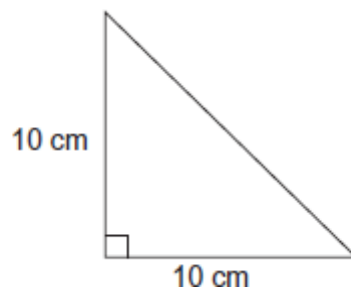
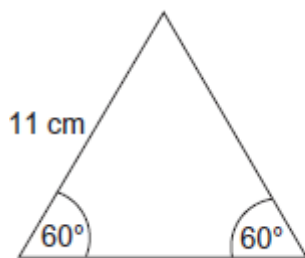
Not drawn accurately

Is the perimeter of the triangle greater than one metre?
You **must** show your working.

(Total 5 marks)

Q16.

One of these triangles is picked at random.



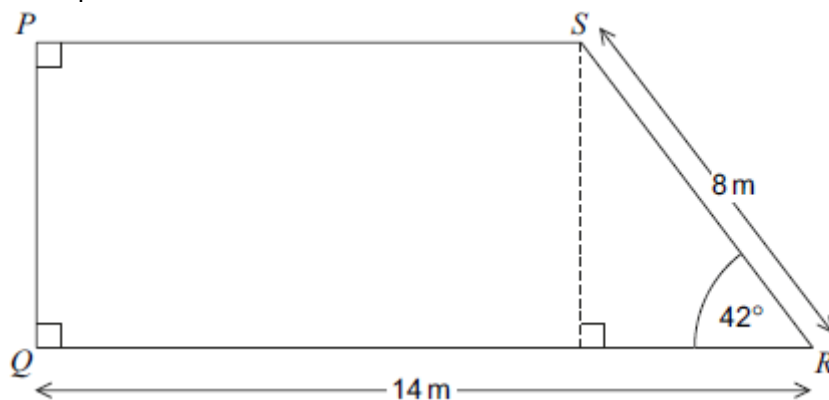
Not drawn accurately

Work out the probability that its perimeter is less than 30 cm
You **must** show your working.

(Total 3 marks)

Q17.

$PQRS$ is a trapezium.



Not drawn accurately

Work out the perimeter of $PQRS$.

(Total 5 marks)