FluidMaths

GCSE Mathematics (Grade 9-1)

Problem Solving
Area and Perimeter Set 2 Questions

Some useful strategies in problem-solving

- Read the question carefully
- Sketch a diagram where applicable
- Take note of key information
- Write down any formulae you may need
- Tackle the problem in bite-size rather than as a whole
- Concentrate on the part of the problem you understand and start from there
- Collaborate with a partner and share ideas
- Use a dictionary to find the meaning of any confusing words
- Check that your answers make sense in the context of the question

1 Here is rectangle ABCD

BC $= \frac{2}{5}$ cm

The area of the rectangle is $\frac{4}{7}$ cm^2

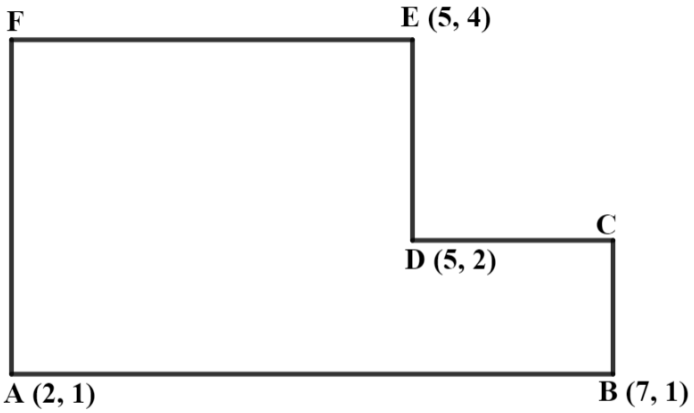
Calculate the perimeter of the rectangle

Give your answer as a mixed number.

[4marks]

2 Here is a 2D shape

Some vertices of the shape are given as coordinates



The coordinates of A are (2, 1)

The coordinates of B are (7, 1)

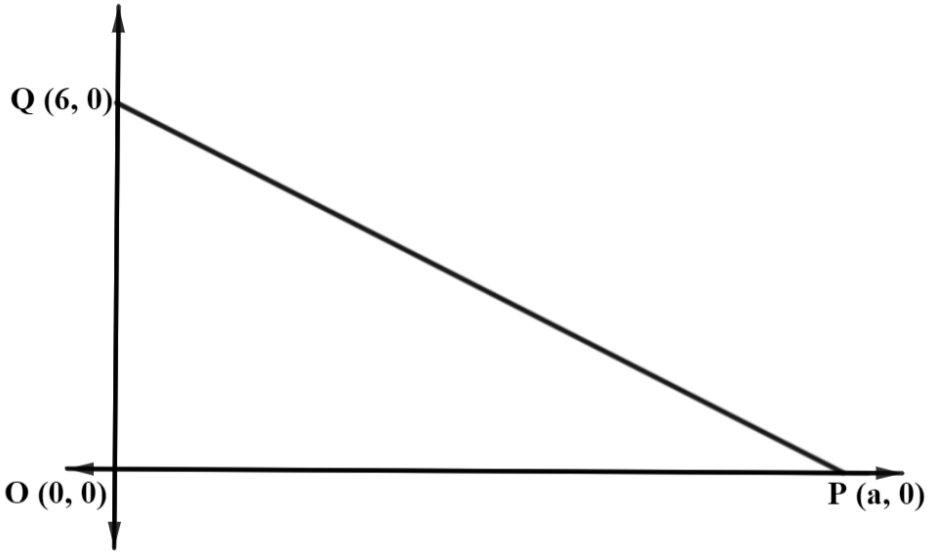
The coordinates of D are (5, 2)

The coordinates of E are (5, 4)

Calculate the area of the shape.

[5marks]

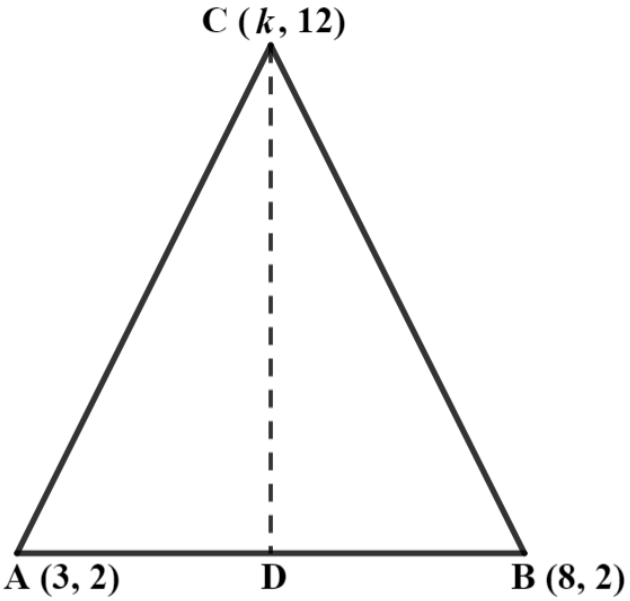
3 PQ is a straight line that intersects the x and y axes at P and Q respectively



O has coordinates (0, 0)
Q has coordinates (0, 6)
P has coordinates (a, 0)
If the area of triangle OPQ is 30 cm^2, find the value of a.

[2marks]

4 Triangle ABC is an isosceles triangle

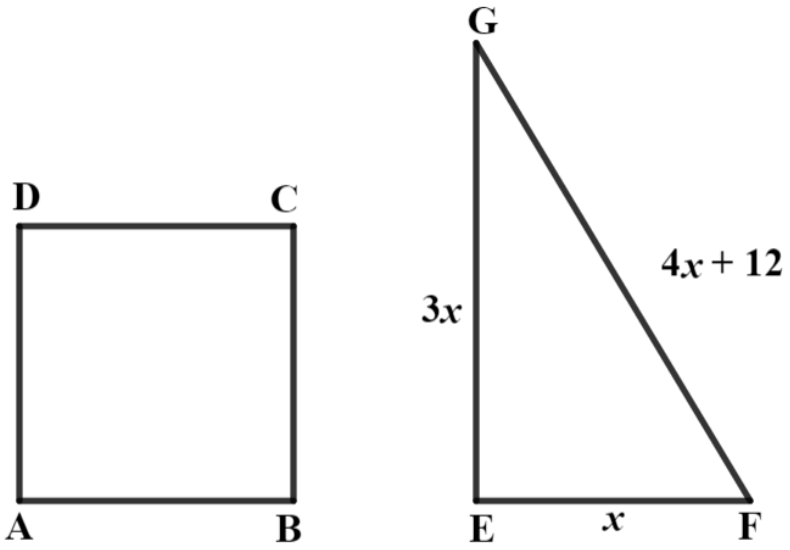


AC = BC
CD is perpendicular to AB
D is the midpoint on AB
A has coordinates (3, 2)
B has coordinates (8, 2)
C has coordinates (k, 12)

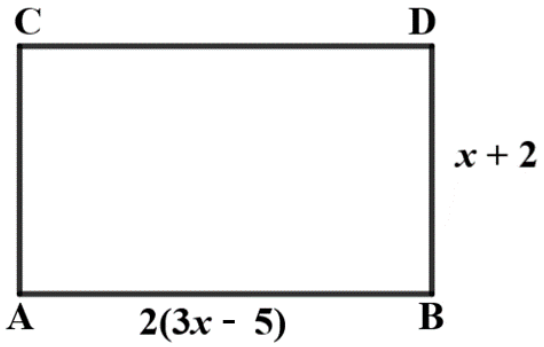
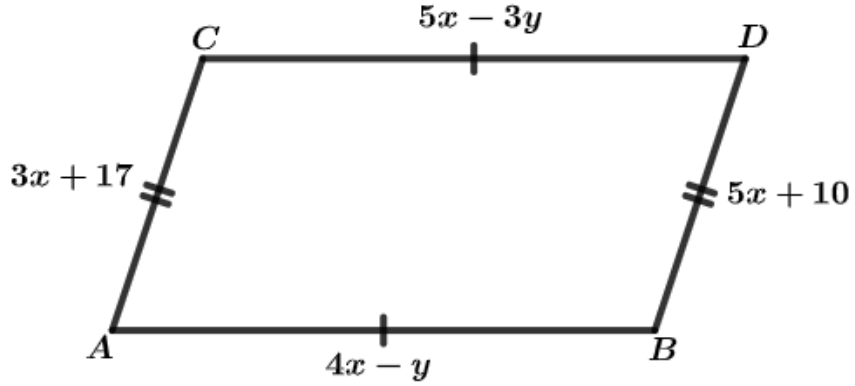
a) Write down the value of k **[2marks]**

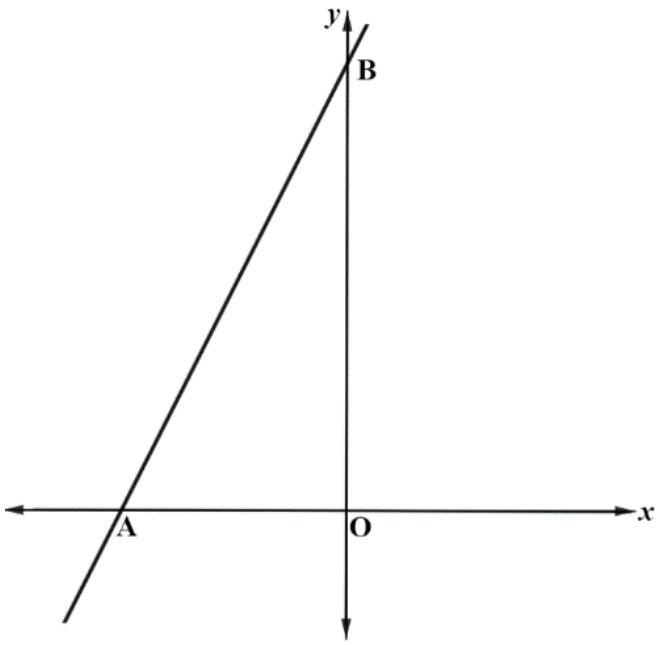
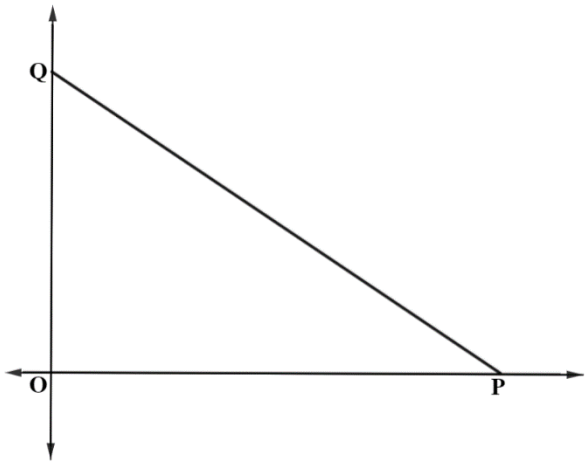
b) Calculate the area of triangle ABC **[3marks]**

5 ABCD is a square
EFG is a triangle

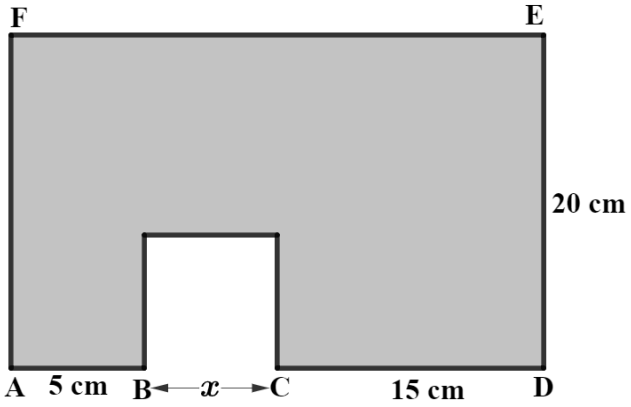


$EG = 3x$
$EF = x$
$FG = 4x + 12$
The area of the square is 144 cm^2
The square and the triangle have the same perimeter.
Calculate the value of x.
[4marks]

6	ABCD is a rectangle  All measurements are in centimeters. AB $= 2(3x - 5)$ BD $= x + 2$ Where x is an integer Given that AB is longer than AC, find the smallest possible area of the rectangle. **[5marks]**
7	ABCD shown below is a parallelogram.  AB = CD and AC = BD Calculate the values of x and y **[5marks]**

8	The line $y = 2x + 8$ is shown in the diagram below  The line intersects the axes at points A and B Calculate the area of triangle AOB **[4marks]**
9	The graph of $3y + 2x - 20 = 0$ is shown below  The graph intersects the axes at P and Q Calculate the area of triangle OPQ Give your answer as a mixed number. **[4marks]**

10 ADEF is a rectangle
A square of side x is removed from the rectangle as shown



AB = 5 cm
BC = x
CD = 15 cm
DE = 20 cm
If the shaded area is 484 cm^2,
show that there are two possible values of x **[5marks]**