

FluidMaths

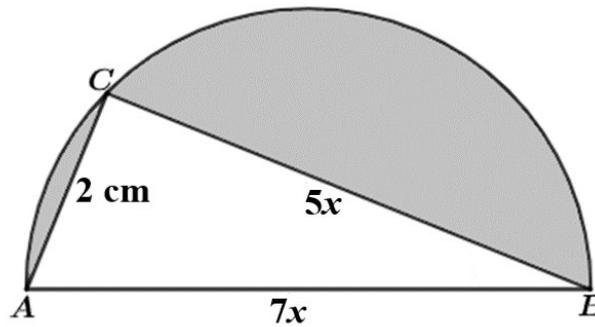
GCSE Mathematics (Grade 9-1)

Problem Solving
Pythagoras Theorem 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 Triangle ABC is drawn inside a semi-circle



The diameter of the semi-circle is $AB = 7x$

$AC = 2$ cm and $BC = 5x$

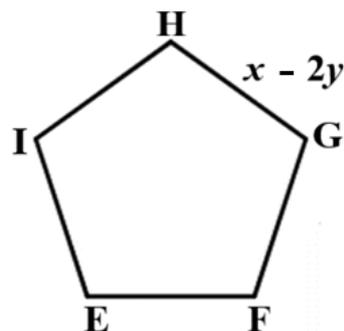
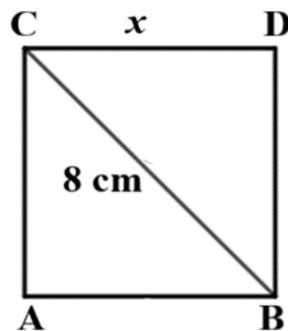
Calculate the size of the shaded area

Give your answer to 2 decimal places.

[6marks]

2 ABCD is a square of side x

EFGHI is a regular pentagon of side $x - 2y$



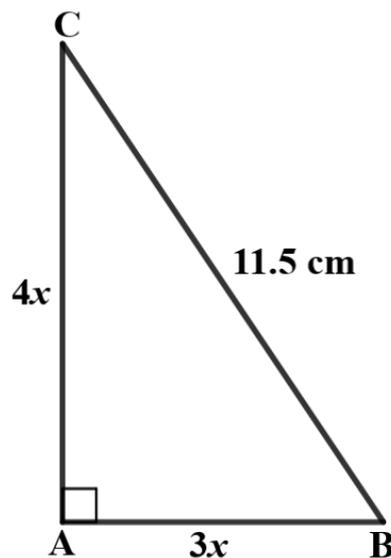
$BC = 8$ cm

The square and the pentagon have the same perimeter.

Show that $y = \frac{2\sqrt{2}}{5}$

[6marks]

3 ABC is a right-angled triangle



$$AB = 3x$$

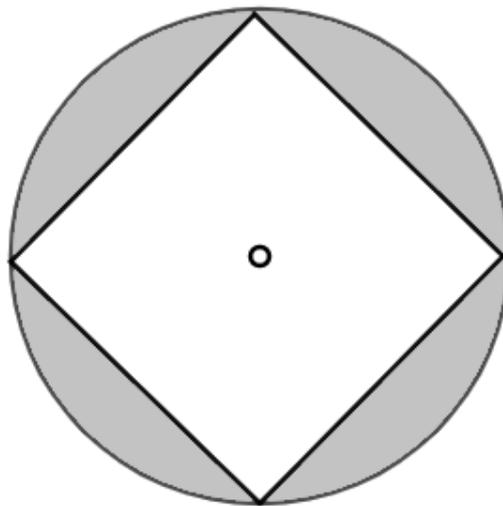
$$AC = 4x$$

$$BC = 11.5 \text{ cm}$$

Calculate the value of x to 1 decimal place

[5marks]

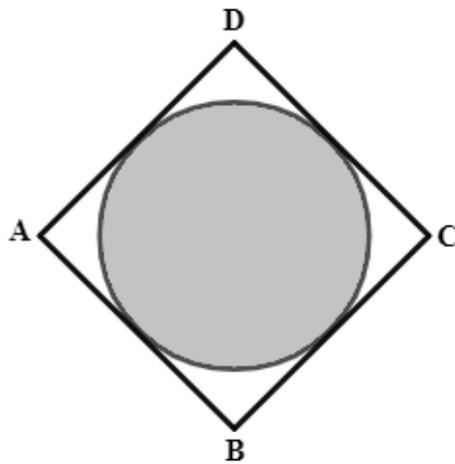
4 A square of area 256 cm^2 is drawn such that, its vertices lie on the circumference of a circle with centre O .



Show that the area of the shaded region can be written as $128(\pi - 2) \text{ cm}^2$

[6marks]

- 5 A circle is drawn inside the square ABCD as shown below



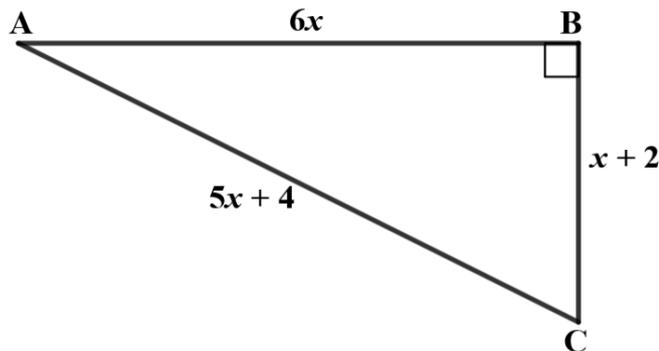
The sides of the square are tangents to the circle.

Given that $AC = 10$ cm,

show that the exact area of the circle is 12.5π cm²

[5marks]

- 6 ABC is a right-angled triangle



$$AB = 6x$$

$$AC = 5x + 4$$

$$BC = x + 2$$

Calculate the true value of x to 3 significant figures [5marks]

- 7 Point A has coordinates $(a, 2)$, where $a > 1$

Point B has coordinates $(7, 5)$

The distance between A and B is $3\sqrt{5}$

What is the value of a ? [5marks]