

# FluidMaths

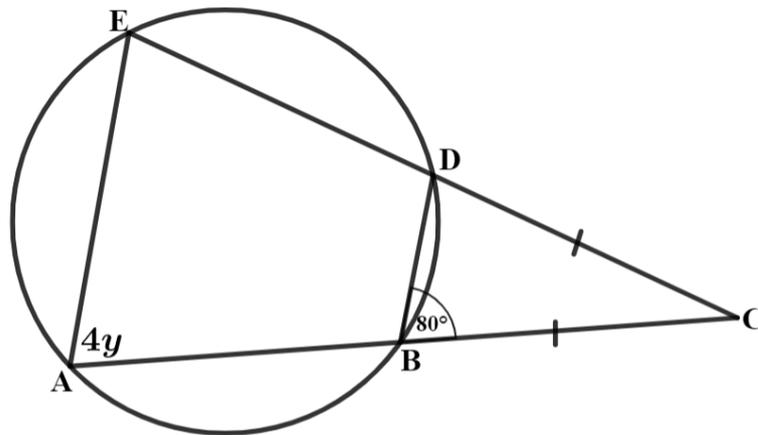
GCSE Mathematics (Grade 9-1)

Problem Solving  
Circle Theorems  
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 A, B, D and E are points on the circumference of a circle



$BC = CD$

AC and CE are straight lines

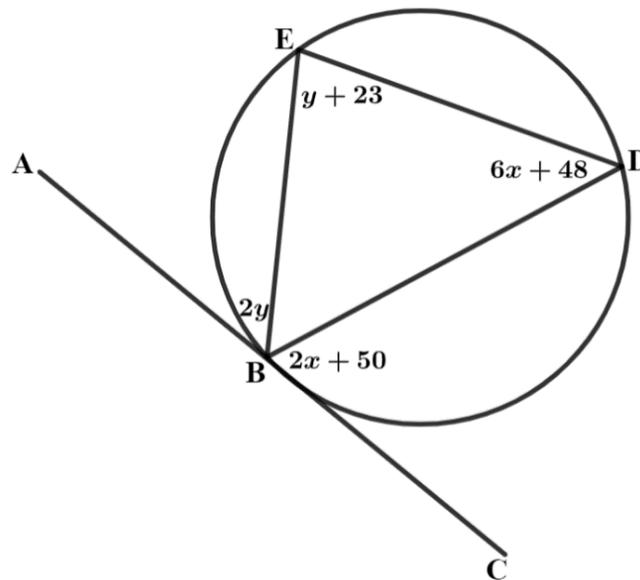
Angle  $CBD = 80^\circ$

Angle  $BAE = 4y$

Calculate the value of  $y$ ?

[3marks]

2 In the diagram below, ABC is a tangent to the circle



Angle  $ABE = 2y$

Angle  $CBD = 2x + 50$

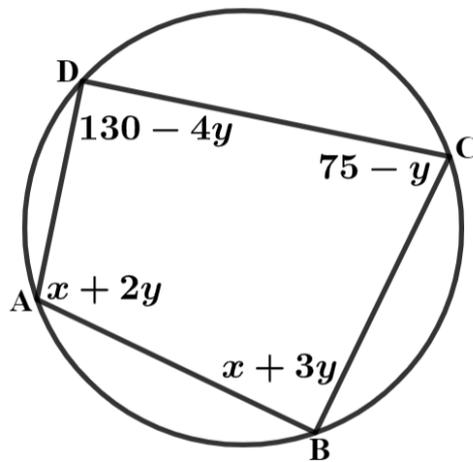
Angle  $BDE = 6x + 48$

Angle  $BED = y + 23$

Calculate the values of  $x$  and  $y$

[5marks]

3 A, B, C and D are points on the circumference of the circle



Angle  $BAD = x + 2y$

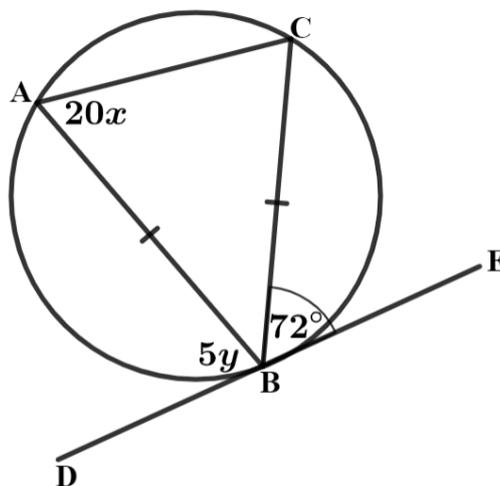
Angle  $BCD = 75 - y$

Angle  $ABC = x + 3y$

Angle  $CDA = 130 - 4y$

Calculate the ratio of  $x : y$  in its simplest form **[6marks]**

4 ABC is a triangle inscribed inside a circle



$AB = BC$

Angle  $CBE = 72^\circ$

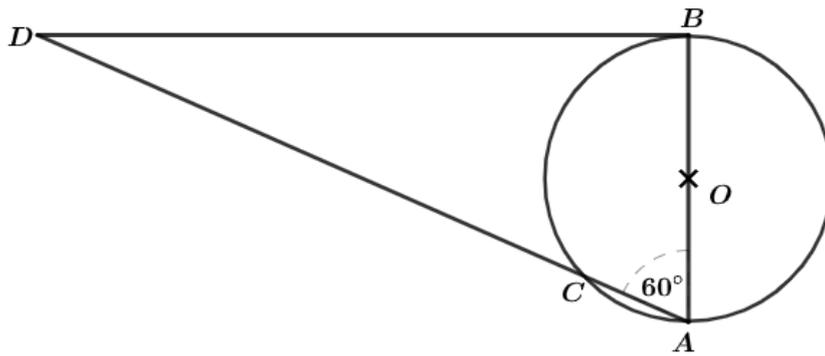
Angle  $ABD = 5y$

Angle  $BAC = 20x$

DE is a tangent to the circle at B

Find the ratio of  $x : y$  in its simplest form **[4marks]**

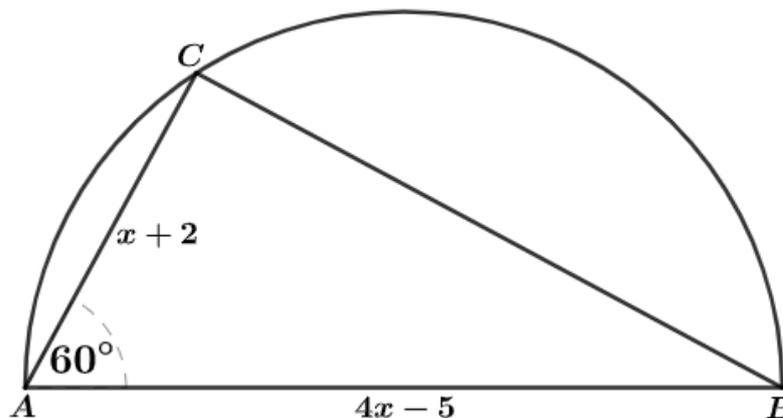
5 The diagram below shows a circle with center  $O$ .



The circumference of the circle is  $10\pi$  cm  
 BD is a tangent to the circle and AC is a chord  
 Calculate the length of CD to 1 decimal place.

[4marks]

6 Triangle ABC is drawn inside a semi-circle of diameter AB



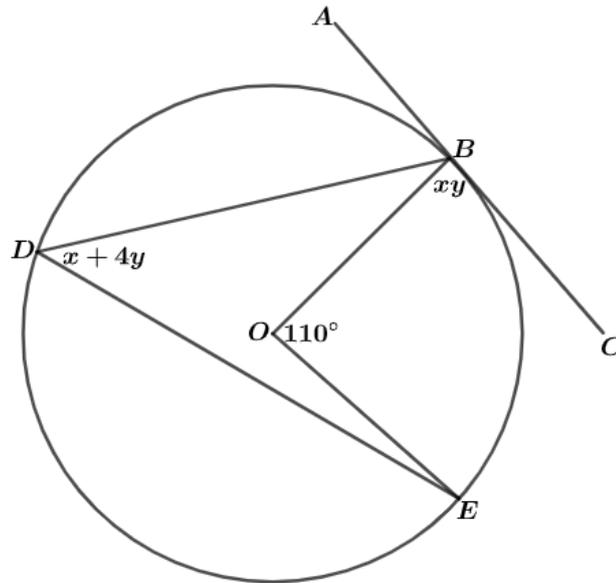
$$AB = 4x - 5$$

$$AC = x + 2$$

Calculate the perimeter of the semi-circle  
 Give your answer to 3 significant figures.

[5marks]

7 AC is a tangent to the circle with centre O



Angle BDE =  $x + 4y$

Angle OBC =  $xy$

Angle BOE =  $110^\circ$

Calculate the values of  $x$  and  $y$  to the nearest whole number

**[5marks]**