FluidMaths

GCSE Mathematics (Grade 9-1)

Problem Solving
Trig Set 5
The cosine rules
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

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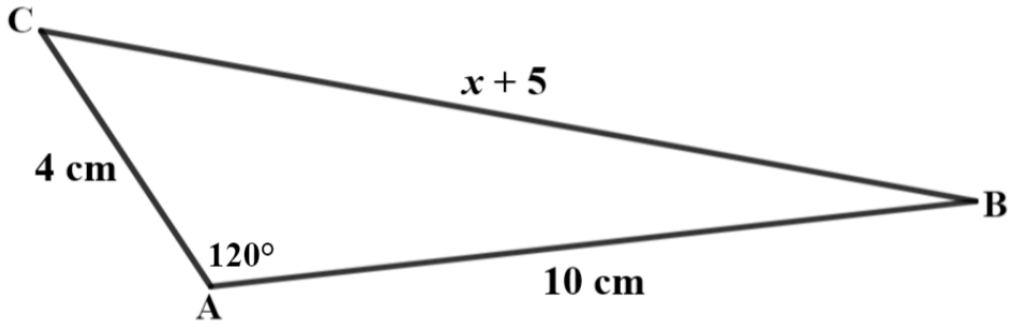
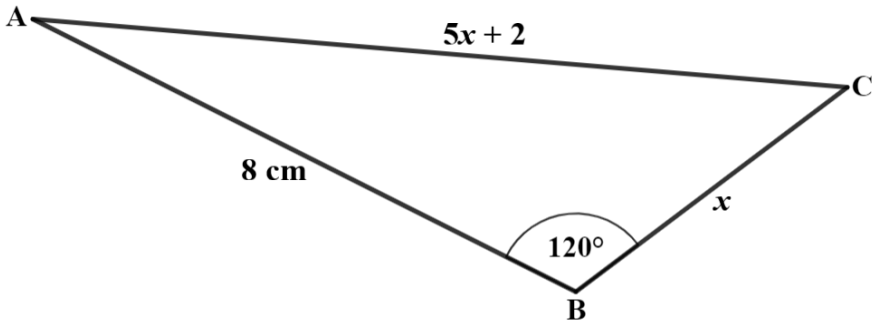
1 Here is triangle ABC



Angle BAC $= 120°$
AB $=$ 10 cm
AC $= 4$ cm
BC $= x + 5$
Calculate the true value of x
Give your answer to 1 decimal place

[5marks]

2 Triangle ABC is shown below



AB $= 8$ cm
BC $= x$
AC $= 5x + 2$
Angle ABC $= 120°$
Show that $2x^2 + x - 5 = 0$

[5marks]

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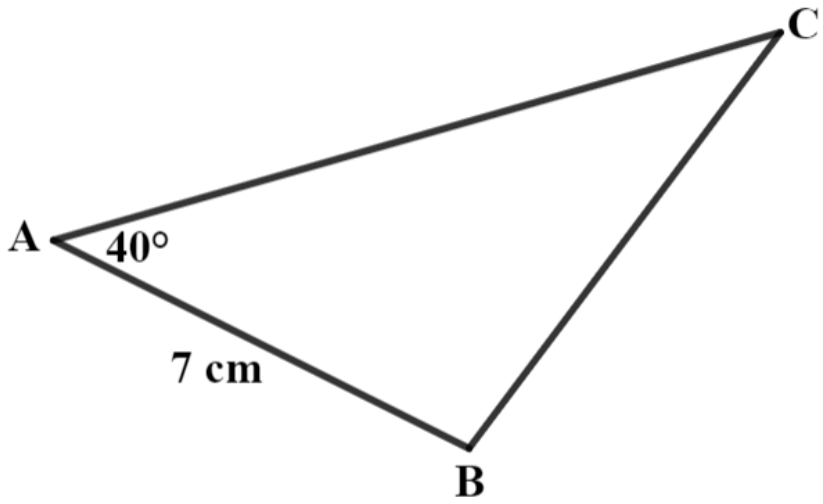
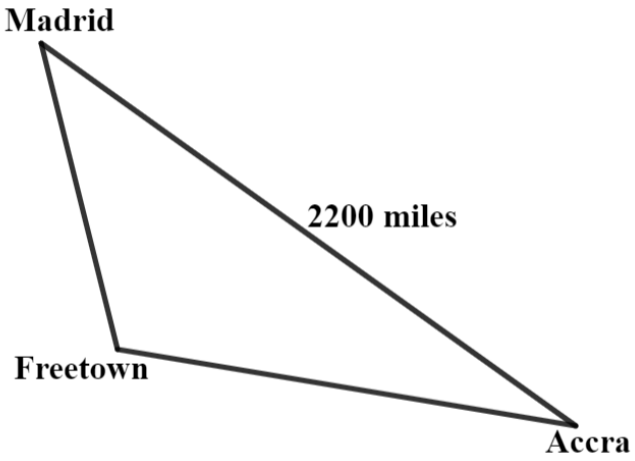
3 ABC is a scalene triangle



The area of the triangle is 33 cm^2
Calculate the perimeter of the triangle **[5marks]**

4 The diagram below shows the locations of three cities.



The bearing of Accra from Madrid is 158°
The bearing of Freetown from Madrid is 196°
The distance between Madrid and Accra is 2200 miles
A plane flying at a constant speed of 500 mph took 2 hours 15 minutes to Freetown from Madrid.
The plane is flying to Accra from Freetown at a constant speed of 350 mph.
Show that the plane will reach Accra after 4 hours. **[5marks]**

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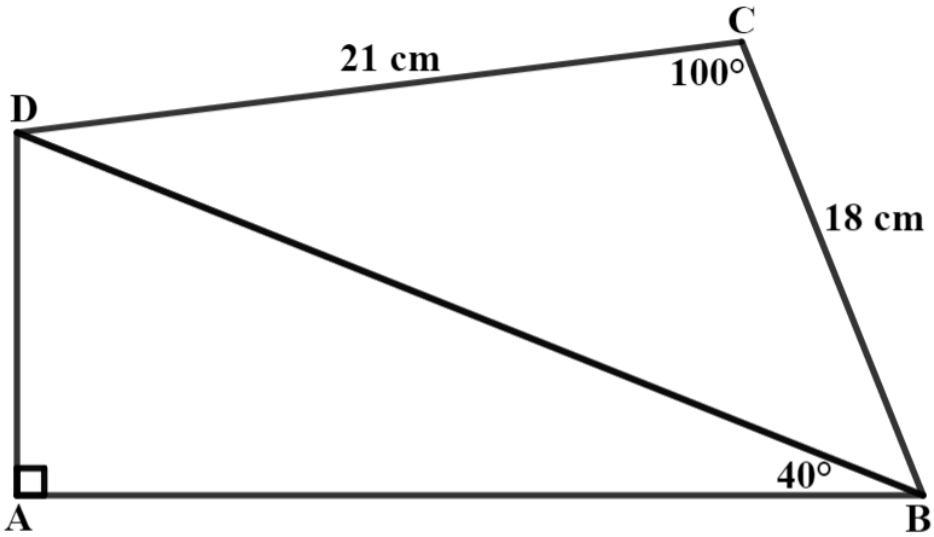
5	Port L is 54 km and on a bearing of 055° from Port K Port M 95 km and is on a bearing of 150° from Port L Calculate the direct distance between ports M and K Give your answer to 3 significant figures **[4marks]**
6	ABCD is a quadrilateral  Angle BCD = 100 Angle ABD = 40 CD = 21 cm BC = 18 cm Calculate the area of the quadrilateral Given your answer to 3 significant figures **[6marks]**

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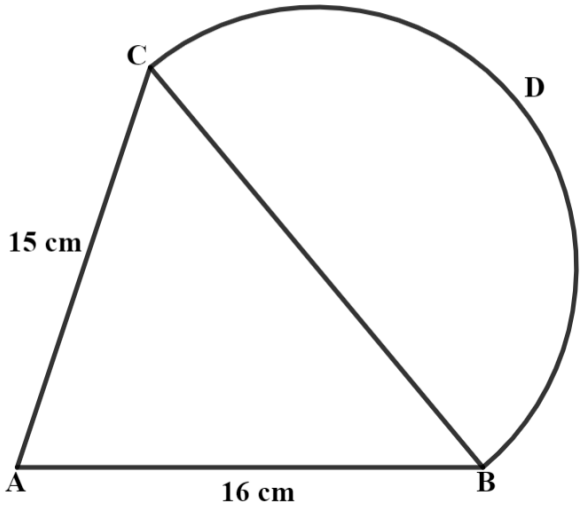
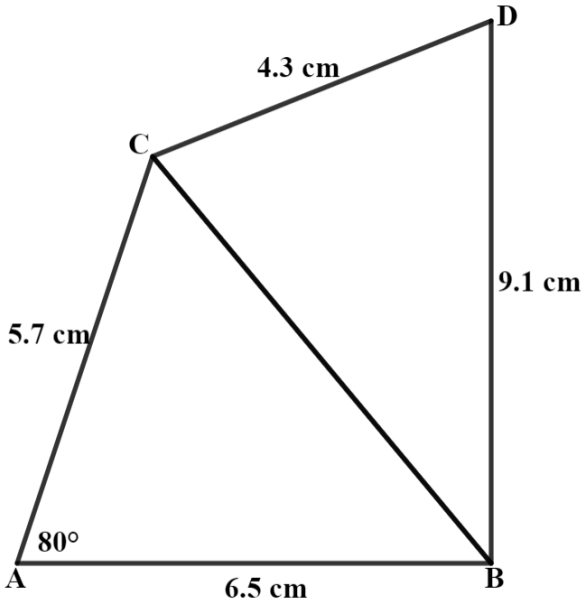
7	ABC is a triangle BDC is a semi-circle  The circumference of the semi-circle is 40π cm^2 Calculate the size of angle CAB.
8	The diagram show triangles ABC and BCD  AB = 6.5 cm AC = 5.7 cm BD = 9.1 cm CD = 4.3 cm Angle BAC = 80 Calculate angle BCD.

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