

Name: _____

Exam Style Questions

[Sine Rule](#)

[Cosine Rule](#)

[Area of a Triangle - Sine](#)



Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

[Video 333](#)

[Video 334](#)

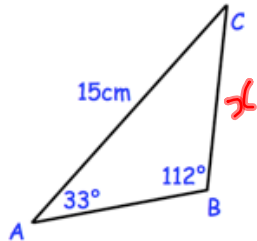
[Video 335](#)

[Video 336](#)

[Video 337](#)



1.



In triangle ABC the length of AC is 15cm.

Angle ABC = 112°

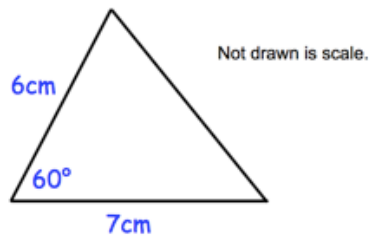
Angle BAC = 33°

Work out the length of BC.

$$\frac{x}{\sin 33} = \frac{15}{\sin 112}$$

8.81
.....cm
(3)

2.

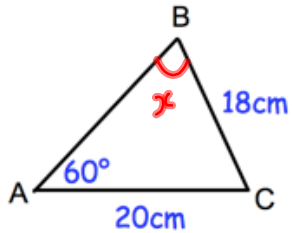


Calculate the area of the triangle.

$$\frac{1}{2} \times 6 \times 7 \times \sin 60$$

18.19
.....cm²
(2)

3.



Calculate the size of angle ABC.

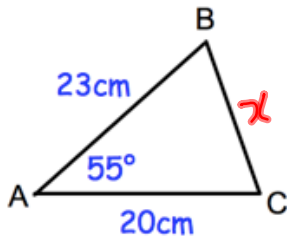
$$\frac{\sin x}{20} = \frac{\sin 60}{18}$$

$$\sin x = 0.962 \dots$$

$$x = 74.2 \dots$$

(3)

4.



Calculate the length of BC.

$$x^2 = 23^2 + 20^2 - 2 \times 20 \times 23 \times \cos 55$$

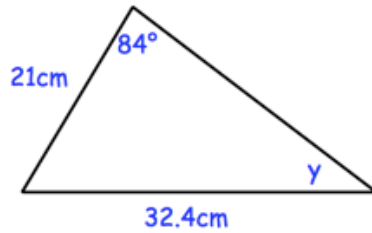
$$x^2 = 401.3 \dots$$

$$x =$$

$$20.03 \dots \text{cm}$$

(3)

5.



Calculate the size of the angle labelled y.

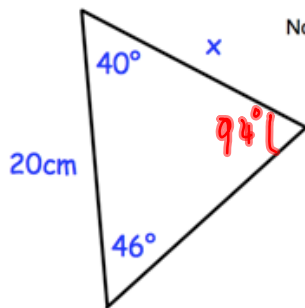
$$\frac{\sin y}{21} = \frac{\sin 84}{32.4}$$

$$\sin y = 0.644 \dots$$

$$\underline{\underline{40.14}}^\circ$$

(3)

6.



Not drawn is scale.

$$180 - 40 - 46 = 94$$

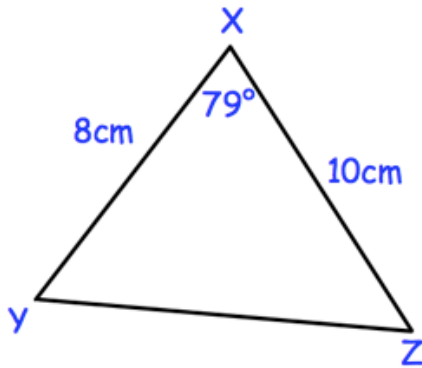
Find the size of x.

$$\frac{x}{\sin 46} = \frac{20}{\sin 94}$$

$$\underline{\underline{14.42}} \text{ cm}$$

(3)

7.



XY is 8cm,
XZ is 10cm,
angle YXZ = 79°

(a) Calculate the area of the triangle XYZ.

$$\frac{1}{2} \times 8 \times 10 \times \sin 79$$

$$\underline{\underline{39.27}} \text{ cm}^2$$

(3)

(b) Calculate the length of YZ.

$$yz^2 = 8^2 + 10^2 - 2 \times 8 \times 10 \times \cos 79$$

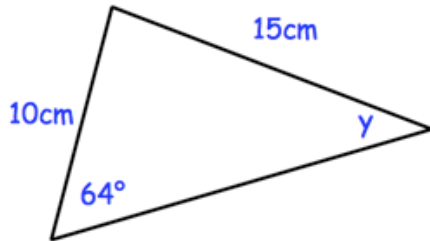
$$yz^2 = 133.47 \dots$$

$$yz = 11.55 \dots$$

$$\underline{\underline{11.55}} \text{ cm}$$

(3)

8.



Find the size of y .

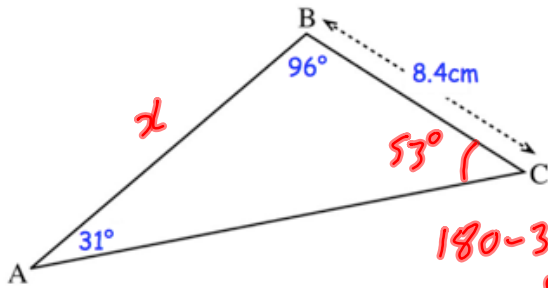
$$\frac{\sin y}{10} = \frac{\sin 64}{15}$$

$$\sin y = 0.599 \dots$$

$$\underline{\underline{36.81^\circ}}$$

(3)

9.



$$180 - 31 - 96 = 53$$

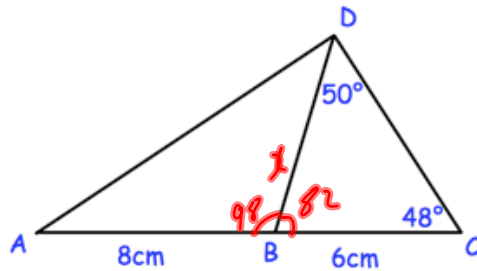
Calculate the length of AB.

$$\frac{x}{\sin 53} = \frac{8.4}{\sin 31}$$

$$\underline{\underline{13.03}} \text{ cm}$$

(3)

10.



ACD is a triangle and B is a point on AC.
 AB = 8cm and BC is 6cm.
 Angle BCD = 48° and angle BDC = 50°.

(a) Find the length of BD.

$$\frac{x}{\sin 48} = \frac{6}{\sin 50}$$

$$\underline{5.82} \text{ cm}$$

(3)

(b) Find the length of AD.

$$AD^2 = 8^2 + 5.82^2 - 2 \times 8 \times 5.82 \times \cos 98$$

$$AD^2 = 110.83 \dots$$

$$\underline{10.53} \text{ cm}$$

(3)

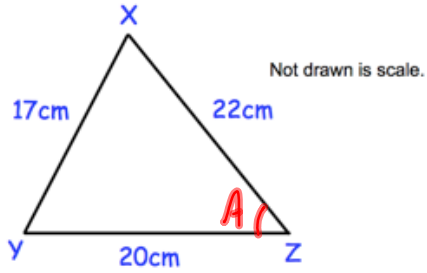
(c) Find the area of triangle ABD.

$$\frac{1}{2} \times 8 \times 5.82 \times \sin 98$$

$$\underline{23.05} \text{ cm}^2$$

(3)

11.



Find the size of angle XZY.

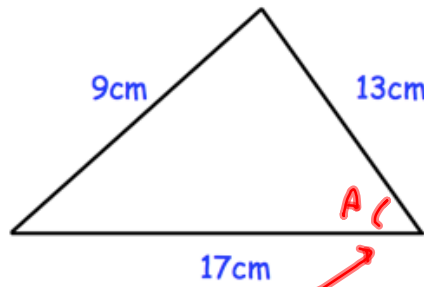
$$\cos A = \frac{20^2 + 22^2 - 17^2}{2 \times 20 \times 22}$$

$$\cos A = 0.676 \dots$$

$$A = 47.46$$

.....°
(3)

12.



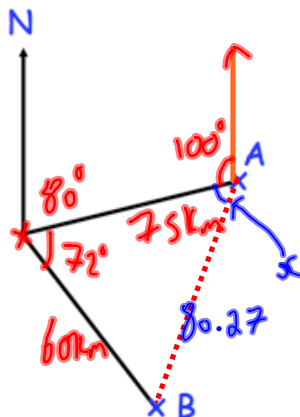
Calculate the smallest angle in the triangle.

opposite smallest side

$$\cos A = \frac{13^2 + 17^2 - 9^2}{2 \times 13 \times 17} = 0.8529 \dots$$

31.47°
(3)

13.



Two ships, A and B, leave a port at 11:00.
 A travels on a bearing of 080° at a speed of 25km/h .
 B travels on a bearing of 152° at a speed of 20km/h .

(a) Work out the distance between A and B at 14:00. 3 hrs

$$AB^2 = 60^2 + 75^2 - 2 \times 60 \times 75 \times \cos 72$$

$$AB^2 = 6443.84 \dots$$

$$AB = 80.27 \text{ km} \quad (3)$$

(b) Work out the bearing of B from A at 14:00.

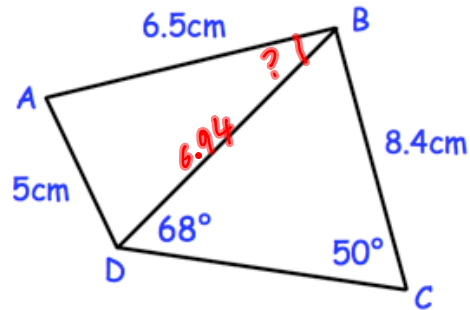
$$\frac{\sin x}{60} = \frac{\sin 72}{80.27}$$

$$x = 45.308$$

$$360 - 100 - 45.308$$

$$214.7^\circ \text{ km} \quad (3)$$

14.



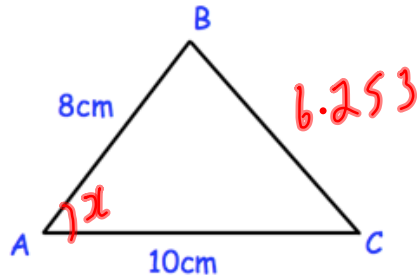
Calculate the size of angle ABD.

$$\frac{8.4}{\sin 68} = \frac{80}{\sin 50} \quad 80 = 6.94$$

$$\cos 180 = \frac{6.5^2 + 6.94^2 - 5^2}{2 \times 6.5 \times 6.94} = 0.725 \dots$$

$$\frac{43.53}{(4)}^\circ$$

15.



The area of the triangle shown is 25cm^2 .

Calculate the perimeter of the triangle.

$$\frac{1}{2} \times 8 \times 10 \times \sin x = 25$$

$$80 \sin x = 50$$

$$\sin x = \frac{5}{8}$$

$$x = 38.682^\circ$$

$$BC^2 = 8^2 + 10^2 - 2 \times 8 \times 10 \times \cos 38.682$$

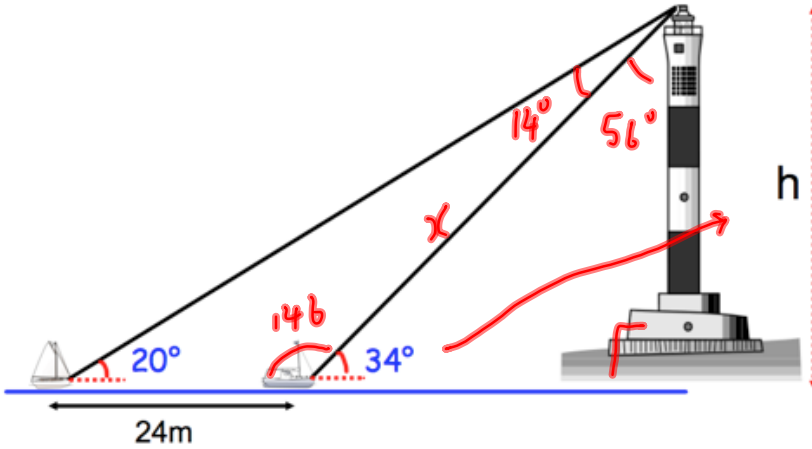
$$BC^2 = 39.099\dots$$

$$BC = 6.253$$

$$\underline{24.25} \text{ cm}$$

(4)

16.



Two small boats are 24m apart.

The angle of elevation of the boats to the top of a lighthouse are 20° and 34° respectively.

Calculate the height of the lighthouse.

$$\frac{x}{\sin 20} = \frac{24}{\sin 14}$$

$$x = 33.93$$

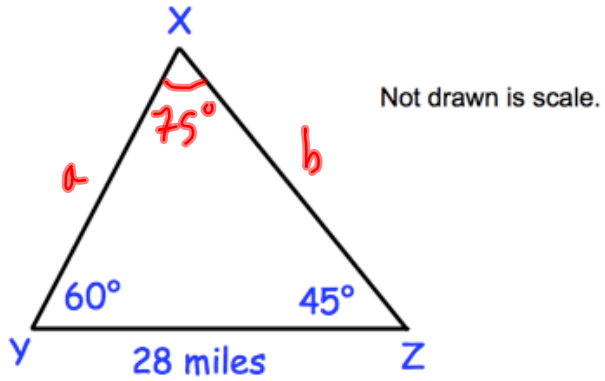
$$\sin 34 = \frac{h}{33.93}$$

$$h = 33.93 \sin 34$$

$$h = 18.97$$

.....m
(6)

17. A boat, located at position X is running out of fuel. There are two ports located at Y and Z. The boat must refuel as soon as possible.



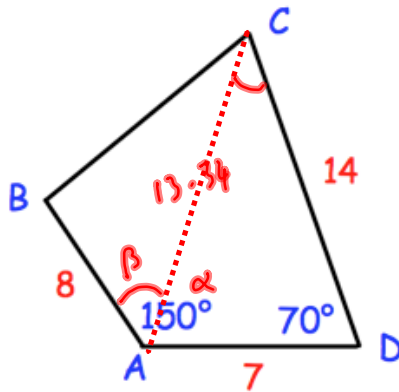
How much closer is the boat to the port at Y than the port at Z?

$$\frac{a}{\sin 45} = \frac{28}{\sin 75} \quad a = 20.497$$

$$\frac{b}{\sin 60} = \frac{28}{\sin 75} \quad b = 25.104$$

4.607 miles
(4)

18. In a quadrilateral ABCD, AD = 7cm, AB = 8cm and CD = 14cm.
Angle BAD = 150° and Angle ADC = 70°



Calculate the length BC.

$$AC^2 = 7^2 + 14^2 - 2 \times 7 \times 14 \times \cos 70$$

$$AC^2 = 177.96 \dots$$

$$AC = 13.34$$

$$\sin \frac{\alpha}{14} = \frac{\sin 70}{13.34}$$

$$\alpha = 80.46$$

$$\beta = 150 - 80.46 = 69.54$$

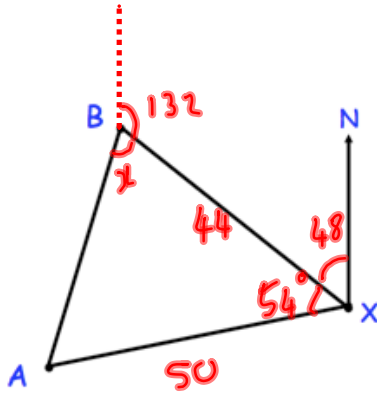
$$BC^2 = 8^2 + 13.34^2 - 2 \times 8 \times 13.34 \times \cos 69.54$$

$$BC = 12.94$$

$$\underline{12.94} \text{ cm}$$

(6)

19.



Ship A is 50km from X on a bearing of 258° .
 Ship B is 44km from X on a bearing of 312° .

(a) Calculate the distance between A and B.

$$AB^2 = 44^2 + 50^2 - 2 \times 44 \times 50 \times \cos 54$$

$$\underline{43.01} \text{ km} \quad (3)$$

(b) Calculate the bearing of A from B.

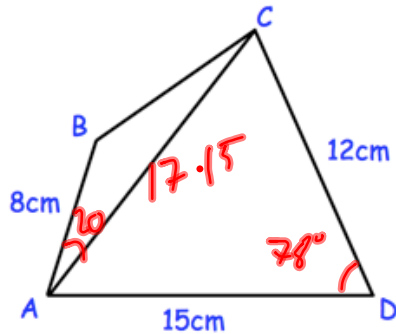
$$\frac{\sin x}{50} = \frac{\sin 54}{43.0087} \quad \sin x = 0.94\dots$$

$$x = 70.14$$

$$\underline{202.14}^\circ \quad (3)$$

20. ABCD is a quadrilateral.

AB = 8cm, AD = 15cm and CD = 12cm.
Angle ADC = 78° and angle BAC = 20°



(a) Calculate the length of AC.

$$AC^2 = 12^2 + 15^2 - 2 \times 15 \times 12 \times \cos 78$$
$$AC^2 = 294.15 \dots$$
$$AC = 17.15 \dots$$

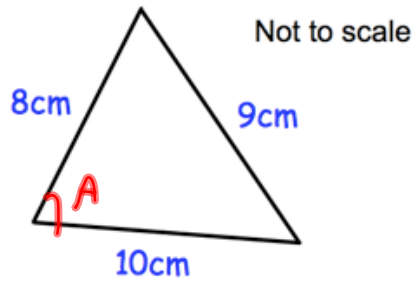
17.15
.....cm
(3)

(b) Calculate the area of triangle ABC.

$$\frac{1}{2} \times 8 \times 17.15 \dots \times \sin 20$$

23.46
.....cm²
(2)

21.



Find the area of the triangle.

$$\cos A = \frac{8^2 + 10^2 - 9^2}{2 \times 8 \times 10}$$

$$A = 58.75 \dots$$

$$\text{Area} = \frac{1}{2} \times 8 \times 10 \times \sin 58.75 \dots$$

$$\underline{\underline{34.2}} \text{ cm}^2$$

(5)