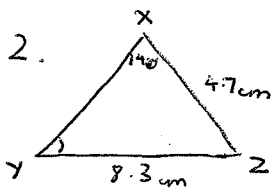


1. In triangle ABC $AB = 7.2$ cm $BC = 9.6$ cm $\angle ABC = 125^\circ$
Find its area.
2. In triangle XYZ $y = 4.7$ cm $x = 8.3$ cm $X = 140^\circ$. Find Y
3. A triangle has edges measuring 3.6, 5.2 and 7.8 cm.
Find the size of its greatest angle.
4. Find the area of a triangle having two edges of 1.8 and 3.4 cm, when the angle between those two edges is
(i) 20° (ii) 160°
5. Triangle ABC has $\angle ABC = 115^\circ$ $AC = 7.63$ cm $BC = 3.8$ cm. Find $\angle ACB$
6. Triangle XYZ has $\angle XYZ = 105^\circ$ $XY = 17.3$ cm $YZ = 26.4$ cm.
Find the length of XZ
7. A triangular field has hedge-lengths of 48, 55 and 87 metres.
Find the size of the largest angle between two of the hedges.
What is the area of the field?
8. A rhombus has an edge-length of 3.5 cm and an obtuse interior vertex angle of 105° .
Find its area.
9. A parallelogram has a edges of 6.3 and 5.7 cm. Its area is 27.4 cm²
What is the size of its obtuse interior vertex angle?
10. A triangle LMN has $LM = 6.3$ cm $LN = 5.8$ cm $\angle LMN = 32^\circ$
Calculate the two possible sizes of $\angle LNM$
11. The goal-posts in Association Fooball are 7.3 metres apart.
A player situated 5 metres from one goal-post and 6 metres from the other
is about to kick the ball at the goal.
Calculate the size of the angle within which the ball must be kicked if a goal is to be scored.
12. Two ships leave the same harbour at the same time.
One steams due North for 130 miles, the other on a course of 140° for a distance of 170 miles.
How far apart are the two ships after this?
13. Two aeroplanes leave simultaneously from the same airport. One flies due East at a speed
of 150 kilometres an hour; the other on a course of 250° at 170 kilometres an hour.
Calculate how far apart the two planes are, 2 hours after leaving the airport.
14. A ship leaves port at noon on a course of 070° at a speed of 20 knots.
A second ship leaves the same port at 13.30 moving at a speed of 30 knots and
heading in the direction of 310°
What distance apart will the two ships be at 16.15?
(A knot is a speed of 1 nautical mile per hour.)

Trigonometry

1. $A = \frac{1}{2} \times 7.2 \times 9.6 \times \sin 125^\circ$
 $= 28.3 \text{ cm}^2 \text{ (1dp)}$



$$\frac{\sin Y}{4.7} = \frac{\sin 140^\circ}{8.3} \checkmark$$

$$\sin Y = \frac{4.7 \sin 140^\circ}{8.3}$$

$$Y = \sin^{-1} \frac{4.7 \sin 140^\circ}{8.3}$$

$$= 21^\circ 21' \text{ (nearest min)}$$

3. Greatest angle ~~exists~~ exists opposite the largest side. \checkmark

$$\cos x = \frac{3.6^2 + 5.2^2 - 7.8^2}{2 \times 3.6 \times 5.2} \checkmark$$

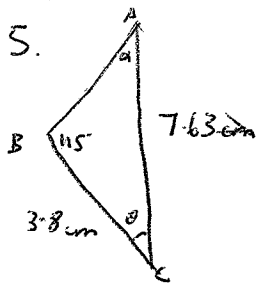
$$= -0.556 \dots$$

$$\cos^{-1} 0.556 \dots = 56^\circ 11'$$

$$x = 180^\circ - 56^\circ 11' = 123^\circ 49' \checkmark$$

4. i) $A = \frac{1}{2} \times 1.8 \times 3.4 \times \sin 20^\circ = 1.0 \text{ cm}^2 \checkmark$

ii) $A = \frac{1}{2} \times 1.8 \times 3.4 \times \sin 160^\circ = 1.0 \text{ cm}^2 \checkmark$



~~W.A.O.A~~

$$\frac{\sin \alpha}{3.8} = \frac{\sin 115^\circ}{7.63} \checkmark$$

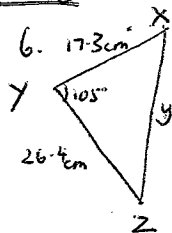
$$\sin \alpha = \frac{3.8 \sin 115^\circ}{7.63}$$

$$\alpha = 26^\circ 50' \text{ (nearest min)}$$

$$\angle ACB = 180^\circ - 115^\circ - 26^\circ 50'$$

$$= 38^\circ 10' \checkmark$$

Good work!



$$y^2 = 26.4^2 + 17.3^2 - 2 \times 26.4 \times 17.3 \cos 105^\circ$$

$$= 1232.665 \dots \checkmark$$

$$y = 35.1 \text{ cm (1dp)} \checkmark$$

7. size of largest angle $\Rightarrow \theta$

$$\cos \theta = \frac{48^2 + 55^2 - 87^2}{2 \times 48 \times 55} \checkmark$$

$$= -0.42$$

$$\cos^{-1} 0.42 = 65^\circ 10' \checkmark$$

$$\theta = 180^\circ - 65^\circ 10' = 114^\circ 50' \text{ (nearest min)}$$

$$A = \frac{1}{2} \times 48 \times 55 \times \sin 114^\circ 50' \checkmark$$

$$= 1197.9 \text{ m}^2 \text{ (1dp)} \checkmark$$

8. $A = 2 \times \frac{1}{2} \times 3.5 \times 3.5 \times \sin 105^\circ \checkmark$

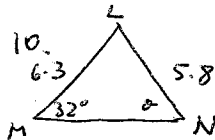
$$= 11.8 \text{ cm}^2 \text{ (1dp)} \checkmark$$

9. $27.4 = 2 \times \frac{1}{2} \times 6.3 \times 5.7 \times \sin \theta$

$$\sin \theta = \frac{27.4}{2 \times 6.3 \times 5.7} = 0.763 \dots$$

$$\theta = 49^\circ 44' \checkmark$$

$$180^\circ - 49^\circ 44' = 130^\circ 16' \text{ (nearest min)}$$



$$\frac{\sin \theta}{6.3} = \frac{\sin 32^\circ}{5.8}$$

$$\sin \theta = \frac{6.3 \sin 32^\circ}{5.8} \checkmark$$

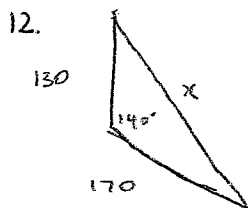
$$= 0.575 \dots$$

$$\theta = 35^\circ 9' \text{ or } 144^\circ 51' \text{ (nearest min)}$$



$$\cos \theta = \frac{6^2 + 5^2 - 7.3^2}{2 \times 5 \times 6} = 0.1285 \checkmark$$

$$\theta = 82^\circ 37' \text{ (nearest min)} \checkmark$$



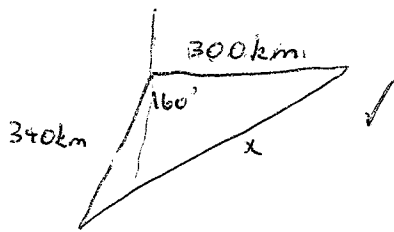
$$x^2 = 130^2 + 170^2 - 2 \times 130 \times 170 \times \cos 140^\circ$$

$$= 24159.164 \dots$$

$$x = 155.4 \text{ miles (2dp)}$$

$$= 282.24 \text{ (to 2 dp)}$$

13.

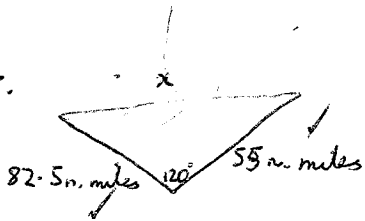


$$x^2 = 340^2 + 300^2 - 2 \times 340 \times 300 \times \cos 160^\circ$$

$$= 397297.294 \dots$$

$$x = 630.32 \text{ km (2dp)} \checkmark$$

14.



$$x^2 = 82.5^2 + 55^2 - 2 \times 82.5 \times 55 \times \cos 120^\circ$$

$$= 14368.75 \checkmark$$

$$x = 119.87 \text{ nautical miles (2dp)} \checkmark$$