QQQ - PureYr1 - Chapter 9 – Trigonometric Ratios (v3)

Total Marks: 16

(16 = Platinum, 14 = Gold, 12 = Silver, 10 = Bronze)

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1. A triangular lawn is modelled by the triangle ABC, shown in Figure 1. The length AB is to be 30 m long. Given that angle $BAC = 70^\circ$ and angle $ABC = 60^\circ$, calculate the area of the lawn to 3 significant figures.

(4)

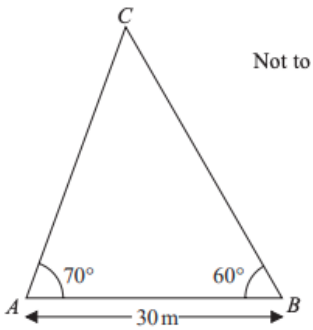
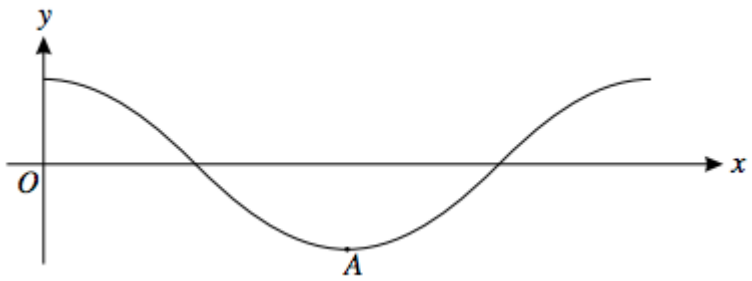


Figure 1

2.



The diagram shows part of the curve $y = cos\ 2x$, where x is in degrees. The point A is the minimum point of this part of the curve.

State the coordinates of A. **(2)**

3. In the triangle ABC, AB = 11 cm, BC = 7 cm and CA = 8 cm. Find the area of triangle ABC, giving your answer in cm2 to 3 significant figures. **(3)**

4. In the triangle ABC, AB = 16 cm, AC = 13 cm, angle ABC = 50° and angle BCA = x °

(a) Find the size of angle C, giving your answer in degrees to 3 significant figures. **(3)**

(b) Find the two possible values for x, giving your answers to one decimal place. **(4)**

Solutions (all questions © Edexcel)

1.

Way 1 Finds third angle of triangle and uses or states $\frac{x}{\sin 60^\circ} = \frac{30}{\sin "50^\circ"}$	**Way 2** Finds third angle of triangle and uses or states $\frac{y}{\sin 70^\circ} = \frac{30}{\sin "50^\circ"}$	M1
So $x = \frac{30\sin 60^\circ}{\sin 50^\circ}$ $(=33.9)$	So $y = \frac{30\sin 70^\circ}{\sin 50^\circ}$ $(=36.8)$	A1
Area $= \frac{1}{2}\times 30\times x\times \sin 70^\circ$ or $\frac{1}{2}\times 30\times y\times \sin 60$		M1
$=478\ \text{m}^2$		A1ft

2.

$(90, -1)$ B1 B1

1.

Use of Area $\Delta ABC = \frac{1}{2}ab\sin(\text{their } C)$, where a, b are any of 7, 8 or 11.	M1
$= \frac{1}{2}(7\times 8)\sin C$ using the value of their C from part (a).	A1 ft
$\{= 27.92848...$ or $27.93297...\}$ = awrt 27.9 (from angle of either 1.64^c or 94.1°)	A1 **cso**

2.

(a)

$11^2 = 8^2 + 7^2 - (2\times 8\times 7\cos C)$	M1
$\cos C = \frac{8^2 + 7^2 - 11^2}{2\times 8\times 7}$ (or equivalent)	A1
$\{\hat{C} = 1.64228...\} \Rightarrow \hat{C}$ = awrt 1.64	A1 **cso**

(b)

$\frac{\sin x}{16} = \frac{\sin 50^0}{13}$	M1
$(\sin x) = \frac{16\times \sin 50}{13}$ $(=0.943$ but accept $0.94)$	A1
x = awrt 70.5(3) **and** 109.5 **or** 70.6 and 109.4	dM1 A1