

Sine & Cos Rule Past Paper Answers GCSE Edexcel - Calculator

1.

39.9	P1	for finding the length of the minor or major arc eg $\frac{220}{360}\pi \times 12 (= 23(.03834..))$	Allow appropriate rounding if calculation seen in parts
	P1	for substituting into the sine or cosine rule to find OD eg $14 \div \sin 140 = OD \div \sin 24$ or $(OD^2 =) 6^2 + 14^2 - 2 \times 6 \times 14 \times \cos 24 (=78.5...)$	Must involve OD in the relationship but may be implied
	P1	for a complete process to find the length OD eg $14 \div \sin 140 \times \sin 24 (=8.8(58778..))$	
	P1	for a complete process to find the perimeter eg $"23(.03834..)" + 14 + "8.8(58778..)" - 6$	May be seen in multiple calculations
	A1	for an answer in the range 39.8 to 40	If an answer in the range is seen in working and then incorrectly rounded award full marks.

2.

Answer	Mark	Mark scheme	Additional guidance
13.1	P1	for start of process to find the length of BD , eg $\frac{BD}{\sin 34^\circ} = \frac{12.5}{\sin 109^\circ}$	Accept 7.4 for the award of the first two P marks If an answer is given within the range and then incorrectly rounded to 3 sig figs award full marks.
	P1	for complete process to find the length of BD , eg $BD = \frac{12.5}{\sin 109^\circ} \times \sin 34^\circ (= 7.39...)$	
	P1	for process to find the length of AD , eg $AD^2 = 11.4^2 + "7.39^2" - 2 \times 11.4 \times "7.39" \times \cos 86^\circ$	
	P1	for process to use correct order of operations, eg $129.96 + 54.6(5...) - 11.7(5...) (= 172.85...)$	
	A1	for answer in the range 13.1 to 13.2	

3.

	14.4	P1	for start of process, eg $0.5 \times 11 \times CD \times \sin 105 = 56$
		P1	for complete process to find CD , eg $(CD =) \frac{56}{0.5 \times 11 \times \sin 105}$ oe (= 10.54)
		P1	for process to find AC , eg $(AC^2 =) 11^2 + [CD]^2 - 2 \times 11 \times [CD] \times \cos 105$ ($AC = 17.09$)
		P1	for process to find AB , eg $\frac{AB}{\sin 48} = \frac{[AC]}{\sin 118}$
		A1	answer in range 14.3 to 14.4

4.

Working	Answer	Mark	Notes
	2.63	P1	for setting up the expression $\frac{1}{2}(x+3)(2x-1)\sin 45$ (may be seen in an equation)
		P1	(dep) for expanding the brackets in the expression or for the equation $\frac{1}{2}(x+3)(2x-1)\sin 45 = 6\sqrt{2}$ or
		P1	(dep) for the process to set up the equation and rearrange to the form $ax^2 + bx + c = d$ e.g. to $2x^2 + 5x - 27 = 0$ or $24 = 2x^2 + 5x - 3$
		P1	(dep) for substitution into the quadratic formula e.g. $\frac{-5 \pm \sqrt{5^2 - 4 \times 2 \times -27}}{4}$
		A1	for 2.63(10436...)

5.

Answer	Notes
10.4	P1 starts process by using cosine rule to find CD eg $(CD)^2 = 4.9^2 + 3.8^2 - 2 \times 4.9 \times 3.8 \times \cos 80$ (= 31.98..)
	P1 uses sine rule to find angle ACD or angle ADC eg $\frac{\sin C}{3.8} = \frac{\sin 80}{4.9}$ or $\frac{\sin D}{4.9} = \frac{\sin 80}{5.655}$
	P1 uses sine rule to find BC or BD eg $\frac{BD}{\sin 25} = \frac{5.655}{\sin 33.6}$
	P1 process to find area eg $1/2 ab \sin C$
	A1 for 10.4 to 10.43

6.

Answer	Notes
130	P1 start to process eg draw a labelled triangle or use of sine rule $\frac{\sin Q}{8.7} = \frac{\sin 32}{5.2}$
	P1 process to find of Q eg $Q = \sin^{-1} \left[\frac{\sin 32}{5.2} \times 8.7 \right]$
	P1 process to find area of triangle PRQ .
	A1 22.5 – 22.6
	C1 angle PRQ is obtuse so need to find area of two triangles.