

Paper E Non Calculator Solutions

Qu	Marking Guidance	Illustration
1.	<ul style="list-style-type: none"> Expands one set of brackets Expands all brackets Simplified 	<ul style="list-style-type: none"> $3(2x - 1) - 2(x^2 - x - 12)$ $6x - 3 - 2x^2 + 2x + 24$ $8x - 2x^2 + 21$
2.	<ul style="list-style-type: none"> Multiplies correctly Begins to solve Fully simplified 	<ul style="list-style-type: none"> $\frac{8}{3\sqrt{6}} \times \frac{\sqrt{6}}{\sqrt{6}}$ $\frac{8\sqrt{6}}{18}$ $\frac{4\sqrt{6}}{9}$
3.	<ul style="list-style-type: none"> Correctly begins to divide fractions Final answer 	<ul style="list-style-type: none"> $\frac{18}{7} \times \frac{9}{13}$ $\frac{162}{91}$
4.	<ul style="list-style-type: none"> Writes as a positive integer Finds the fifth roots Final answer 	<ul style="list-style-type: none"> $\frac{1}{32^{\frac{2}{5}}}$ $\frac{1}{2^2}$ $\frac{1}{4}$
	<ul style="list-style-type: none"> Expands the numerator Fully simplified 	<ul style="list-style-type: none"> $\frac{4x^{10}y^4}{10x^2y^5}$ $\frac{2x^3}{5y}$
5.	<ul style="list-style-type: none"> Correctly applies Pythagoras theorem Begins to solve Answer as a surd in its simplest form 	<ul style="list-style-type: none"> $8^2 + 10^2 = 164$ $x = \sqrt{164}$ $x = 2\sqrt{41}cm$
6.	<ul style="list-style-type: none"> Begins to find the area of a triangle Final answer 	<ul style="list-style-type: none"> $\frac{1}{2} \times 15 \times 18 \times 0.2$ $27cm^2$
7.	<ul style="list-style-type: none"> Correct fraction Correct calculation Final answer 	<ul style="list-style-type: none"> $\frac{60}{360}$ $\frac{60}{360} \times 3.14 \times 18$ $9.42cm$ $18 + 9.42 = 27.42cm$
8.	<ul style="list-style-type: none"> Uses the discriminant Evaluates the discriminant Conclusion 	<ul style="list-style-type: none"> $5^2 - 4 \times 2 \times 7$ -31 Since $b^2 - 4ac < 0$ no real roots exist.
9.	<ul style="list-style-type: none"> Correct answer 	<ul style="list-style-type: none"> $\tan 100, \cos 90, \sin 50, \cos 0$
10.	<ul style="list-style-type: none"> Finds equivalent equations Solves for x or y Writes final answer as a quarter. 	<ul style="list-style-type: none"> $4x + 6y = 2$ $9x - 6y = 8$ $x = 2$ or $y = -1$ $(2, -1)$
11.	<ul style="list-style-type: none"> Correct scale factor Begins to find x Final answer 	<ul style="list-style-type: none"> $\frac{2}{5}$ $x = \frac{2}{5} \times 7$ $2.8cm$
12.	<ul style="list-style-type: none"> Correct answer 	<ul style="list-style-type: none"> $(0, 8, 10)$
	<ul style="list-style-type: none"> Correct answer 	<ul style="list-style-type: none"> $(3, 4, 18)$
13.	<ul style="list-style-type: none"> First equation begins to solve Original amount with units 	<ul style="list-style-type: none"> $70\% = 42000$ $10\% = 6000$ $100\% = £60000$
14.	<ul style="list-style-type: none"> Knows how to find the volume of a hemisphere. Begins to solve Final answer 	<ul style="list-style-type: none"> $\frac{2}{3} \times 3.14 \times 6^3$ $3.14 \times 4 \times 6 \times 6$ $452.16cm^3$
15.	<ul style="list-style-type: none"> Knows to multiply Final answer 	<ul style="list-style-type: none"> $A(x) = (x - 3)(x - 9)$ $A(x) = x^2 - 12x + 27$
	<ul style="list-style-type: none"> Equates to 72 	<ul style="list-style-type: none"> $x^2 - 12x + 27 = 72$

	<ul style="list-style-type: none"> • Writes as a trinomial • Factorise • States the only solution. 	<ul style="list-style-type: none"> • $x^2 - 12x - 45 = 0$ • $(x - 15)(x + 3) = 0$ • $x = 15$
16.	<ul style="list-style-type: none"> • Correctly sketches $2a$ or $3b$ • Correctly sketches $2a + 3b$ 	<p>The diagram shows a grid with a horizontal vector labeled $2a$ and a vertical vector labeled $3b$. A third vector, labeled $2a + 3b$, is drawn from the tip of $2a$ to the tip of $3b$, representing the resultant vector.</p>
17.	<ul style="list-style-type: none"> • Begins to complete the square • Final answer 	<ul style="list-style-type: none"> • $\left(x + \frac{7}{2}\right)^2 \dots$ • $\left(x + \frac{7}{2}\right)^2 - \frac{29}{4}$
18.	<ul style="list-style-type: none"> • Correctly substitutes and equates to 6. • Begins to solve equation • Final answer 	<ul style="list-style-type: none"> • $f(p) = \frac{2}{3}(p + 5) = 6$ • $2p + 10 = 18$ • $p = 4$