

Paper B Non Calculator Solutions

Qu	Marking Guidance	Illustration
1.	<ul style="list-style-type: none"> Prepares to multiply Answer fully simplified 	<ul style="list-style-type: none"> $\frac{18}{5} \times \frac{3}{16}$ $\frac{27}{40}$
2	<ul style="list-style-type: none"> Expands brackets Final answer fully simplified 	<ul style="list-style-type: none"> $4 - 12x^2 + 60x - 75$ $-12x^2 + 60x - 71$
3.	<ul style="list-style-type: none"> Expands brackets Begins to solve Final answer 	<ul style="list-style-type: none"> $6 - 4x \geq 20$ $-4x \geq 14$ $x \leq -\frac{7}{2}$
4.	<ul style="list-style-type: none"> Correct value of p Correct value of q 	<ul style="list-style-type: none"> $p = 4$ $q = 2$
5.	<ul style="list-style-type: none"> Correct use of discriminant Completes the discriminant Final statement 	<ul style="list-style-type: none"> $5^2 - 4 \times 3 \times 2$ $= 1$ Since $b^2 - 4ac > 0$ there are two real and distinct roots.
6.	<ul style="list-style-type: none"> Correct equation 	<ul style="list-style-type: none"> $3a + 2c = 173$
	<ul style="list-style-type: none"> Correct equation 	<ul style="list-style-type: none"> $a + 4c = 141$
	<ul style="list-style-type: none"> Prepares equations Begins to solve for one term Solves for second term Final statement in context 	<ul style="list-style-type: none"> $6a + 4c = 346$ $-a - 4c = -141$ $5a = 205$ $41 + 4c = 141$ Adult cost £41, Child cost £25
7.	<ul style="list-style-type: none"> Correct Factors Correct signs 	<ul style="list-style-type: none"> $(2x \dots 1)(x \dots 3)$ $(\dots + \dots)(\dots - \dots)$
	<ul style="list-style-type: none"> Correctly factorise numerators 	<ul style="list-style-type: none"> $\frac{(2x+1)(2x-1)}{(2x+1)(x-3)}$ $\frac{2x-1}{x-3}$
8	<ul style="list-style-type: none"> Correct numerator Subtracts indices Final answer with positive index 	<ul style="list-style-type: none"> $\frac{18x^3}{5x^9}$ $\frac{18x^{-6}}{5}$ $\frac{18}{5x^6}$
9.	<ul style="list-style-type: none"> Correct amplitude Correct period 	<ul style="list-style-type: none"> Amplitude of 3 Period 180°
10.	<ul style="list-style-type: none"> Multiplies by $\frac{\sqrt{5}}{\sqrt{5}}$ Final answer 	<ul style="list-style-type: none"> $\frac{12}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}}$ $\frac{12\sqrt{5}}{5}$
11.	<ul style="list-style-type: none"> Equates percentage to quantity Begins to solve Final answer 	<ul style="list-style-type: none"> $15\% = 300,000$ $5\% = 100,000$ $100\% = £2,000,000$
12.	<ul style="list-style-type: none"> States the components of $2u$ and v Final answer 	<ul style="list-style-type: none"> $\begin{pmatrix} 6 \\ -4 \end{pmatrix} - \begin{pmatrix} -3 \\ 3 \end{pmatrix}$ $\begin{pmatrix} 9 \\ -7 \end{pmatrix}$
13	<ul style="list-style-type: none"> Creates equivalent fractions Writes as a single fraction Simplifies 	<ul style="list-style-type: none"> $\frac{5(x+3)}{(x-4)(x+3)} - \frac{6(x-4)}{(x-4)(x+3)}$ $\frac{5x+15-6x+24}{(x-4)(x+3)}$ $\frac{-x+39}{(x-4)(x+3)}$
14	<ul style="list-style-type: none"> Uses correct formulae Correct volume in cm^3 Converts to millilitres Converts to litres 	<ul style="list-style-type: none"> $V = 3.14 \times 100^2 \times 400$ $V = 1,256,000cm^3$ $V = 1,256,000ml$ $V = 1,256 l$

	<ul style="list-style-type: none"> • Correctly sets up Pythagoras • Begins to use • Finds size of missing sizes • Final value of d 	<ul style="list-style-type: none"> • $x^2 = 100^2 - 80^2$ • $x^2 = 3600$ • $x = 60cm$ • $d = 100 - 60 = 40cm$
15	<ul style="list-style-type: none"> • Equates quadratic to 0 • Factorises equation • Solves and gives coordinates 	<ul style="list-style-type: none"> • $x^2 - 2x - 15 = 0$ • $(x + 3)(x - 5) = 0$ • $(-3, 0)$ and $(5, 0)$
	<ul style="list-style-type: none"> • Correct axis of symmetry 	<ul style="list-style-type: none"> • $x = 1$
	<ul style="list-style-type: none"> • Correct coordinate 	<ul style="list-style-type: none"> • $(1, -16)$