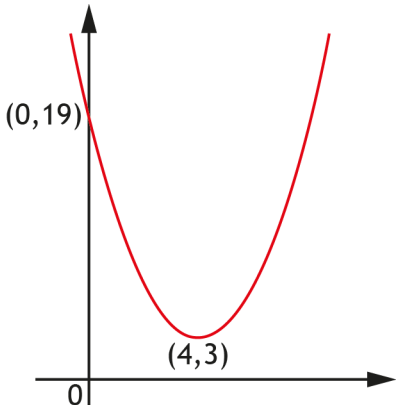


Marking instructions for each question

Question	Generic scheme	Illustrative scheme	Max mark
1	<p>Ans: $7\frac{3}{5}$</p> <ul style="list-style-type: none"> •¹ start simplification and know how to divide fractions •² consistent answer in simplest form 	<ul style="list-style-type: none"> •¹ $\frac{19}{8} \times \frac{16}{5}$ •² $7\frac{3}{5}$ or $\frac{38}{5}$ 	2
2	<p>Ans: $x > -5$</p> <ul style="list-style-type: none"> •¹ expand bracket •² collect like terms •³ solve for x 	<ul style="list-style-type: none"> •¹ $11 - 2 - 6x < 39$ •² $-6x < 30$ or $-30 < 6x$ •³ $x > -5$ or $-5 < x$ 	3
3	<p>Ans: $7\sqrt{2}$</p> <ul style="list-style-type: none"> •¹ add vectors correctly •² know how to find magnitude •³ find magnitude as a surd in its simplest form 	<ul style="list-style-type: none"> •¹ $\begin{pmatrix} 9 \\ -1 \\ -4 \end{pmatrix}$ •² $\sqrt{9^2 + (-1)^2 + (-4)^2}$ •³ $7\sqrt{2}$ 	3
4	<p>Ans: $a = 5$</p> <ul style="list-style-type: none"> •¹ know to substitute $(-3, 45)$ into $y = ax^2$ •² solve equation for a 	<ul style="list-style-type: none"> •¹ $45 = a(-3)^2$ or equivalent •² $a = 5$ 	2
5	<p>Ans: two real and distinct roots</p> <ul style="list-style-type: none"> •¹ find discriminant •² state nature of roots 	<ul style="list-style-type: none"> •¹ 53 $[5^2 - 4 \times 7 \times (-1)]$ •² two real and distinct roots 	2

Question		Generic scheme	Illustrative scheme	Max mark
6	(a)	<p>Ans: $W = 20A + 40$</p> <ul style="list-style-type: none"> •¹ gradient •² substitute gradient and a point into $y - b = m(x - a)$ or $y = mx + c$ •³ state equation in terms of W and A and in simplest form (remove any brackets and collect constants) 	<ul style="list-style-type: none"> •¹ $\frac{240}{12}$ or equivalent •² $y - 100 = \frac{240}{12}(x - 3)$ or $y - 340 = \frac{240}{12}(x - 15)$ or $100 = \frac{240}{12} \times 3 + c$ or $340 = \frac{240}{12} \times 15 + c$ •³ $W = 20A + 40$ or equivalent 	3
6	(b)	<p>Ans: $20 \times 12 + 40 = 280 \text{ kg}$</p> <ul style="list-style-type: none"> •¹ calculate weight using equation from part (a) 	<ul style="list-style-type: none"> •¹ $20 \times 12 + 40 = 280 \text{ kg}$ stated explicitly 	1
7	(a)	<p>Ans: median = 19.5, SIQR = 4.5</p> <ul style="list-style-type: none"> •¹ find median •² find quartiles •³ calculate semi-interquartile range 	<ul style="list-style-type: none"> •¹ 19.5 •² 17 and 26 •³ 4.5 	3
7	(b)	<p>Ans: valid comments</p> <ul style="list-style-type: none"> •¹ compare medians •² compare semi-interquartile ranges 	<ul style="list-style-type: none"> •¹ On average the second round's scores are higher •² The second round's scores are more consistent. 	2

Question		Generic scheme	Illustrative scheme	Max mark
8	(a)	<p>Ans: $5a + 3c = 158 \cdot 25$</p> <ul style="list-style-type: none"> •¹ construct equation 	<ul style="list-style-type: none"> •¹ $5a + 3c = 158 \cdot 25$ 	1
8	(b)	<p>Ans: $3a + 2c = 98$</p> <ul style="list-style-type: none"> •¹ construct equation 	<ul style="list-style-type: none"> •¹ $3a + 2c = 98$ 	1
8	(c)	<p>Ans: Adult ticket costs £22·50 Child ticket costs £15·25</p> <ul style="list-style-type: none"> •¹ evidence of scaling •² follow a valid strategy through to produce values for a and c •³ calculate correct values for a and c •⁴ communicate answers in money 	<ul style="list-style-type: none"> •¹ eg $10a + 6c = 316 \cdot 50$ $9a + 6c = 294$ •² values for a and c •³ $a = 22 \cdot 5$ and $c = 15 \cdot 25$ •⁴ Adult £22·50 Child £15·25 	4
9		<p>Ans: 600000</p> <ul style="list-style-type: none"> •¹ know that $80\% = 480000$ •² begin valid strategy •³ answer 	<ul style="list-style-type: none"> •¹ $80\% = 480000$ •² $10\% = 60000$ or equivalent •³ 600000 	3
10		<p>Ans: $\frac{2\sqrt{5}}{5}$</p> <ul style="list-style-type: none"> •¹ correct substitution •² correct answer 	<ul style="list-style-type: none"> •¹ $\frac{2}{\sqrt{5}}$ •² $\frac{2\sqrt{5}}{5}$ 	2

Question		Generic scheme	Illustrative scheme	Max mark
11	(a)	Ans: $b - a$ <ul style="list-style-type: none"> •¹ correct answer 	<ul style="list-style-type: none"> •¹ $b - a$ or $-a + b$ 	1
11	(b)	Ans: $2(b - a)$ <ul style="list-style-type: none"> •¹ correct answer 	<ul style="list-style-type: none"> •¹ $2(b - a)$ or $2(-a + b)$ 	1
12		Ans: $a = 4, b = 3$ <ul style="list-style-type: none"> •¹ state the value of a •² state the value of b 	<ul style="list-style-type: none"> •¹ 4 •² 3 	2
13	(a)	Ans: $(x - 4)^2 + 3$ <ul style="list-style-type: none"> •¹ correct bracket with square •² complete process 	<ul style="list-style-type: none"> •¹ $(x - 4)^2$ •² $(x - 4)^2 + 3$ 	2
13	(b)	Ans:  <ul style="list-style-type: none"> •¹ coordinates of turning point correct •² sketch parabola with minimum turning point consistent with •¹ •³ y-intercept correct 	<ul style="list-style-type: none"> •¹ (4, 3) •² parabola with minimum turning point consistent with •¹ •³ (0, 19) 	3

Question	Generic scheme	Illustrative scheme	Max mark
14	<p>Ans: $\frac{x-22}{(x+2)(x-4)}$</p> <ul style="list-style-type: none"> •¹ correct denominator •² correct numerator •³ remove brackets and collect like terms in numerator 	<ul style="list-style-type: none"> •¹ $(x+2)(x-4)$ •² $4(x-4) - 3(x+2)$ •³ $\frac{x-22}{(x+2)(x-4)}$ 	3
15	<p>Ans: $\sin^2 x^\circ$</p> <ul style="list-style-type: none"> •¹ identify correct trigonometric identity to be used •² use correct trigonometric identity to simplify expression 	<ul style="list-style-type: none"> •¹ $\frac{\sin x}{\cos x}$ or $\frac{\sin^2 x}{\cos^2 x}$ •² $\frac{\sin^2 x}{\cos^2 x} \times \cos^2 x = \sin^2 x$ 	2
16 (a)	<p>Ans: $r-5$</p> <ul style="list-style-type: none"> •¹ state expression 	<ul style="list-style-type: none"> •¹ $r-5$ 	1
16 (b)	<p>Ans: 10·6</p> <ul style="list-style-type: none"> •¹ correct use of Pythagoras' Theorem •² expand bracket •³ solve equation 	<ul style="list-style-type: none"> •¹ $r^2 = (r-5)^2 + 9^2$ •² $r^2 = r^2 - 10r + 25 + 81$ •³ $r = 10 \cdot 6$ 	3

[END OF SPECIMEN MARKING INSTRUCTIONS]