

- 1 Any (x, y) pair from the following table. (2)

x	-10	-5	-2	-1	1	2	5	10
y	5	6	9	14	-6	-1	2	3

One mark if correct product for -10 seen, eg. -5×2)

- 2 125 (2) One mark for 27 (from 3^3).
- 3 a $2x - 3 = 4x - 20$ (1)
 $-3 + 20 = 4x - 2x$ (1)
 $8.5 = x$ (1)
- b 5 or -5 (2) One mark for one correct solution
- 4 Red = 11 originally, or 22 after Reds are added (1)
Blue + Green = 30 (from $41 - 11$ or $52 - 22$) (1)
Green = 6 (1)
- 5 $3.6 \times 1000 \times 100$ (1)
 \div by 24 000 (1)
15 cm (1) (units needed)
- 6 $\pi \times 6^2 \times 15$ (1)
1696 (.460033) cm^3 (1)
- 7 $270 \div 3 \times 2$ or 2×90 (1)
180 (for C) (1)
 $660 - 270 - \text{their } 180$ or 210 (for B) (1)
7 : 6 (1)
- 8 $7 + 3 > 2n$ (1)
 $5 > n$ (1)
- 9 a 0.042 (1)
- b 8000, 50, 0.4 seen (1) Accept two or three correct.
 $\frac{8000}{20}$ or $\frac{20\,000}{50}$ or $\frac{160}{0.4}$ (1)
400 (1)
20 (1)
- 10 $x^2 + 5^2 = 10^2$ (1)
 $x = \sqrt{10^2 - 5^2}$ or $\sqrt{75}$ (1)
 $x = 8.66(025\dots)$ (1)
- 11 $5x + (3x - 7) = 13$ or $5x + y = 13$
and
 $3x - y = 11$ (1)
 $x = 3$ (1)
 $y = -2$ (1)

- 12 Trapezium at (4, 4), (4.5, 4), (5, 5) and (4, 5) (2) One mark for 3 points correct.

13 a 0.0716 (1)

b i 1.4×10^7 (1)

ii 6.54×10^{-4} (1)

14 $T - m = \frac{x}{h}$ or $Th = mh + x$ (1)

$x = h(T - m)$ or $x = Th - mh$ (1) Must have $x =$, if not then no mark.

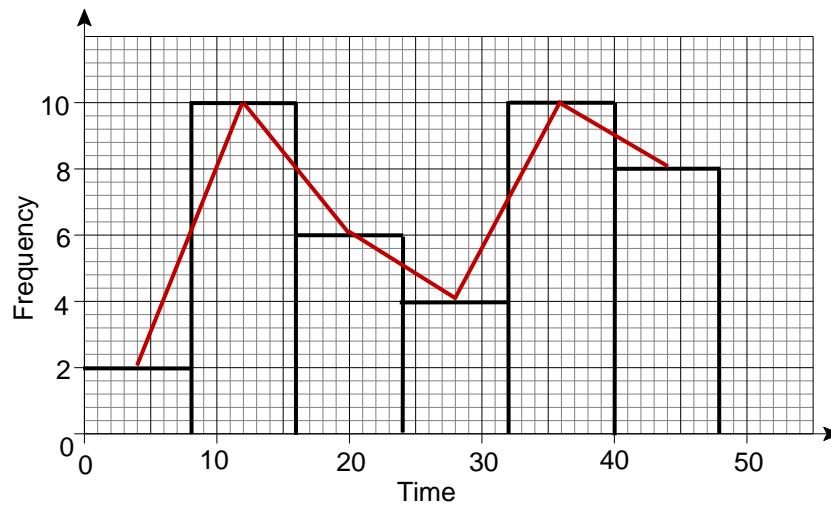
15 a $12m - 9t - 2m + 4t$ (1) Allow one error.

$10m - 5t$ (1)

b $y^2 - 3y + 10y - 30$ (1)

$y^2 + 7y - 30$ (1)

16 a i and ii



i (1) for bars of frequency diagram at correct heights.

(1) for bars plotted at correct intervals.

ii (1) for frequency polygon ... ft if lines plotted from the mid-pt of their bars.

b and d

Time (minutes)	Frequency	mid-pt	mid-pt × freq	cf
$0 < t \leq 8$	2	4	8	2
$8 < t \leq 16$	10	12	120	12
$16 < t \leq 24$	6	20	120	18
$24 < t \leq 32$	4	28	112	22
$32 < t \leq 40$	10	36	360	32
$40 < t \leq 48$	8	44	352	40
Total	40		1072	

- b** 2×4 , 10×12 , 6×18 , 4×28 , 10×36 and 8×44 (1) Allow one error.
 1072 (1) ft if first mark earned.
 $1072 \div 40$ (1)
 26.8 minutes (1)
- c** Comment on 'average'
 e.g. School A results have a lower mean than school B
 or On the whole, the students from school A took less time to solve the puzzle. (oe) (1)
- Comment on spread
 e.g. School A results have a greater range than school B. (oe) (1)
- d** Cumulative frequencies used to identify $24 < t \leq 32$ (1)
- 17** Ratio of 4 : 3 or 9 is $\frac{3}{4}$ of 12 (oe) (1)
 7.5 cm for height of smaller triangle (1)
 $\frac{1}{2} \times 12 \times 10 - \frac{1}{2} \times 9 \times 7.5$ (1)
 26.25 cm² (1)
- 18** Reduction = £168 (1)
 their $\frac{168}{480} \times 100$ (1) (must be full method)
 35% (1)
- 19** $\frac{x}{13} = \sin 72^\circ$ or $x = 13 \times \sin 72^\circ$ (1)
 12.3637... (1)
 12.4 cm (1)
- 20** $(15 - k) \times 3 = 24$ or $24 \div 3 + k = 15$ (1)
 $k = 7$ (1)
 $15 \div 3 + 7$ (1)
 12 (1)
- 21 a** $5c(3 - 4c)$ (2) One mark for $5(3c - 4c^2)$ or $c(15 - 20c)$
- b** $(x \pm a)(x \pm b)$ where $ab = 6$ or $a + b = -7$ (1)
 $(x - 1)(x - 6)$ (1)
- c** $(x + 4)(x - 4)$ (1)
- 22** 15.5 and 16.5 seen or 15.5 and 8.5 seen (1)
 8.5 and 9.5 seen or 16.5 and 9.5 seen (1)
 Either 16.5×9.5 (or 156.75 seen) or 15.5×8.5 (or 131.75 seen) (1)
 $131.75 \leq A < 156.75$ (inequality signs must be correct) (1)
- 23** $\frac{1}{8}$ (2) One mark for 8 seen.

GCSE % breakdown per topic:

	Number	Algebra	Ratio	Geometry	Stats & Prob	Total
6c		Q1 (2) Q3a (2)				4
6b			Q4 (3)		Q16a (3)	6
6a		Q2 (2) Q3b (2)	Q5 (3)			7
7c	Q9a (1 mark)	Q21a (2)	Q7 (4)	Q6 (3)		10
7b	Q9b (4)	Q8 (2) Q11 (3) Q15a (2)		Q10 (3)		14
7a	Q13a (1) Q13b (2)	Q14 (2) Q15b (2)		Q12 (2) Q17 (4)	Q16b (4) Q16c (2)	19
8c	Q18 (3)	Q20 (4)		Q19 (3)	Q16d (1)	11
8b		Q21b (2)		Q22 (4)		6
8a	Q23 (2)	Q21c (1)				3
Total	13	29	9	19	10	80