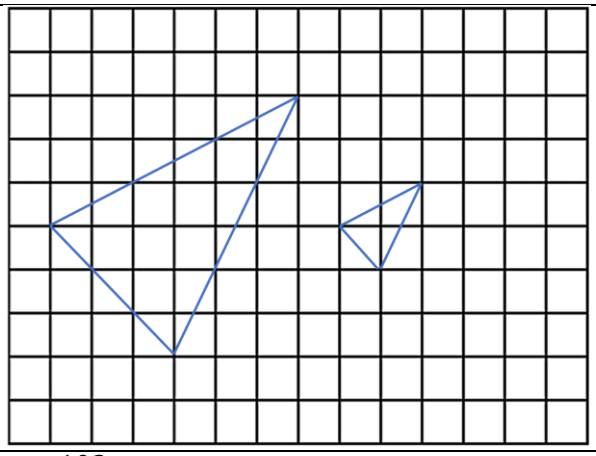
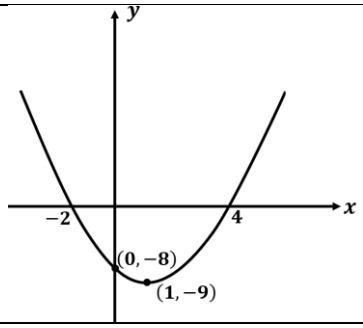
Mark scheme

2023 4N Prelim Paper 1

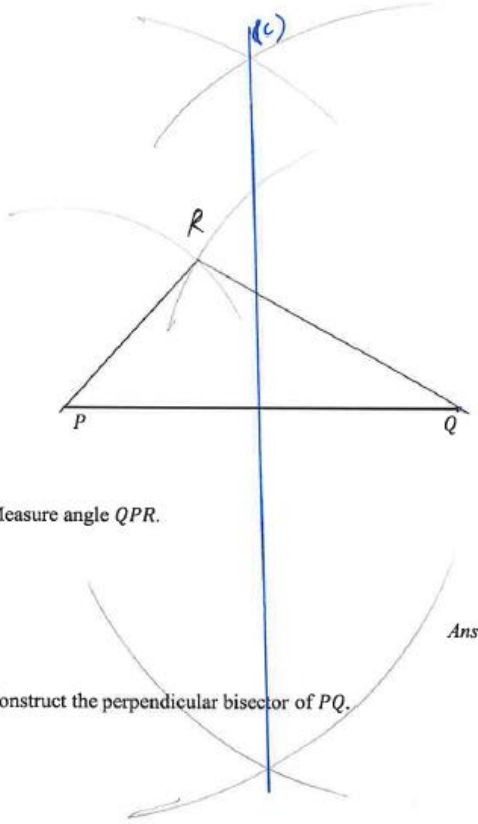
Qn	Answer	Marks
1a)	$\frac{11.2 \times 3}{8.2 - 4.7}$ $= 9.6$ (Accept $\frac{48}{5}$)	B1
1b)	$\sqrt{5.1 + 3.75^2}$ $= 4.4$	B1
2a)	$0.31\dot{2}$	B1
2b)	21	B1
2c)	$\frac{5}{7}$, 21, $\sqrt{64}$, $0.31\dot{2}$	B1 (all correct)
3)	$-4x \geq 73$ $x \geq \frac{-73}{4}$ $x \leq -18.25$ The largest integer is -19.	M1 A1
4a)	$x^2 + 10x + 21$ $= x^2 + 10x + \left(\frac{10}{2}\right)^2 - \left(\frac{10}{2}\right)^2 + 21$ $= (x + 5)^2 - 4$ $a = 5$ $b = -4$	 M1 A1 A1
4b)	$x^2 + 10x + 21 = 0$ $(x + 5)^2 - 4 = 0$ $(x + 5)^2 = 4$ $(x + 5) = 2$ *or* $(x + 5) = -2$ $x = -3$ *or* $x = -7$	 M1 A1, A1
5a)	9 students	B1
5b)	Number of students with at least \$5 of average daily pocket money $= 18$ Required probability$= \frac{18}{50}$. $= \frac{9}{25}$.	B1

6a)	$\frac{250}{4} = 62.5$ $Maximum\ number\ of\ cupcakes\ = 62 \times 24$ $= 1488$ Amount= 1488×1.80 $= 2678.40$	 M1 M1 A1
6b)	Amount of eggs used= 62×4 $= 248$ Percentage of eggs not used= $\frac{2}{250} \times 100$ $= 0.8\%$	 M1 A1
6c)	Butter: Flour and Milk $= 115: 180 + 120$ $= 115: 300$ $= 23: 60$	 M1 A1
7a)	Speed at ***AB*** $= \frac{15}{10}$ $= 1.5m/s$ Speed at ***CD*** $= \frac{10}{10}$ $= 1m/s$ Hence, the statement is incorrect. It is travelling faster at ***AB***.	 M1 A1
7b)	During ***BC***. Duration =10s.	 B1
7c)	The electric toy car is making a u-turn to return back to the original position.	B1
7d)	Average speed $= \frac{total\ distance}{total\ time}$ $= \frac{50}{50} m/s$ $= 1m/s$	 M1 A1
8a)	2 | 1050 3 | 525 5 | 175 5 | 35 7 | 7 | 1 $1050 = 2 \times 3 \times 5 \times 5 \times 7$ $x = 1$ $y = 2$	 B1 B1

8b)	$1050k = 2 \times 3 \times 5 \times 5 \times 7 \times k$ $k = 2 \times 3 \times 7$ $= 42$	B1
8c)	$H.C.F = 2 \times 5 \times 5 \times 7$ $= 350$	M1 A1
9)		B2 (shape, size)
10a)	$p = \frac{102}{2}$ $= 51\ cm$	B1
10b)	$q = 75°$	B1
10c)	$r = 180 - 60 - 75$ $= 45°$ (sum of angles in a triangle)	M1 A1
11a)		B1-Shape B1-Points
11b)	Line of symmetry is $x = 1$.	B1
11c)	Coordinates $= (1, -9)$	B1
12a)	Deposit $= \frac{10}{100} \times 6200$ $= \$620$	M1 A1
12b)	Let the monthly payment be x. $620 + 12x = 7400$ $x = 565$ Each monthly payment is \$565.	M1 A1

13a)	$y + 2x = 18$ $y = -2x + 18$ Let $x = 0$ Coodinates of $A = (0, 18)$ Let $y = 0$ Coodinates of $B = (9, 0)$	 B1 B1
13b)	Distance $= \sqrt{(8-0)^2 + (20-0)^2}$ $= 21.5 units$	M1 A1
14)	Gradient of $AB = \frac{1}{2}$ $\frac{7-0}{p+2} = \frac{1}{2}$ $14 = p + 2$ $p = 12$	 M1 A1
15)	Area $= \frac{1}{2}(38 + 48)(25)$ $= 1075m^2$	M1 A1
16a)	$x^2 + x - 6$ $= (x - 2)(x + 3)$	 B1
16b)	$50y^2 - 18$ $= 2(25y^2 - 9)$ $= 2(5y - 3)(5y + 3)$	 M1 A1
17a)	$\frac{3p}{q} = 5r + 1$ $3p = 5rq + q$ $p = \frac{5rq+q}{3}$	 B1
17b)	$\frac{1}{x^2-9} + \frac{2}{x+3}$ $= \frac{1}{x^2-9} + \frac{2x-6}{x^2-9}$ $= \frac{2x-5}{x^2-9}$	 M1 A1
18a)	 **Brand** | **Colour** X | R X | B X | G Y | R Y | B Y | G	 A1 A1

18b)	$P(\text{Ali chooses a blue pen}) = \frac{2}{6}$ $= \frac{1}{3}$	B1
19a)	- Inconsistent scale on vertical axis. - Missing years represented. - Inaccurate title description.	B1 (any of these)
19b)	- The inconsistency may have caused viewers to have the perception that the number of visitors have doubled. - The difference between the years. Not all the years are shown. Attendance in the missing years could have been higher. - The title is biased and does not allow reader to make their own judgement.	B1 (any of these)

20a)	 **(b)** Measure angle QPR. *Answer* _____ **(c)** Construct the perpendicular bisector of PQ.	B1 $[PR]$, B1 $[QR]$
20b)	Angle $QPR = 48°$	B1
20c)	As above diagram	B1