

AQA, OCR, Edexcel

GCSE

GCSE Maths

Model Solutions for AQA Paper
1 June 2013

Name:

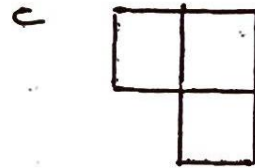
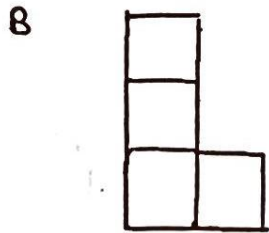
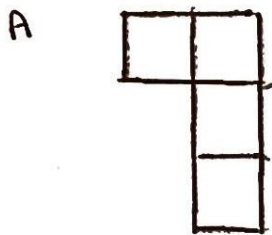
M M E

Mathsmadeeasy.co.uk

Total Marks:

AQA June 13 P1

1.



2.

$$\frac{41 \times 198}{77}$$

$$\begin{aligned} 41 &\approx 40 \\ 198 &\approx 200 \\ 77 &\approx 80 \end{aligned}$$

$$\frac{40 \times 200}{80}$$

$$= \frac{8000}{80} = 100$$

3.

$$n = 10$$

$$\frac{1}{n} = 0.1, \quad n-1 = 9, \quad n+1 = 11, \quad n^2 = 100, \quad \sqrt{n} = \sqrt{10}$$

median so order: $0.1, \sqrt{10}, 9, 11, 100$

median = 9 $\therefore n-1$ is the median

4a.

$$pq = \text{even}$$

4b.

$$3(p+q) = 3 \times \text{odd} = \text{odd}$$

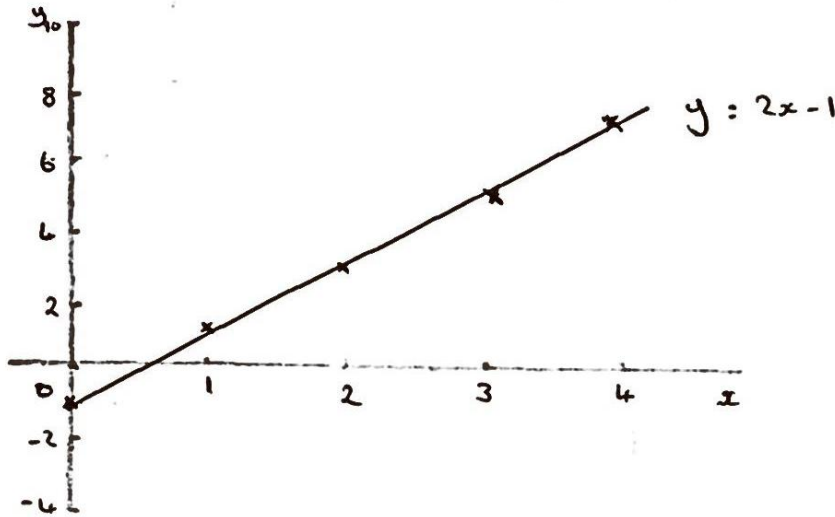
4c.

$$p/q = \text{either}$$

5a

$$y = 2x - 1$$

x	0	1	2	3	4
y	-1	1	3	5	7



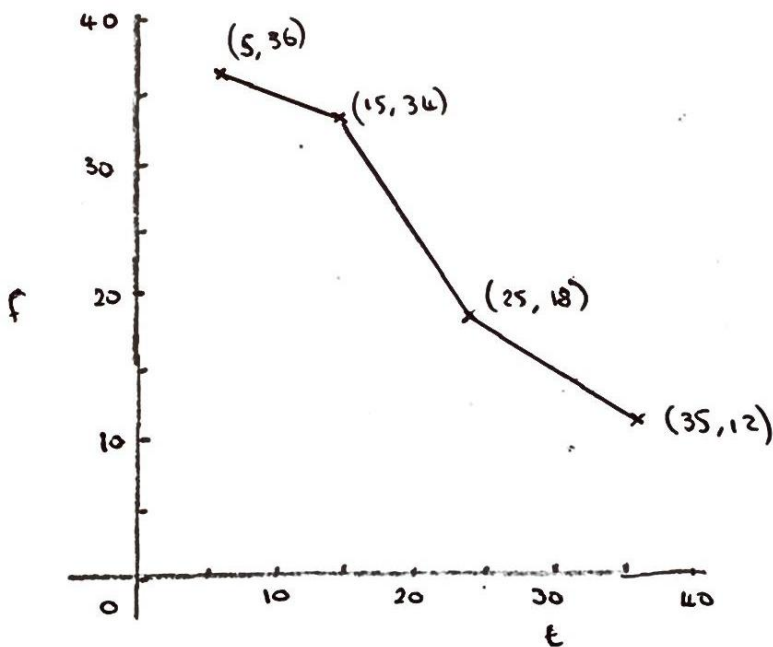
5b

$$2x - 1 = 2 \quad (+1)$$

$$2x = 3 \quad (\div 2)$$

$$x = 3/2$$

6a



6b

out of 100 students, $18 + 12 = 30$ take more than 20 mins

$$\therefore 180 \text{ students} \quad \left(\frac{30}{100} \times 600 \right)$$

7.

people living	no. of houses	no. of people
2	4	8
3	3	9
4	a	4a
5	1	5

$$\begin{aligned} \text{so } 8 + 9 + 4a + 5 &= 30 \\ 22 + 4a &= 30 && (-22) \\ 4a &= 8 && (\div 4) \\ a &= 2 \end{aligned}$$

8a.

$$3x - 15 = 3(x - 5)$$

8b.

$$5(y + 4t - 2) = 5y + 20t - 10$$

8c.

$$3(w + 2) = 2w - 1$$

$$3w + 6 = 2w - 1 \quad (-2w)$$

$$w + 6 = -1 \quad (-6)$$

$$w = -7$$

9.

$$J + W = 250 \quad \textcircled{1}$$

$$J + 4W = 550 \quad \textcircled{2}$$

$$\textcircled{2} - \textcircled{1} \quad 3W = 300 \quad (\div 3)$$

$$W = 100$$

$$J + 100 = 250$$

$$\therefore J = 150$$

10.

$$y \leq 5$$

$$x > 2$$

$$x \leq y$$

11.

$$T + S + P = 48$$

$$3t : 4s : 5p$$

so $3 + 4 + 5 = 12$ bits

$$\frac{48}{12} = 4 \text{ so each 'bit' worth 4}$$

T	S	P
12	16	20

\therefore P area 20 cm^2

12.

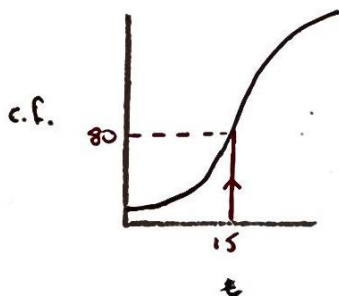
$$2(a+c) = 5(a-b)$$

$$2a + 2c = 5a - 5b \quad (-2a)$$

$$2c = 3a - 5b \quad (\div 2)$$

$$c = \frac{1}{2}(3a - 5b)$$

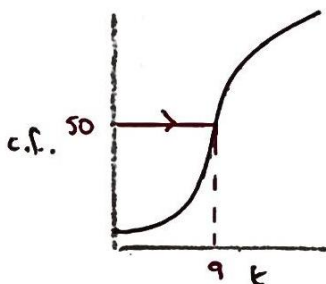
13a.



$$100 - 80 = 20$$

so 20 customers waited longer than 15 mins

13b.



median = 50th value

so 9 minutes

3.

$$\begin{aligned} \text{IQR} &= \text{UQ} - \text{LQ} \\ &= 11 - 3 \\ &= 8 \end{aligned}$$

13d

Waiting times decreased after the new window since median is lower.

Spread of waiting times decreased after new window

14a.

$$\hat{A}BC = 90^\circ$$

$$\begin{aligned} \text{so } x &= 180 - 90 - 55 \\ &= 35^\circ \end{aligned}$$

14b

$y = 100^\circ$, angle at centre is twice the angle at the circumference

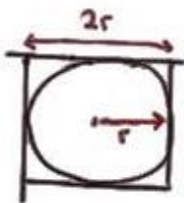
15a.

$$\begin{aligned} &(3x+2)(2x+5) \\ &= 6x^2 + 15x + 4x + 10 \\ &= 6x^2 + 19x + 10 \end{aligned}$$

15b.

$$(3x^2y^4)^2 = 9x^4y^8$$

16.



$$\text{Area of square} = 2r \times 2r = 4r^2$$

$$\text{Area of circle} = \pi r^2$$

$$\frac{3}{4} \text{ Area of square} = \frac{3}{4} \times 4r^2 = 3r^2$$

$$3 < \pi$$

$$\text{so } 3r^2 < \pi r^2$$

\therefore more than $\frac{3}{4}$ of the area taken up

\therefore more than 75%

17.

$$\frac{n(n-2)}{2} + \frac{n(n+1)}{2}$$

$$\frac{n(n-1) + n(n+1)}{2}$$

$$= \frac{n^2 - n + n^2 + n}{2}$$

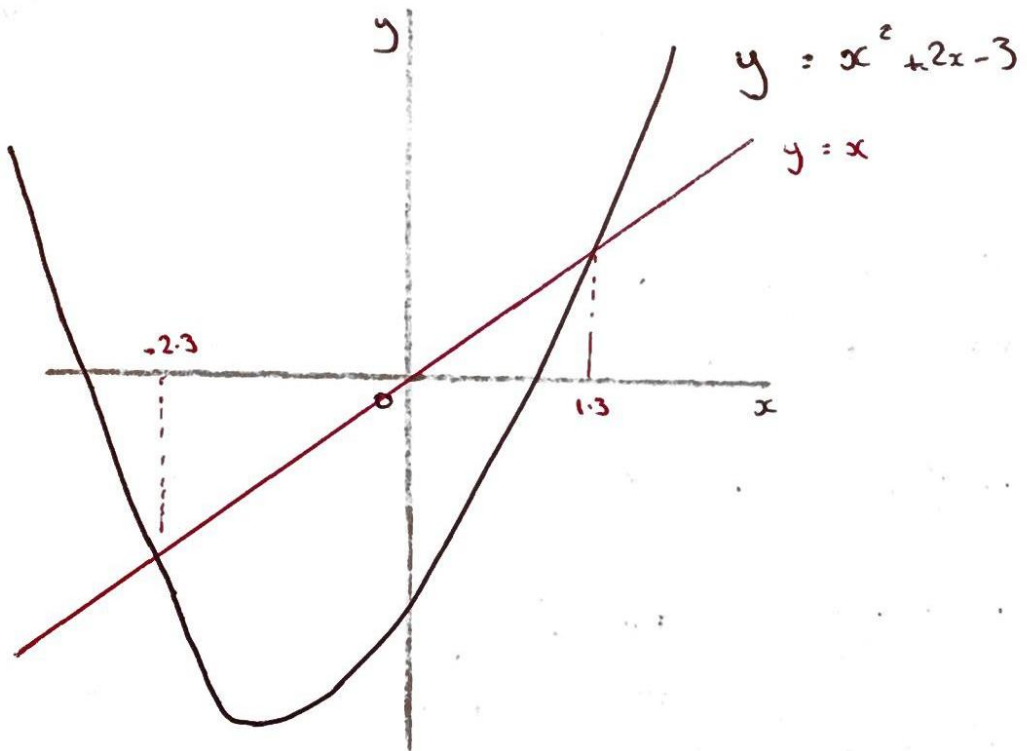
$$= \frac{2n^2}{2}$$

$$= n^2$$

18.

$$(x^2 + 2x - 3) = (x^2 + x - 3)$$

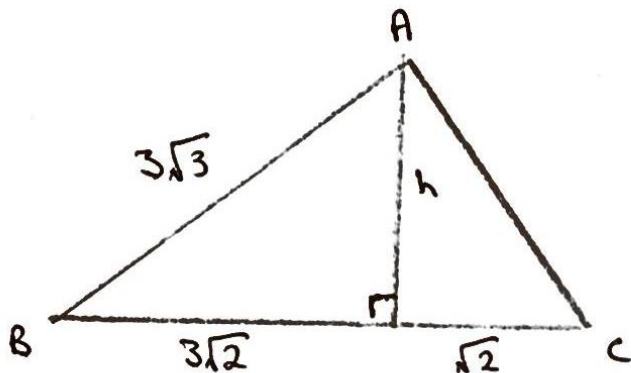
$$y = x$$



19a

$$\begin{aligned}(3\sqrt{3})^2 &= 3^2 \times (\sqrt{3})^2 \\ &= 9 \times 3 \\ &= 27\end{aligned}$$

19b



Pythag.

$$\begin{aligned}(3\sqrt{3})^2 &= h^2 + (3\sqrt{2})^2 \\ 27 &= h^2 + 18 \\ h^2 &= 9 \\ h &= 3\end{aligned}$$

$$\text{Area of } \Delta = \frac{1}{2} (b \times h)$$

$$\begin{aligned}b &= 3\sqrt{2} + \sqrt{2} \\ &= 4\sqrt{2}\end{aligned}$$

$$\begin{aligned}\text{Area} &= \frac{1}{2} (4\sqrt{2} \times 3) \\ &= \frac{1}{2} \times 12\sqrt{2} \\ &= 6\sqrt{2}\end{aligned}$$