

**AQA, OCR, Edexcel**

**GCSE**

# GCSE Maths

Model Solutions for AQA Paper  
1 November 2013

Name:

**M**

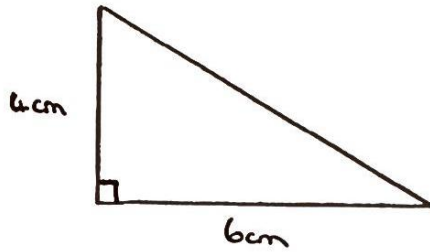
**M**

**E**

Mathsmadeeasy.co.uk

Total Marks:

1.



$$\begin{aligned} A &= \frac{1}{2} (b \times h) \\ &= \frac{1}{2} (4 \times 6) \\ &= 12 \text{ cm}^2 \end{aligned}$$

2.

$$20T + 16C$$

3a.

$$\begin{aligned} 3(2c-1) \\ = 6c-3 \end{aligned}$$

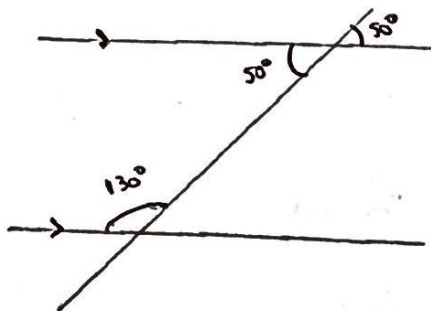
3b.

$$\begin{aligned} \frac{x}{20} &= 10 \quad (\times 20) \\ x &= 200 \end{aligned}$$

3c.

$$\begin{aligned} 3y + 6 &= 30 - 7y && (+7y) \\ 10y + 6 &= 30 && (-6) \\ 10y &= 24 && (\div 10) \\ y &= 2.4 \end{aligned}$$

4a.



$$x = 130^\circ$$

Supplementary angles sum to  $180^\circ$

4b Vertically opposite

5a.

$$\begin{aligned} E &= mv^2 \\ &= 3(10)^2 \\ &= 3 \times 100 \\ &= 300 \end{aligned}$$

5b

$$\begin{aligned} E &= mv^2 \\ \frac{E}{m} &= v^2 \\ v &= \sqrt{\frac{E}{m}} \quad \text{so Julie correct} \end{aligned}$$

Phil didn't  $\sqrt{\text{the } m}$

6.

$$\begin{aligned} £65 &- 15\% \\ 10\% &= £6.50 \\ 5\% &= £3.25 \\ 15\% &= £6.50 + £3.25 = £9.75 \\ £65 &- £9.75 \\ &= £55.25 \end{aligned}$$

7. Yes, because the new counters are still in the same proportion.

24 in the bag so  $P(B) = \frac{1}{3}$  so 8 blue

add 5B 5R 5W, so ~~24~~ 13 blue, ~~24~~  $\frac{13}{39} = \frac{1}{3}$

8.  $\frac{2}{3} = 0.666\dots$       $\frac{3}{5} = 0.6$       $\frac{7}{10} = 0.7$       $\frac{13}{20} = 0.65$

$\frac{3}{4} = 0.75$       $\Rightarrow$       $0.7$  is closest so  $\frac{7}{10}$

7b.  $A = \frac{1}{2} (10 + 20) \times 8$   
 $= 4(30)$   
 $= 120 \text{ cm}^2$

7b.  $A = \frac{1}{2} (4 + 10) \times h$   
 $21 = \frac{1}{2} (14) \times h$   
 $21 = 7h$   
 $h = 3$

so  $RS = 3 \Rightarrow RM = 3$

$\therefore QL = 10 - 4 - 3$   
 $= 3$

so  $QL = RM$

10a.  $j : l$   
 $1 : 4$

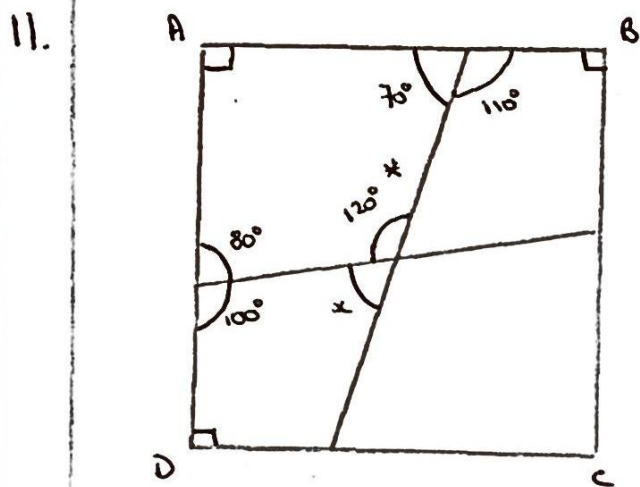
5 parts so for 1l of juice fruit drink  
 we need 200ml juice 800ml lemonade

Juice is £6 per litre  
 $\frac{£6}{5} = £1.20$  per 200ml

lemonade is 50p per litre  
 $50p \times \frac{4}{5} = 40p$  per 800ml  
 $£1.20 + 40p = £1.60$

10b.  $£2 - £1.60 = 40p$  profit

$$\frac{40p}{£1.60} = \frac{1}{4} = 25\%$$



$$\begin{aligned} * & 360 - 90 - 70 - 80 \\ & = 120^\circ \\ & \text{angles in quad. sum to } 360^\circ \end{aligned}$$

$$x = 60^\circ \quad (\text{angles on straight line sum to } 180^\circ)$$

12. Jo should give the students a test and record the marks for both groups - those who practised at home and those who didn't.

She should record her results and find the average score for both groups.

She should then compare the two average scores and refer back to her hypothesis.

13.

$$\begin{aligned} 2x - 3y &= 7 & \times 4 \\ 3x + 4y &= 2 & \times 3 \end{aligned}$$

$$\begin{aligned} 8x - 12y &= 28 & \textcircled{1} \\ 9x + 12y &= 6 & \textcircled{2} \end{aligned}$$

$$\begin{aligned} \textcircled{1} + \textcircled{2} & & 17x - 34 \\ & & x = 2 \end{aligned}$$

$$\begin{aligned} 3(2) + 4y &= 2 \\ 6 + 4y &= 2 \\ 4y &= -4 & \Rightarrow y = -1\frac{1}{4} \end{aligned}$$

14a.  $10 \times \frac{50}{300} = 10 \times \frac{1}{3} = 2$

16b.  $(\cancel{30} + 25) (35 + 20 + 15) \times \frac{1}{5}$   
 $= 70 \times \frac{1}{5}$   
 $= 14$

15a.  $(2x+1)(3x-4)$   
 $= 6x^2 - 8x + 3x - 4$   
 $= 6x^2 - 5x - 4$

15b.  $6x^2 - 23x - 4$   
 $= 6x^2 - 24x + x - 4$   
 $= 6x(x-4) + 1(x-4)$   
 $= (6x+1)(x-4)$

	24
1	24
2	12
3	8
4	6

16a.  $3:4$  so  $3+4=7$  total

16b.  $P(T) = \frac{3}{7}$        $P(Q) = \frac{4}{7}$   
 $P(T,T) = \frac{3}{7} \times \frac{3}{7}$        $P(Q,Q) = \frac{4}{7} \times \frac{4}{7}$

$P(\text{same}) = P(T,T) + P(Q,Q)$   
 $= \frac{9}{49} + \frac{16}{49} = \frac{25}{49}$

17. grad of AC =  $\frac{y_1 - y_2}{x_1 - x_2} = \frac{4 - 2}{0 - 2} = -2$

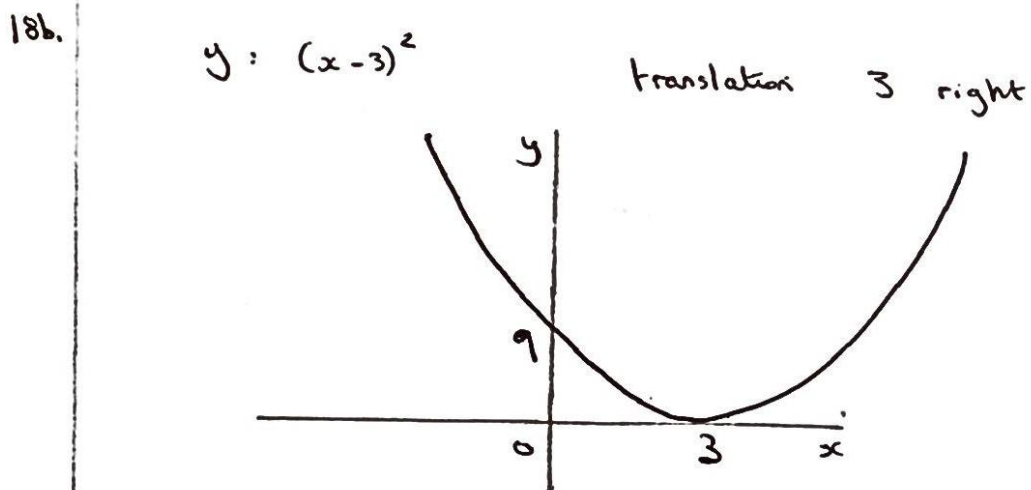
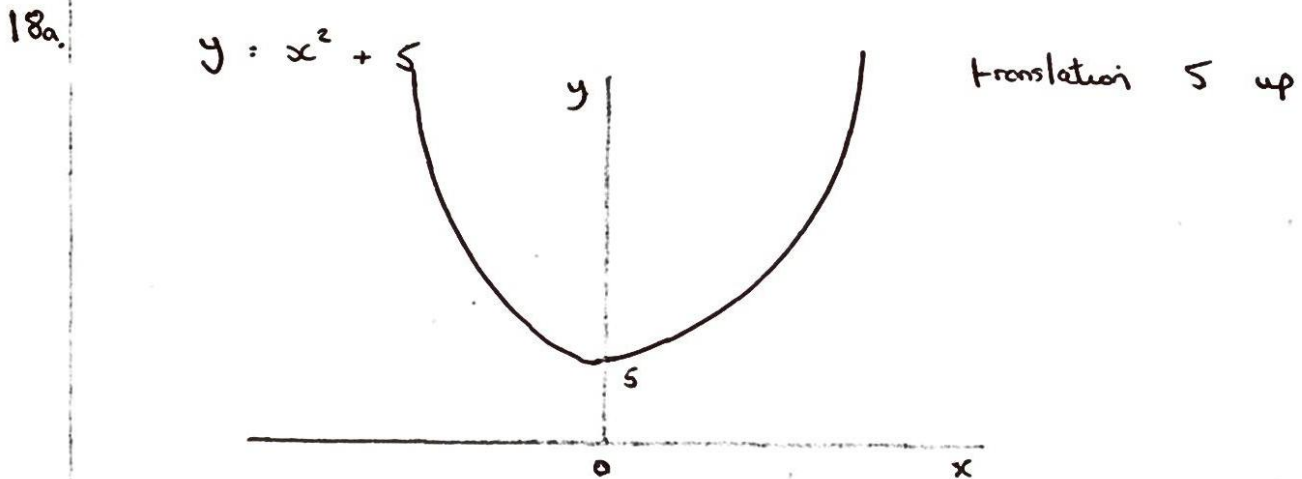
B (1,0)

$$y - y_1 = m(x - x_1)$$

$$y - 0 = -2(x - 1)$$

$$y = -2x + 2$$

$$2x + y = 2$$



when  $x = 0$   $y = (0 - 3)^2 = 9$

19.

$$x^2 + 8x + 6 = 0$$

$$(x+4)^2 - 16 + 6 = 0$$

$$(x+4)^2 = 10$$

$$x+4 = \pm \sqrt{10}$$

$$x = -4 \pm \sqrt{10}$$