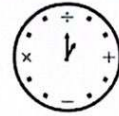


# QT Quick Test - Grade 5B

Non calculator



1. In a sale, normal prices are reduced by 25%. The normal price of a coat is reduced by £30. Work out the normal price of the coat.

$$\begin{aligned} 30 &= 25\% \text{ of the normal price} \\ 30 &= 0.25 N \\ \div 0.25 & \qquad \qquad \div 0.25 \qquad \qquad \text{Normal price} = \underline{\underline{\pounds 120}} \\ 120 &= N \end{aligned}$$

2. Expand and simplify  $(5a - 1)(2a - 8)$

$$\begin{aligned} 10a^2 - 40a - 2a + 8 \\ 10a^2 - 42a + 8 \\ \underline{\underline{5a^2 - 21a + 4}} \end{aligned}$$

3. Simon drove from Leeds to London. It took him  $4\frac{1}{2}$  hours at a speed of 70mph. Josh drove from Leeds to London. It took Josh 6 hours to make the same journey.

Assuming that Josh drove along the same roads as Simon, and did not take a break:

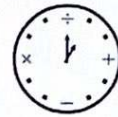
- (a) Work out Josh's average speed from Leeds to London  
(b) If Josh did not drive along the same roads as Simon, explain how this would affect your answer to part (a)

$$\begin{aligned} \text{Simon} \Rightarrow \text{Speed} &= \frac{\text{Dist}}{\text{Time}} & \text{Josh} \Rightarrow \text{Speed} &= \frac{\text{Dist}}{\text{Time}} \\ 70 &= \frac{\text{Dist}}{4.5} & &= \frac{315}{6} \\ 315 &= \text{Dist} & \text{(a) Speed} &= \underline{\underline{52.5 \text{ mph}}} \end{aligned}$$

(b) Dist large  
short - short time  
longer - longer time

# QT Quick Test - Grade 5B

Non calculator



4. (a) Work out  $6.24 \times 0.008$

$$\begin{array}{r} 624 \\ \times 8 \\ \hline 04992 \end{array}$$

$$0.04992$$

(b) Work out the value of  $(9.4 \times 10^4) \times (1.8 \times 10^3)$ . Give your answer in standard form.

$$\begin{aligned} &(9.4 \times 1.8) \times (10^4 \times 10^3) \\ &16.92 \times 10^7 \\ &1.692 \times 10^8 \end{aligned}$$

$$\begin{array}{r} 94 \\ \times 18 \\ \hline 752 \\ 1692 \\ \hline 1692 \end{array}$$

(c) Work out the value of  $(4.5 \times 10^7) \div (1.5 \times 10^3)$ . Give your answer in standard form.

$$\begin{aligned} &(4.5 \div 1.5) \times (10^7 \div 10^3) \\ &3 \times 10^4 \end{aligned}$$

5. In a theatre production, the ratio of the number of men to the number of women is 3 : 7.

40% of the men are under the age of 32

50% of the women are under the age of 32

What percentage of all the people in the theatre production are under the age of 32?

Men	:	Women	
3	:	7	
30	:	70	

10 people  
100 people

40% of 30 = 12      50% of 70 = 35

$$\frac{47}{100} = 47\%$$

6. (a) Factorise  $(x^2 + 13x + 30)$

$$(x + 3)(x + 10)$$

(b) Hence, or otherwise, find the solutions to  $x^2 + 13x + 30 = 0$

$$(x + 3)(x + 10) = 0$$

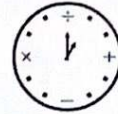
$\therefore x = -10$   
 $x = -3$

(c) Factorise fully  $20x^2 + 4x$

$$4x(5x + 1)$$

# QT Quick Test - Grade 5B

Non calculator



7.  $x$  is inversely proportional to  $y$ .  $x$  is given by the formula  $x = \frac{500}{y}$ .

Find the value of  $y$  when  $x = 12.5$ .

$$x = \frac{500}{y}$$

$$12.5 = \frac{500}{y}$$

$$y = \frac{500}{12.5}$$

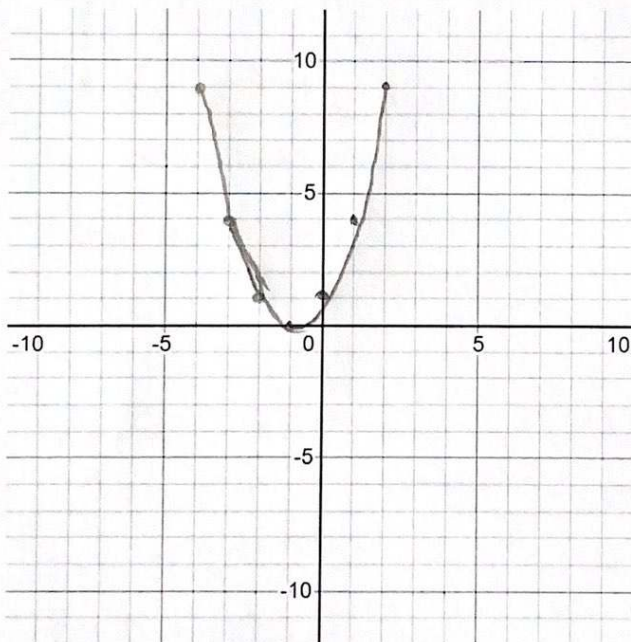
$$y = 40$$

8. (a) Complete the table of values for  $y = x^2 + 2x + 1$

$(-1)^2 + 2(-1) + 1$

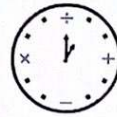
x	-4	-3	-2	-1	0	1	2
y	9	4	1	0	1	4	9

(b) On the grid, draw the graph of  $y = x^2 + 2x + 1$



$$\begin{aligned} & \underline{-2} \\ & x^2 + 2x + 1 \\ & (-2)^2 + 2(-2) + 1 \\ & 4 - 4 + 1 \\ & \underline{-3} \\ & (-3)^2 + 2(-3) + 1 \\ & 9 - 6 + 1 \\ & \underline{-4} \\ & (-4)^2 + 2(-4) + 1 \\ & 16 - 8 + 1 \end{aligned}$$

# QT Quick Test - Grade 5B



Non calculator

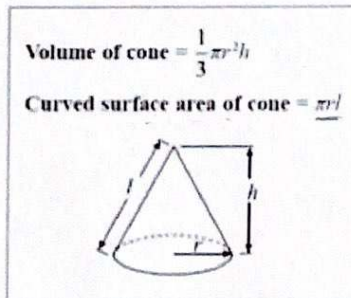
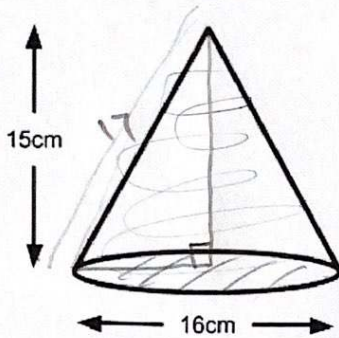
9. Find the gradient of the line that passes through  $(-1, -2)$  and  $(-3, 10)$

$$\begin{aligned} \text{Gradient} &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{10 - (-2)}{-3 - (-1)} \\ &= \frac{12}{-2} \\ &= \underline{\underline{-6}} \end{aligned}$$

10. The diagram shows a cone.

The height of the cone is 15cm. The base of the cone has a diameter of 16cm.

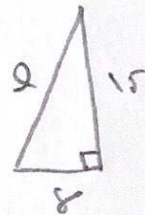
Work out the total surface area of the cone. Give your answer in terms of  $\pi$



$$\begin{aligned} \text{Surface} &= \pi r l \\ &= \pi \cdot 8 \cdot 17 \\ &= \underline{136\pi} \end{aligned}$$

$$\begin{aligned} \text{circle} &= \pi r^2 \\ &= \pi \cdot 8^2 \\ &= \underline{64\pi} \end{aligned}$$

$$\text{Total Surface Area} = \underline{\underline{200\pi}}$$



$$\begin{aligned} l^2 &= 15^2 + 8^2 \\ l^2 &= 289 \\ l &= 17 \end{aligned}$$