



QT Quick Test 2 - Higher Calculator

1. A lorry travels a distance of 200 miles in 3 hours and 25 minutes. Calculate the average speed of the lorry in miles per hour. Give your answer to 1 d.p.

$$\begin{aligned} \text{Speed} &= \frac{\text{Distance}}{\text{Time}} & \text{Speed} &= 58.53658 \\ &= \frac{200}{3\frac{25}{60}} & &= \underline{\underline{58.5 \text{ mph}}} \end{aligned}$$

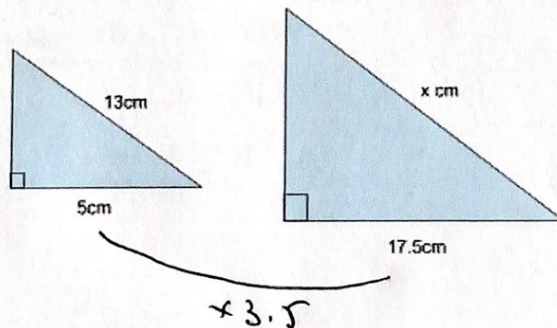
2. It costs £3.40 to buy 5 oranges. Calculate how much it will cost to buy 18 oranges.

$$\begin{aligned} \frac{340}{5} &= 68p \text{ per orange} & 18 \times 68 &= 1224p \\ & & &= \underline{\underline{£12.24}} \end{aligned}$$

3. Calculate $(1.38 \times 10^2) \div (2.3 \times 10^{-4})$

$$\begin{aligned} (1.38 \div 2.3) \times (10^2 \div 10^{-4}) & & & \\ 0.6 & \times 10^6 & & \\ & & & \underline{\underline{6 \times 10^5}} \end{aligned}$$

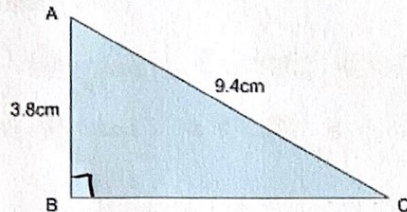
4. These triangles are mathematically similar. Calculate the value of x .



$$\begin{aligned} 13 \times 3.5 &= 45.5 \\ x &= \underline{\underline{45.5 \text{ cm}}} \end{aligned}$$



5. Calculate the length of BC. Give your answer correct to 1 decimal place.



$$\begin{aligned} a^2 &= b^2 + c^2 \\ 9.4^2 &= 3.8^2 + BC^2 \\ 9.4^2 - 3.8^2 &= BC^2 \\ 73.92 &= BC^2 \\ 8.597674 &= BC \\ \therefore BC &= \underline{\underline{8.6 \text{ cm}}} \end{aligned}$$

6. Given that $a:b = 5:4$ and $b:c = 9:7$
Find the ratio $a:b:c$

$$\begin{array}{l} a:b \qquad b:c \\ 5:4 \qquad 9:7 \\ \times 9 \qquad \times 4 \\ \hline 45:36 \qquad 36:28 \end{array}$$

$$\begin{array}{l} a:b:c \\ 45:36:28 \\ \hline \end{array}$$

7. Solve the simultaneous equations:

$$\begin{array}{r} 3x + y = 11 \quad \times 2 \\ 2x - 4y = -9 \quad \times 3 \end{array}$$

$$\begin{array}{r} 6x + 2y = 22 \quad - \\ 6x - 12y = -27 \\ \hline 14y = 49 \\ y = \underline{\underline{3.5}} \end{array}$$

Substitute

$$\begin{array}{l} 3x + y = 11 \\ 3x + (3.5) = 11 \\ 3x = 7.5 \\ x = \underline{\underline{2.5}} \end{array}$$

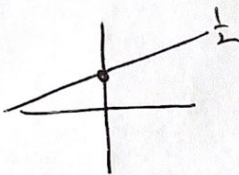
$$x = \underline{\underline{2.5}}, y = 3.5$$



8. Kavin bought a boat for £65,000. In the first year the value of the boat decreased by 25%. In the second year the value of the boat increased by 10%. Calculate the value of the boat after 2 years.

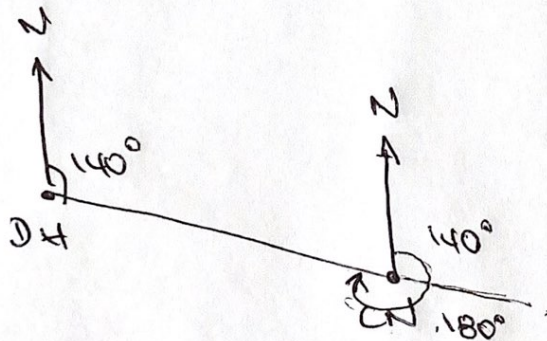
$$\begin{aligned} \text{1st year } 65000 \times 0.75 &= 48750 \\ \text{2nd year } 48750 \times 1.10 &= 53625 \\ &= \underline{\underline{£ 53625}} \end{aligned}$$

9. Line A passes through the point (0,5) and has a gradient of $\frac{1}{2}$. Write down the equation of line A.



$$\begin{aligned} y &= mx + c \\ y &= \frac{1}{2}x + 5 \\ &= \underline{\underline{y = \frac{1}{2}x + 5}} \end{aligned}$$

10. The bearing of Crows Nest from Deacons Hill is 140° . What is the bearing of Deacons Hill from Crows Nest?



Crows Nest
to Deacons Hill

$$\begin{aligned} &140 \\ &180 + \\ \hline &320^\circ \end{aligned} \quad \underline{\underline{320^\circ}}$$