

Foundation tier unit 14 check in test

Calculator

Q1. A and B are two companies.

The table shows some information about the sales of each company and the number of workers for each company in 2004 and in 2014.

	Company A		Company B	
	Sales (£ millions)	Number of workers	Sales (£ millions)	Number of workers
2004	320	2960	48	605
2014	388	3200	57	640

Work out the percentage increase in sales from 2004 to 2014 for Company A.

Q2. A clothes shop has a sale.

In the first week they reduce all their prices by 10%.

In the second week they reduce all their prices by a further 5%.

Find the sale price in the second week of a dress that originally cost £90.

Q3. Sally won some money in a raffle.

She gave 12.5% of the money to charity.

She had £262.50 left.

Work out how much money Sally won.

Q4. Talil is going to make some concrete mix.

He needs to mix cement, sand and gravel in the ratio 1 : 3 : 5 by weight.

Talil wants to make 180 kg of concrete mix.

How much sand does Talil need?

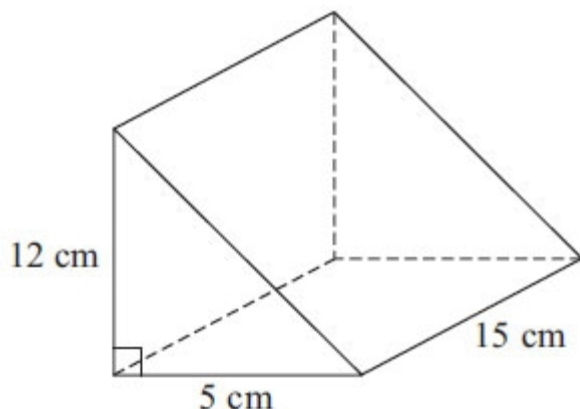
Q5. A car starts from rest and accelerates at 4 m/s for 300 m.

Use the formula $v^2 = u^2 + 2as$, where a is constant acceleration, u is initial velocity, v is final velocity and s is displacement from the initial position, to work out the final velocity in m/s.

Give your answer correct to 3 significant figures.

Q6. The diagram shows a solid triangular prism.

Diagram **NOT**
accurately drawn



The prism is made from metal.
The density of the metal is $6.6 \text{ grams per cm}^3$.
Calculate the mass of the prism.

Q7. Change 72 km/h into m/s .

Q8. Four companies sell the same type of furniture.

The price of the furniture from Pooles of London is £1480
The price of the furniture from Jardins of Paris is €1980
The price of the furniture from Outways of New York is \$2250
The price of the furniture from Gottfrieds of Bern is CHF1910

The exchange rates are

$$£1 = €1.34$$

$$£1 = \$1.52$$

$$£1 = \text{CHF}1.26$$

Which company sells this furniture at the lowest price?

Q9. Toby invested £7500 for 2 years in a savings account.
He was paid 4% per annum compound interest.

How much money did Toby have in his savings account at the end of 2 years?

Q10. At a depth of x metres, the temperature of the water in an ocean is $T^\circ\text{C}$.
At depths below 900 metres, T is inversely proportional to x .

$$T \text{ is given by } T = \frac{4500}{x}$$

Work out the difference in the temperature of the water at a depth of 1000 metres and the temperature of the water at a depth of 3000 metres.

Topics listed in objectives

- Understand and use compound measures:
 - density;
 - pressure;
 - speed:
 - convert between metric speed measures;
 - read values in km/h and mph from a speedometer;
 - calculate average speed, distance, time – in miles per hour as well as metric measures;
 - use kinematics formulae to calculate speed, acceleration (with formula provided and variables defined in the question);
 - change d/t in m/s to a formula in km/h, i.e. $d/t \times (60 \times 60)/1000$ – with support;
- Express a given number as a percentage of another number in more complex situations;
- Calculate percentage profit or loss;
- Make calculations involving repeated percentage change, not using the formula;
- Find the original amount given the final amount after a percentage increase or decrease;
- Use compound interest;
- Use a variety of measures in ratio and proportion problems:
 - currency conversion;
 - rates of pay;
 - best value;
- Set up, solve and interpret the answers in growth and decay problems;
- Understand that X is inversely proportional to Y is equivalent to X is proportional to $\frac{1}{Y}$;
- Interpret equations that describe direct and inverse proportion.

Answers

- Q1. 21.25%
Q2. £76.95
Q3. £300
Q4. 60kg
Q5. 49.0 m/s
Q6. 2970 g
Q7. 20 m/s
Q8. Jardins of Paris
Q9. £8112
Q10. 3 °C