



## Using Formulae:

### Exam Questions

All the following questions should be attempted **without** a calculator unless stated otherwise

1. Distances travelled by falling objects can be measured using the following formula

$$d = \frac{g}{2} \times t^2$$

Given that  $g = 9.8$  and  $t = 3$  seconds. Calculate the distanced travelled in meters.

2. The formula to work out the missing angle is as follows

$$A = 180 - (b + c)$$

where  $b$  and  $c$  are angles measured in degrees. If  $b = 55$  and  $c = 81$ , what is the value of the missing angle?

3. In Physics Force is found using the formula

$$F = ma$$

where  $m$  is mass in kg and  $a$  is acceleration in m/s. Given the two objects with their masses and acceleration state which object has the higher Force.

	Mass (kg)	Acceleration (m/s)
Object A	30	4.3
Object B	40	3.3

4. The formula to calculate Electrical Power is as follows

$$P = I^2R$$

Given that  $I = 5$  and  $R = 12$ , calculate the electrical power  $P$ .

5. The formula a building company uses when calculating the cost (in £) is as follows

$$C = 50 + 15h + b.$$

where  $h$  is the number of hours worked an  $b$  is the cost of building materials (£).

If it took the company three hours and used £80 worth of building materials calculate total cost.

6. Alan buys supplies from a new American supplier in order to cut costs. He finds that the temperatures on the packets however are written in degrees Fahrenheit instead of degrees Celsius. The formula to turn Fahrenheit into Celsius is as follows

$$C = (F - 32) \times \frac{5}{9}$$

The temperature on the packet is 428°F, so Alan puts the oven to 212°C, is he correct? Justify your answer.

7. **(Calculator)** The formula to calculate a person's BMI (Body Mass Index) is as follows

$$BMI = \frac{weight}{height^2}$$

where weight is in kg and height is in meters.

- a) Given that Jamie is 1.84m tall and weighs 89kg, calculate Jamie's BMI.

Underweight	<19
Healthy	19-25
Overweight	25-30
Obese	30+

- b) Using the table above state which category Jamie falls into.

8. Two painting companies calculate cost with the following formula.

Company 1	$C = 13h + 9.50$
Company 2	$C = 11h + 14$

Carol requires painters for 3 hours, which company should she hire?

9. Heather is in America and buys supplies from a new UK supplier in order to cut costs. He finds that the temperatures on the packets however are written in degrees Celsius instead of degrees Fahrenheit.

The formula to turn Celsius into Fahrenheit is as follows

$$F = C \times \frac{9}{5} + 32$$

The temperature on the packet is 240°C, so Heather puts the oven to 450°, is she correct? Justify your answer.

10. **(Calculator)** The formula to calculate a person's BMI (Body Mass Index) is as follows

$$BMI = \frac{weight}{height^2}$$

where weight is in kg and height is in meters.

a) Given that Laura is 1.58m tall and weighs 42kg, calculate Laura's BMI.

Underweight	<19
Healthy	19-25
Overweight	25-30
Obese	30+

b) Using the table above state which category Laura falls into.