



**Bishops
Online
Tutoring**



Education Consultancy

Edexcel GCSE Mathematics

PERCENTAGES

Materials Required:

- Pen
- HB Pencil
- Ruler (in centimetres and millimetres)
- Protractor
- Compass

Instructions:

- Use a black ink pen to answer all questions
- Fill your name in the section below
- Answer the questions in the spaces provided
- Show your working out for all answers

Information:

- The marks allocated for each question are displayed within brackets – utilise this information to gauge the appropriate amount of time to dedicate to each question
- Questions marked with an asterisk (*) will assess your written communication; be careful of spelling, punctuation and grammar with these questions

Advice:

- Carefully read the question before attempting to answer it
- Be vary of time and try to answer every question
- If you have enough time in the end, go back and check your answers. A good way to check your answers is to retry the question with the hope of getting the same answer as before without looking at your working out from before

NO CALCULATOR ALLOWED

NAME:

1. Wayne bought an engagement ring for Tracy.
The total cost of the ring was £420 **plus** VAT at 17.5%.



$$420 + 73.50 = 493.50$$

- (a) Work out the cost of the ring.

$$\begin{array}{r}
 10\% = 42 \\
 5\% = 21 \\
 2.5\% = 10.5 \\
 \hline
 + \quad 17.5\% \quad | \quad 73.5
 \end{array}$$

$$£ \quad 493.50$$

(2)

Wayne invited 96 people to an engagement party.
Only 60 of the people invited came to the party.

- (b) Express 60 as a percentage of 96.

$$\frac{500}{8} = \frac{250}{4} = \frac{125}{2} = 62.5$$

$$\frac{60}{96} = \frac{30}{48} = \frac{15}{24} = \frac{5}{8}$$

$$\frac{5}{8} \times \frac{100}{1} = \frac{500}{8}$$

$$62.5\%$$

(2)

(Total 4 marks)

2. A doctor has 12000 patients.

4560 of these patients are male.

What percentage of these patients are **female**?

$$12000 - 4560 = 7440$$

$$\frac{7440}{12000} = \frac{744}{1200} = \frac{372}{600} = \frac{186}{300}$$

$$\begin{aligned}
 &= \frac{93}{150} = \frac{31}{50} \quad \frac{31}{50} = \frac{62}{100} = 62\% \\
 &\quad \quad \quad 62\%
 \end{aligned}$$

(3)

(Total 3 marks)

3. Martin had to buy some cleaning materials.
The cost of the cleaning materials was £64.00 plus VAT at $17\frac{1}{2}\%$.

Work out the total cost of the cleaning materials.

$$\begin{array}{r} 10\% = 6.4 \\ 5\% = 3.2 \\ + 2.5\% = 1.6 \\ \hline 17.5\% = 11.2 \end{array}$$

$$\begin{array}{r} 64 + 11.20 \\ = 75.20 \end{array}$$

$$\pounds 75.20$$

(Total 2 marks)

4. There are 800 students at Bishopshalt High School.

45% of these 800 students are girls.

- (a) Work out 45% of 800

$$50\% = 400$$

$$5\% = 40$$

$$50\% - 5\% = 45\%$$

$$400 - 40 = 360$$

$$36$$

(2)

There are 176 students in Year 10.

- (b) Write 176 out of 800 as a percentage.

$$\frac{176}{800} = \frac{68}{400} = \frac{34}{200} = \frac{17}{100}$$

$$\frac{17}{100} = 17\%$$

$$17\%$$

(2)

(Total 4 marks)

$$7.60 + 1.33 = 8.93$$

$$£8.93 = 893p$$

5. Alistair sells books.

He sells each book for £7.60 plus VAT at 17.5%.

He sells 1650 books.

Work out how much money Alistair receives.

$$£7.60$$

$$10\% = 76p$$

$$5\% = 38p$$

$$+ 2.5\% = 19p$$

$$17.5\% = £1.33$$

$$\begin{array}{r} 51650 \\ \times 893 \\ \hline 14950 \\ 46500 \\ 132000 \\ \hline 1473450 \end{array}$$

$$1473450p$$

$$= £14734.50$$

$$£14734.50$$

(Total 4 marks)

6. A hotel has 56 guests.
35 of the guests are male.

- (a) Work out 35 out of 56 as a percentage.

$$\frac{35}{56} = \frac{5}{8}$$

$$\frac{5}{8} \times \frac{100}{1} = \frac{500}{8} = \frac{250}{4} = \frac{125}{2} = 62.5$$

$$62.5\%$$

(2)

40% of the 35 male guests wear glasses.

- (b) Write the number of male guests who wear glasses as a fraction of the 56 guests.
Give your answer in its simplest form.

$$40\% \text{ of } 35 \rightarrow 35 \times 0.4 = 14$$

$$\frac{14}{56} = \frac{7}{28} = \frac{1}{4}$$

$$\frac{1}{4}$$

(4)

(Total 6 marks)

7. The cost of a compact disc holder is 25p. John has £15 to spend.

(a) What is the greatest number of compact disc holders that John can buy for £15?

$$1500 \div 25 = 60$$

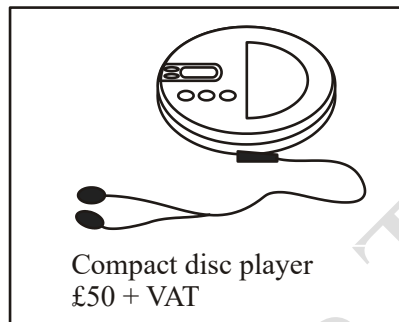
60

(3)

A compact disc player costs £50 plus 17½% VAT.

(b) Calculate the total cost of the compact disc player.

$$\begin{aligned} 10\% &= 5 \\ 5\% &= 2.50 \\ + 2.5\% &= 1.25 \\ \hline 17.5\% &= 8.75 \end{aligned}$$



$$50 + 8.75 = 58.75$$

£ 58.75

(3)

(Total 6 marks)

8. Work out 28% of £85 000

$$\begin{aligned} 10\% &= 8500 \\ 1\% &= 850 \\ 8\% &= 10\% - 1\% - 1\% \\ \therefore 8500 - 850 - 850 &= 6800 \end{aligned}$$

$$\begin{aligned} 20\% &= 10\% + 10\% \\ \therefore 8500 + 8500 &= 17000 \\ 28\% &= 20\% + 8\% \\ \therefore 17000 + 6800 &= 23800 \end{aligned}$$

£ 23800

(Total 2 marks)

9. Work out 45% of 800

$$\begin{aligned} 800 \times 0.45 \\ \begin{array}{r} 800 \\ \times 45 \\ \hline 4000 \\ + 3200 \times \\ \hline 36000 \end{array} &= 360 \end{aligned}$$

360

(Total 2 marks)

$$\% \text{ increase} = \text{Increase} \div \text{Original number} \times 100$$

10. Bytes is a shop that sells computers and digital cameras.

In 2003, Bytes sold 620 computers.

In 2004, Bytes sold 708 computers.

Work out the percentage increase in the number of computers sold.

Give your answer to an appropriate degree of accuracy.

$$708 - 620 = 88$$

$$\therefore 88 \div 620 = 0.14193548 = 0.14 (2 \text{ d.p.})$$

$$0.14 \times 100 = 14$$

$$\dots\dots\dots 14 \dots\dots\dots \%$$

(4)

11. Calculate 36% of £4500

$$10\% = 450$$

$$10\% = 450$$

$$10\% = 450$$

$$5\% = 225$$

$$+ \quad 1\% = 45$$

$$\hline 36\% = 1620$$

$$\pounds \dots\dots\dots 1620 \dots\dots\dots$$

(Total 2 marks)

12. In April 2004, the population of the European Community was 376 million.

In April 2005, the population of the European Community was 451 million.

Work out the percentage increase in population.

Give your answer correct to 1 decimal place.

$$451\text{m} - 376\text{m} = 75\text{m}$$

$$75 \div 376 = 0.19946809$$

$$0.19946809 \times 100$$

$$= 19.946809$$

$$= 19.9 (1 \text{ d.p.})$$

$$\dots\dots\dots 19.9 \dots\dots\dots \%$$

(Total 3 marks)

13. The cost of a radio is the list price plus VAT at 17.5%.

The list price of a radio is £240

Work out the cost of the radio.

$$\begin{array}{r} 10\% = 24 \\ 5\% = 12 \\ + 2.5\% = 6 \\ \hline 17.5\% = 42 \end{array}$$

$$240 + 42 = 282$$

$$£ 282$$

(Total 3 marks)

14. Linda's mark in a maths test was 36 out of 50

Find 36 out of 50 as a percentage.

$$\frac{36}{50} = \frac{72}{100} = 72\%$$

$$72\%$$

(Total 2 marks)

15. Ann buys a dress in a sale.

The normal price of the dress is reduced by 20%.

The normal price is £36.80

Work out the sale price of the dress.

$$£36.80 = 3680p$$

$$10\% = 368$$

$$20\% = 368 \times 2 = 736$$

$$3680 - 736 = 2944$$

$$2944p = £29.44$$

$$£ 29.44$$

(Total 3 marks)

16. William's salary is £24,000
His salary increases by 4%.

Work out William's new salary.

$$24000$$

$$5\% = 1200$$

$$1\% = 240$$

$$5\% - 1\% = 4\%$$

$$\therefore 1200 - 240 = 960$$

$$24000 + 960 = 24960 \quad \text{£ } 24960$$

(Total 3 marks)

17. The table shows the number of mobile phones sold in a shop in April and in May.

April	May
85	91

Work out the percentage increase in the number of mobile phones sold from April to May.
Give your answer correct to 3 significant figures.

$$91 - 85 = 6$$

$$6 \div 85 = 0.07058824$$

$$0.07058824 \times 100 = 7.058824$$

$$= 7.06 \text{ (3 s.f.)}$$

$$7.06\%$$

(Total 3 marks)