

PERCENTAGES PAST PAPER QUESTIONS

1. There are 964 pupils on the roll of Aberleven High School.
It is forecast that the roll will decrease by 15% per year.
What will be the expected roll after 3 years?
Give your answer to the nearest ten. 3
2. A house is valued at £240 000.
Its value is predicted to rise by 2.8% per annum.
Calculate its predicted value after 2 years. 3
3. Jack weighs 94 kilograms.
On the 1st of January, he starts a diet which is designed to reduce his weight by 7% per month.
During which month should he achieve his target weight of 73 kilograms? 4
4. There are 2.69 million vehicles in Scotland.
It is estimated that this number will increase at a rate of 4% each year.
If this estimate is correct, how many vehicles will there be in 3 years' time?
Give your answer correct to 3 significant figures. 4
5. Olga normally runs a total distance of 28 miles per week.
She decides to increase her distance by 10% a week for the next four weeks.
How many miles will she run in the fourth week? 3
6. A local council recycles 42 000 tonnes of waste a year.
The council aims to increase the amount of waste recycled by 8% each year.
How much waste does it expect to recycle in 3 years time?
Give your answer to three significant figures. 4
7. Bacteria in a test tube increase at the rate of 0.6% per hour.
At 12 noon, there are 5000 bacteria.
At 3pm, how many bacteria will be present?
Give your answer to 3 significant figures. 4
8. It is estimated that an iceberg weighs 84 000 tonnes.
As the iceberg moves into warmer water, its weight decreases by 25% each day.
What will the iceberg weigh after 3 days in the warmer water?
Give your answer correct to three significant figures. 4
9. A company makes large bags of crisps which contain 90 grams of fat.
The company aims to reduce the fat content of the crisps by 50%.
They decide to reduce the fat content by 20% each year.
Will they have achieved their aim by the end of the 3rd year? 4
10. Alistair buys an antique chair for £600.
It is expected to increase in value at the rate of 4.5% each year.
How much is it expected to be worth in 3 years? 3

11. The number of people suffering from a virus is 12 million.
For each of the next three years, the number of people suffering from the virus is expected to be 5% more than the number in the previous year.
How many people are expected to be suffering from the virus in 3 years time?
Give your answer in millions. 3
12. In January 1999, it was estimated that the number of monkeys in a colony was 5000.
The number of monkeys is decreasing at the rate of 12% per year.
How many monkeys are expected to be in this colony in January 2002?
Give your answer to the nearest 10. 4
13. 250 milligrams of a drug are given to a patient at 12 noon.
The amount of the drug in the bloodstream decreases by 20% every hour.
How many milligrams of the drug are in the bloodstream at 3pm? 3
14. On a £500 holiday, a company offers an easy payment scheme.

£100 is repaid on the 15th of each month.
Interest is charged at a rate of 2.5% per month on
the amount outstanding at the end of each month.
The first payment is to be made in May.

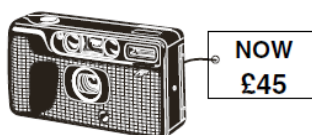
Find the amount outstanding at the beginning of August. 3
15. In 1999, a house was valued at £90 000 and the contents were valued at £60 000.
The value of the house appreciates by 5% each year.
The value of the contents depreciates by 8% each year.
What will be the total value of the house and the contents in 2002? 3
16. A company buys machinery worth £750 000.
The value of the machinery depreciates by 20% per annum.
The machinery will be replaced at the end of the year in which its value falls below half of its original value.
After how many years should the machinery be replaced? 4
17. Due to the threat of global warming, scientists recommended in 2010 that the emissions of greenhouse gases should be reduced by 50% by the year 2050.
The government decided to reduce the emissions of greenhouse gases by 15% **every ten years**, starting in the year 2010.
Will the scientists' recommendations have been achieved by 2050? 4
18. It is estimated that house prices will increase at the rate of 3.15% per annum.
A house is valued at £134 750. If its value increases at the predicted rate, calculate its value after 3 years.
Give your answer correct to four significant figures. 4



19. An industrial machine costs £176 500.
Its value depreciates by 4.25% each year.
How much is it worth after 3 years?
Give your answer correct to three significant figures. 4
20. A new book "Maths is Fun" was published in 2006.
There were 3000 sales of the book during that year.
Sales rose by 11% in 2007 then fell by 10% in 2008.
Were the sales in 2008 more or less than the sales in 2006? 3
21. Calculate the **compound interest** earned when £50 000 is invested for 4 years at 4.5% per annum.
Give your answer to the nearest penny. 4
22. Ian's annual salary is £28 400. His boss tells him that his salary will increase by 2.3% per annum.
What will Ian's annual salary be after 3 years?
Give your answer to the nearest pound. 3
23. The value of a boat decreases from £35 000 to £32 200 in one year.
a) What was the percentage decrease? 1
b) If the value of the boat continues to fall at this rate, what would its value be after a further 3 years? Give your answer to the nearest hundred pounds. 3
24. In the evening, the temperature in a greenhouse drops by 4% per hour.
At 8pm the temperature is 28° Celsius.
What will the temperature be at 11pm? 3
25. The average Scottish house price is £77 900.
The average price is expected to rise by 2.5% per month.
What will the average Scottish house price be in 3 months? 3
26. The population of Newton is 50 000.
The population of Newton is increasing at a steady rate of 5% per annum.
The population of Coaltown is 108 000.
The population of Coaltown is decreasing at a steady rate of 20% per annum.
How many years will it take until the population of Newton is greater than the population of Coaltown? 5

REVERSE PERCENTAGES

1. 480 000 tickets were sold for a tennis tournament last year.
This represents 80% of all the available tickets.
Calculate the total number of tickets that were available for this tournament. 3
2. James paid £297.50 for a laptop in a sale. The discount in the sale was 15%.
Calculate the original price of the laptop. 3
3. In a sale, all cameras are reduced by 20%.
A camera now costs £45.
Calculate the **original** cost of the camera. 3



4. Last year, 1296 learner drivers from “Topflight” school of motoring passed their driving test. This was 72% of those who sat their driving test from Topflight.
How many failed their driving test? 3
5. The price for Paul’s summer holiday is £894.40.
The price includes a 4% booking fee.
What is the price of his holiday without the booking fee? 3
6. A car is valued at £3780. This is 16% less than last year’s value.
What was the value of the car last year? 3
7. Cleano washing powder is on special offer.
Each box on special offer contains 20% more powder than the standard box.
A box on special offer contains 900 grams of powder.
How many grams of powder does the standard box contain? 3
8. A microwave oven is sold for £150.
This price includes VAT at 17.5%.
Calculate the price of the microwave oven without VAT. 3
9. This year, Ben paid £260 for his car insurance.
This is an increase of 30% on last year’s payment.
How much did Ben pay last year? 4
10. Mark takes some friends out for a meal.
The restaurant adds a 10% service charge to the price of the meal.
The **total** bill is £148.50.
What was the price of the meal? 3
11. Harry bids successfully for a painting at an auction.
An “auction tax” of 8% is added to his bid price.
He pays £324 in total.
Calculate his bid price. 3
12. Paul bought a car last year. It has lost $12\frac{1}{2}\%$ of its value since then.
It is now valued at £10 500. How much did Paul pay for the car? 2
13. Marmalade is on special offer.
Each jar contains 12.5% more than the standard jar.

A jar on special offer contains 450g of marmalade.
How much does a standard jar contain? 3

