

PERCENTAGES AND FINANCE

1. Give the multiplier for each percentage increase.
(a) 19% _____ (b) 7% _____ (c) 0.3% _____ (d) 1.04% _____
2. Jessica, who was on a salary of \$ 29,500, was given a pay rise of 6%.
What is her new salary?
\$ _____
(exact)
3. In 2006 the population of a city was 2,836,000.
By 2012 its population had increased by 9%.
What was the population in 2012?

(exact)
4. Give the multiplier for each percentage decrease.
(a) 12% _____ (b) 3% _____ (c) 3.4% _____ (d) 0.8% _____
5. Decrease € 34 by 16%.

(exact)
6. Marcus went to school with € 5.5. He spent 95 cents at the school shop.
What percentage of his pocket money did he spend at the school shop?
_____ % (to 1 d.p.)
7. As a result of "the crisis" the number of students in a school dropped
from 620 to 480.
What was the percentage decrease? _____ % (to 1 d.p.)
8. Edward bought a painting for £ 560 but had to sell it for only £ 364.
What was the percentage loss? _____ %
9. A bank pays 0.4% simple interest on the money that each saver keeps in
the bank for a year. Paula keeps \$ 862 in the bank for five years.
How much money will she have in the bank from this investment after
5 years?
\$ _____
(exact)
10. David invests € 9000 at 2% compound interest for seven years.
What is the total amount of this investment after seven years?
€ _____
(to 2 d.p.)

Matrix 2 Test: Extended

Name: _____

11. Marta invests € 6000 at 3.2% compound interest for four years.
What is the overall percentage increase?

_____ %
(to 2 d.p.)

12. The number of workers in a call centre fell by 15% to 153.
How many workers were there originally?

13. In a sale the price of a mobile phone is reduced to \$ 185.
This is a 26% reduction on the original price.
What was the original price?

\$ _____

14. Rachael invested some money at 5% compound interest for two years.
After 2 years she had £ 23373 in the bank.
How much did she invest originally?

£ _____

RATIO

1. In a plane the seats are allocated as business class and economy class
in the ratio 3 : 23

(a) What fraction of the seats are business class? _____

(b) If there are 234 seats altogether, how many are economy class?

2. A map has a scale of 8 cm to 5 km.

(a) Rewrite the scale as a ratio in its simplest form.

_____ : _____

(b) How long is a path that measures 0.6 cm on the map?

_____ m

(c) How long should an 875 m road be on the map?

_____ mm

3. The ratio of male to female spectators at a football match is 11 : 3
22935 males watched the match.

What was the total attendance at the game?

4. Prices are up in the ratio 23 : 20

What percentage increase is this?

SPEED

1. A train travels a distance of 228 km at an average speed of 120 km/h.

(a) How long does the journey take?

_____ hours

(b) If the train started the journey at 7.40 am, at what time did it reach its destination?

2. How long will it take an athlete to run 1350 metres at an average speed of 6 m/s? (Give the answer in minutes and seconds.)

_____ mins _____ secs

3. Convert 25 m/s into km/h.

_____ km/h

4. A car travels at 82 km/h for 4 hours, then it slows down to do the last 72 minutes of the journey at 30 km/h.

(a) What is the total distance of this journey?

_____ km

(b) What is the average speed of the car over the whole journey?

_____ km/h

RATES

1. Marina says that she can read a book with 301 pages in 7 hours.

(a) What is her rate of reading in pages / hour ?

(b) How long would she take to read 387 pages at this rate?

(c) How many **seconds** does she take to read one page?

2. Eighteen maths textbooks cost € 441.

(a) How much will 24 maths textbooks cost at the same price?

(b) How many of these maths textbooks can be bought for € 700 ?

3. It takes a photocopier 18 seconds to produce 15 copies.

How long will it take to produce 25 copies at the same rate?

VARIATION

1. Y is directly proportional to R.

If $Y = 96$ when $R = 64$ find (a) Y when $R = 24$ _____
 (b) R when $Y = 45$ _____

2. The cost, in euros, of a trip varies directly with the square root of the number of miles travelled.

The cost of a 729-mile trip is 135 euros.

(a) What is the cost of a 500-mile trip? (To the nearest euro.)

€ _____

(b) What is the distance of a trip costing 220 euros?

_____ miles
 (exact)

3. y is inversely proportional to the cube root of x.

If $y = 3$ when $x = 216$ find (a) y when $x = 125$ _____
 (b) x when $y = 6$ _____

4. The grant available to a group of students was inversely proportional to the number of students.

When 40 students needed a grant they received \$ 60 each.

(a) What would the grant have been if 30 students had needed one?

\$ _____

(b) If the grant had been \$ 37.50 each, how many students would have needed it?

END OF MATRIX 2 TEST