



National 5 Mathematics

Percentages – Solutions

Marks are indicated in brackets after each question number

2014 Paper 1 Question 9, (3)

$$80\% = 480,000$$

$$\text{So, } 1\% = 480,000 \div 80 = 6,000$$

$$\text{So, } 100\% = 600,000$$

2014 Paper 2 Question 1, (3)

A 15% decrease is the same as 85% of the original roll

So, after three years the roll will be given by

$$964 \times 0.85^3 = 592.$$

2015 Paper 2 Question 1, (3)

$$\text{Value after two years} = £240,000 \times 1.028^2 = £253,628.16.$$

2015 Paper 2 Question 8, (3)

Since the price has been reduced by 15% James paid 85% of the original price.

$$£297.50 = 85\%$$

$$1\% = \frac{£297.50}{85} = £3.50$$

$$100\% = £3.50 \times 100 = £350$$

2016 Paper 2 Question 1, (3)

$$35 \times 0.92^3 = 27.25$$

Sugar content = 27.25 grams.



2017 Paper 2 Question 2, (3)

$$1200 \times 1.045^3$$

$$= 1369.39$$

$$\text{Value} = \text{£}1369$$

2017 Paper 2 Question 5, (3)

$$4,800 = 115\%$$

$$1\% = \frac{4,800}{115} = 42$$

$$100\% = 42 \times 100 = 4,200$$

2018 Paper 2 Question 1, (3)

$$125,000 \times 0.98^3 = 117,649$$

117,649 tonnes.

2019 Paper 2 Question 1, (3)

$$80,000 \times 1.15 = 92,000$$

92,000 blankets.

2019 Paper 2 Question 9, (3)

$$977.85 = 102.5\%$$

$$1\% = 977.85 \div 102.5 = 9.54$$

$$100\% = 9.54 \times 100 = 954$$

So, £954 is the price if she had paid on time

$$\text{£}977.85 - \text{£}954 = \text{£}23.85$$

She could have saved £23.85.

2022 Paper 1 Question 10, (3)

$$16.10 = 70\%$$

Divide both sides by 7 to give

$$2.3 = 10\%$$

$$23 = 100\%$$

So, the cost without the discount is £23.

**2022 Paper 2 Question 2, (3)**

$$215,000 \times 1.03^4 = 241,984.39$$

So, £242,000 to the nearest thousand pounds.

2023 Paper 2 Question 1, (3)

An 11% depreciation can be expressed as 0.89 i.e. $100 - 11 = 89\%$.

$$20,000 \times 0.89 = 17,800$$

A 6% depreciation can be expressed as 0.94 i.e. $100 - 6 = 94\%$

$$17,800 \times 0.94^2 = 15,728.08$$

So, the value is £15,728.08

2023 Paper 2 Question 6, (3)

$$94,500 = 108\%$$

Divide both sides by 108 to give

$$875 = 1\%$$

Multiply both sides by 100 to give

$$87,500 = 100\%$$

So, Nadim paid £87,500 for the flat.

2024 Paper 2 Question 1, (3)

$$100\% - 26\% = 74\% = 0.74$$

$$460 \times 0.74^3 = 186.40$$

The value of the laptop is £186.40

2024 Paper 2 Question 5, (3)

$$100\% + 16\% = 116\%$$

$$£278.40 = 116\%$$

$$1\% = £278.40 \div 116 = £2.40$$

$$100\% = £2.40 \times 100 = £240$$



2025 Paper 1 Question 4, (3)

$$100\% - 20\% = 80\%$$

$$80\% = 720$$

$$1\% = 90$$

$$100\% = 900$$

So, the dress cost £900 before the sale.

2025 Paper 2 Question 1, (3)

$$118750 \times 1.04^2 = 128,440$$

128,440 visitors