PERCENTAGE CHANGES – PRACTICE QUESTIONS

1.

A coat normally costs £50.

During a sale, the coat is reduced in price by 10%.

Find the price of the coat during the sale.

$$10\% \text{ of } 50 = 5$$

$$50 - 5 = \underline{£45}$$

2.

In 2019, a farm had 100 chickens.

In 2020, the number of chickens at the farm increased by 25%.

How many chickens did the farm have in 2020?

$$25\% \text{ of } 100 = 25$$

$$100 + 25 = \underline{125}$$

3.

The value of a car went from £500 to £400.

Find the percentage decrease of the value of the car.

$$\frac{500 - 400}{500} = \frac{100}{500} \times 100 = \underline{20\%}$$

4.

The number of songs on Ashley's iPod went from 1,200 to 1,500.

Find the percentage increase.

$$\frac{1500 - 1200}{1200} \times 100 = \underline{25\%}$$

5.

The population of a city went from 200,000 to 280,000.

Find the percentage increase.

$$\frac{280,000 - 200,000}{200,000} \times 100 = \underline{40\%}$$

6.

The capacity of a football stadium went from 55,000 to 60,500.
Find the percentage increase.

$$\frac{60,500 - 55,000}{55,000} \times 100 = \underline{10\%}$$

7.

Beth bought a phone for £280.
A year later, she sold the phone for £210.
Find the percentage loss.

$$\frac{280 - 210}{280} \times 100 = \underline{25\%}$$

8.

A car was travelling at 30 miles per hour.
The car accelerated and increased its speed to 66 miles per hour.
Find the percentage increase.

$$\frac{66 - 30}{30} \times 100 = \underline{120\%}$$

9.

In a sale, the price of a television went from £480 to £168.
Find the percentage decrease.

$$\frac{480 - 168}{480} \times 100 = \underline{65\%}$$

10.

Colin bought a house for £120,000.
He sold the house for £186,000.
Find Colin's percentage profit.

$$\frac{186,000 - 120,000}{120,000} \times 100 = \underline{55\%}$$

11.

A company bought a machine for £11,000.
They sold the machine for £6,930.
Find the percentage loss.

$$\frac{11,000 - 6,930}{11,000} \times 100 = \underline{37\%}$$

12.

David bought a motorbike for £960.
He sold the motorbike for £336.
Find the percentage loss.

$$\frac{960 - 336}{960} \times 100 = \underline{65\%}$$

13.

Edwina bought a bicycle for £150.
She sold the bicycle for £162.
Find the percentage profit.

$$\frac{162 - 150}{150} \times 100 = \underline{8\%}$$

14.

Fred bought a caravan for £1,660.
He sold it for £1,920.
Find the percentage profit, to 1 decimal place.

$$\frac{1920 - 1660}{1660} \times 100 = 15.6626... = \underline{15.7\%}$$
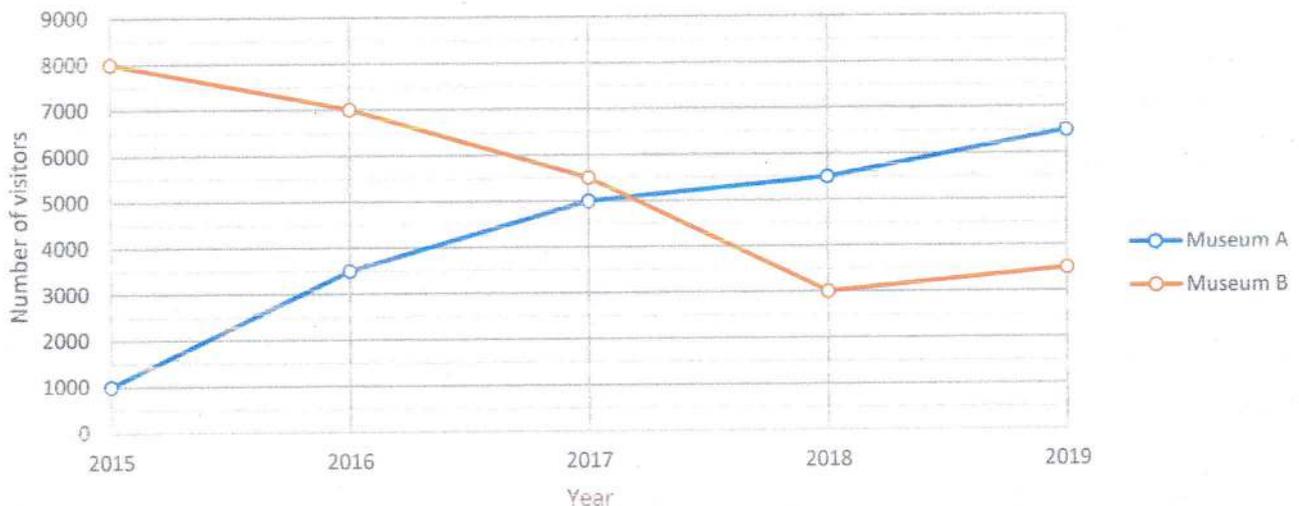
15.

Graham bought an antique for £98.
He sold it for £260.
Find the percentage profit, to 1 decimal place.

$$\frac{260 - 98}{98} \times 100 = 165.3061... = \underline{165.3\%}$$

16.

The graph below shows the number of visitors to two museum from 2014 to 2019.

(a) Find the percentage increase in the number of visitors to Museum A from 2017 to 2018.

$$\frac{5500 - 5000}{5000} \times 100 = \underline{10\%}$$

(b) Find the percentage decrease in the number of visitors to Museum B from 2016 to 2017.

$$\frac{7000 - 5500}{7000} \times 100 = 21.4...$$
$$= \underline{21.4\%}$$

17.

Harriet weighed 70 kilograms.
Ian weighed 86 kilograms.
They both had a personal trainer for 10 weeks.
After the 10 weeks, Harriet weighed 62 kilograms and Ian weighed 72 kilograms.

Who had the highest percentage weight loss? Show all your working.

Harriet : $\frac{70 - 62}{70} \times 100 = 11.42857\%$

Ian : $\frac{86 - 72}{86} \times 100 = 16.279...\%$

Ian had the highest percentage weight loss.

18.

The table below shows the number of medals won at the last two Olympic games.

Country	USA	China	Great Britain	Russia
Medals in 2012	104	91	65	68
Medals in 2016	121	70	67	56

(a) Find the percentage increase of medals won by the USA from 2012 to 2016.
   Give your answer to the nearest %.

$$\frac{121-104}{104} \times 100 = 16.3... = \underline{16\%}$$

(b) Find the percentage decrease of medals won by Russia from 2012 to 2016.
   Give your answer to the nearest %.

$$\frac{68-56}{56} \times 100 = 17.647... = \underline{18\%}$$

19.

Rectangle A has width 10.6 cm and height 5.8 cm.
Rectangle A is then enlarged to make Rectangle B.
The width of Rectangle A is increased by 6% and the height is increased by 12%.

Find the percentage increase of the area of Rectangle A to the area of Rectangle B.
Give your answer to one decimal place.

Width: 6% of 10.6 = 0.636
      10.6 + 0.636 = 11.236 cm

Height: 12% of 5.8 = 0.696
      5.8 + 0.696 = 6.496 cm

Old Area = 10.6 × 5.8 = 61.48 cm²

New Area = 11.236 × 6.496 = 72.989056 cm²

$$\frac{72.989056 - 61.48}{61.48} \times 100 = 18.72\% = \underline{18.7\%}$$

20.

Jason and Kay both run antiques businesses.
Jason spent £6,500 on antiques, and sold them for £8,980.
Kay spent £10,770 on antiques, and sold them for £14,900.

Who made the highest percentage profit? Show all your working.

Jason: $\dfrac{8980 - 6500}{6500} \times 100 = 38.153...\%$

Kay: $\dfrac{14900 - 10770}{10770} \times 100 = 38.347...\%$

Kay made the highest percentage profit.

21.

Laura and Martha are both long jumpers.
They decided to follow a new training regime to improve the length of their jumps.
The table below shows both girls' best jumps before and after the training regime.

	Before training regime	After training regime
Laura	6.09 m	6.45 m
Martha	6.78 m	7.19 m

Who achieved the highest percentage increase in their best jumps? Show all your working.

Laura: $\dfrac{6.45 - 6.09}{6.09} \times 100 = 5.9113...\%$

Martha: $\dfrac{7.19 - 6.78}{6.78} \times 100 = 6.04719...\%$

Martha achieved the highest percentage increase.