

*Calculator Needed !*

#### 4.1 Percentage Profit & Loss

When a shopkeeper purchases stock, and then selling it for a profit, it is the percentage of the extra money gained in relation to *the original purchase price* that is calculated.

The idea is not restricted to money; a percentage profit is simply a percentage increase and this can be of any measurable quantity.

Likewise a percentage loss is a percentage decrease.

#### 4.2 Example of Percentage Profit

Charlie buys a complete set of “Sun & Moon” Pokemon Trading Cards on ebay for £575 which he then sells at a Games Fair for £645.

Calculate his percentage profit.

#### 4.3 Example of Percentage Decrease

The Amazon rainforest is an area of 5 500 000 km<sup>2</sup>

By the year 2000 deforestation for cattle farming had caused 587 000 km<sup>2</sup> to be turned into pasture.

(Data from Wikipedia)

( i ) What percentage of the Amazon Rainforest had been deforested by 2000 ?

By the start of 2019 deforestation had reached 27%.

(Data form WWF, World Wild Fund)

( ii ) What area had been deforested by 2019 ?

( iii ) Given that the area of England is 130 395 km<sup>2</sup>, how many areas the equivalent of England have been deforested in the Amazon Rainforest ?

## 4.4 Exercise

### Question 1

Two weeks ago Peter spend an average of 57 minutes a day on his mobile phone.

One week ago his average had increased to 92 minutes per day.

What percentage increase is this ?

Give your answer accurate to one decimal place.

### Question 2

On Monday, Judy's Fitbit reported that she had walked 7431 steps that day.

The next day, on Tuesday, Judy walked 9214 steps.

What percentage increase is this ?

### Question 3

From public domain historical house price data on the RightMove website, a certain house, chosen at random, in Shrewsbury was bought for £68 500 in 1995 and sold for £91 500 in 1999.

- ( i ) Calculate the percentage profit made by this 1<sup>st</sup> set of owners.  
Give your answer accurate to one decimal place.

The same house next sold for £262 500 in 2006

- ( ii ) Calculate the percentage profit made by this 2<sup>nd</sup> set of owners

This house next sold for £230 000 in 2012

- ( iii ) Calculate the percentage loss made by this 3<sup>rd</sup> set of owners.

The house was most recently sold for £282 500 in 2018

- ( iv ) Calculate the percentage profit made by this 4<sup>th</sup> set of owners.

**Question 4**

To track and time his racing pigeons, Gerard is considering buying an iPigeon system pack. He is considering buying either

- The 1-Bird pack for £395
- or • The 4-Bird pack for £511

( i ) How many percent more than the 1-Bird pack is the 4-Bird pack ?

( ii ) How many percent less than the 4-Bird pack is the 1-Bird pack ?

**Question 5**

In January 2019 the Society of motor Manufacturers and traders reported that 2.54 million new cars were registered in the UK in 2017 and 2.36 million new cars were registered in the UK in 2018.

They said Brexit and a collapse in sales of diesel engine vehicles caused the decline.

Calculate the percentage fall in car sales for 2018 in comparison with 2017.

**Question 6**

In London, June 2019, Sebastian is analysing the M<sup>c</sup>Donalds<sup>TM</sup> Menu,

Cola-Cola Classic	small	medium	large
Price	97 p	£1.11	£1.53
Capacity	250 ml	400 ml	500 ml

( i ) What percentage more in cost is the medium size drink than the small ?

( ii ) What is the corresponding percentage increase in capacity ?

( iii ) In the light of your answers to parts ( i ) and ( ii ) make a relevant comment.

**Question 7**

Fully fuelled, the Saturn V “heavy lift” rocket that took astronauts to the moon had a mass of 2 950 000 kg. Of the total 15 that were built, 13 were launched and two were “left over” when going to the moon was abandoned in 1972.

The Saturn V rocket was designed to be able to send a 41,000 kg payload to the moon. What percentage of the rocket's mass was 'lost' in getting the payload to the moon ?

**Question 8**

The Saturn V rocket's payload capacity to Low Earth Orbit (LEO) was 118,000 kg. It's replacement, the Space Shuttle could lift 24,400kg into Low Earth Orbit. What was the percentage reduction in payload capacity in moving from the Saturn V rocket to the Space Shuttle ?

**Question 9**

The amount of carbon dioxide, of interest because it is a greenhouse gas, in the Earth's atmosphere is measured in parts per million, ppm.

At the start of 2019 they were reported to be 406.42 ppm.

Before the industrial revolution which began in 1760, they were about 280 ppm.

What is the percentage increase in carbon dioxide levels in the Earth's atmosphere since the industrial revolution began ?

**Question 10**

In May 2017, Niel Woodford's Equity Income Fund held £10.7 bn.

By June 2019, when trading in the fund was suspended, it's value had fallen to £3.7 bn.

( i ) What is the percentage fall in the value of the fund ?

( ii ) If, in May 2017, you invested £3,400 in the fund, what was it worth in June 2019 ?

### Question 11

By the end of 2016, the total installed wind power generation capacity in the UK was 14 512 MW. (MegaWatts)

By the end of 2017 this had increased to a total of 17 852 MW.

( i ) What is this increase, expressed as a percentage ?

- ( ii ) In the UK annual energy consumption per person in 2017 has been estimated to be 34.82 MWh. (Mega Watt hours)  
In 2017 it was estimated that wind power provided 5.22 MWh of an average person's energy consumption.  
What percentage of the average person's energy consumption came from wind power in 2017 ?

### Question 12

In a 2016 report it was observed that, since 1925, the average number of days to market for a US chicken had been reduced from 112 to 48, while its average weight had ballooned from a market weight of 2.5 pounds to 6.2

(Data source : Live Chicken Production Trends, 2016)

- ( i ) What is the percentage increase in average chicken weight between 1925 and 2016 ?
- ( ii ) What is the percentage reduction in the average number of days to market between 1925 and 2016 ?