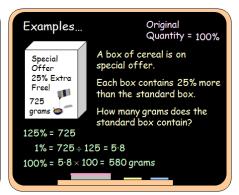# Outcome 2 – Percentage Increase/Decrease
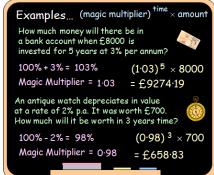
Bronze examples

Examples...   **Or use the magic multiplier!**

Increase £700 by 20%.

1. Calculate the % $1·2 \times 700 = 840$

$700 \div 5 = 140$ $700 + 140 = £840$

2. Add it onto the amount

Decrease €300 by 32%.

1. Calculate the % $0·68 \times 300 = 204$

$300 \div 100 \times 32 = 96$ $300 - 96 = €204$

2. Take this away from the amount

Silver example

Examples...   Original Quantity = 100%

Special Offer 25% Extra Free!

725 grams

A box of cereal is on special offer.

Each box contains 25% more than the standard box.

How many grams does the standard box contain?

125% = 725

1% = $725 \div 125 = 5·8$

100% = $5·8 \times 100 = 580$ grams

Gold examples

Examples... (magic multiplier)$^{time} \times$ amount

How much money will there be in a bank account when £8000 is invested for 5 years at 3% per annum?

100% + 3% = 103% $(1·03)^5 \times 8000$

Magic Multiplier = 1·03   = £9274·19

An antique watch depreciates in value at a rate of 2% p.a. It was worth £700. How much will it be worth in 3 years time?

100% - 2% = 98% $(0·98)^3 \times 700$

Magic Multiplier = 0·98   = £658·83

Bronze Questions

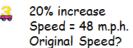Work out the following percentage increases and decreases...

1. Increase 180 grams by 25%

2. Decrease €300 by 10%

3. Decrease 500 centimetres by 40%

4. Increase 770 litres by 30%

5. Increase 400 kilograms by 37%

6. Increase 60 millimetres by 72%

7. Decrease $900 by 23%

8. Decrease 10 metres by 17%

Silver Questions
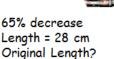
Calculate the following original amounts...
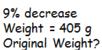
1. 70% increase
Cost = £2040
Original Price?

2. 10% increase
Cost = £6600
Original Price?

3. 20% increase
Speed = 48 m.p.h.
Original Speed?

4. 9% decrease
Weight = 405 g
Original Weight?

5. 65% decrease
Length = 28 cm
Original Length?

6. 35% decrease
Area = 910 m²
Original Area?

Gold Questions

Calculate the following after appreciation/ depreciation...

1. 2% increase p.a.
Amount = £9000
Amount after 3 years?

2. 6% increase p.a.
Value = £400
Value after 2 years?

3. 7% increase p.a.
Population = 14 000
Population after 5 years?

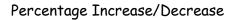4. 12% decrease p.a.
Cost = £8000
Cost after 2 years?

5. 5% decrease per hour
Temperature = 24°C
Temperature after 3 hours?

6. 20% decrease p.a.
Value = £1800
Value after 5 years?

Bronze Answers

1. 225 grams
2. €270
3. £300
4. 1001 litres
5. 548 kilograms
6. 103·2 millimetres
7. $693
8. 8·3 metres

Silver Answers

1. £1200
2. £6000
3. 40 m.p.h.
4. 500 g
5. 80 cm
6. 1400 m²

Gold Answers

1. £9550·87
2. £449·44
3. 19 635
4. £6195·20
5. 20·58°C
6. £589·82