Outcome 2 – Appreciation

Bronze example

Examples...

(magic multiplier) time × amount

How much money will there be in a bank account when £5000 is invested for 4 years at 3% per annum?

100% + 3% = 103%

Magic Multiplier = 1·03

$(1{\cdot}03)^4 \times 5000 = £5627{\cdot}54$

Silver example

Examples...

(magic multiplier) time × amount

How much money will there be in a bank account when £6000 is invested for 3 years at 4·7% per annum?

100% + 4·7% = 104·7%

Magic Multiplier = 1·047

$(1{\cdot}047)^3 \times 6000 = £6886{\cdot}38$

Gold example

Examples... If the percentage increase is different each year...

Year 1 = (magic multiplier) × amount

Year 2 = (magic multiplier) × previous amount

A house is bought for £120 000. The value of the house appreciates at a rate of 10% for the first year and 8% in the second year. Calculate the value of the house after 2 years.

Year 1 = 1·1 × 120 000 = £132 000

Year 2 = 1·08 × 132 000 = £142 560

Bronze Questions

Calculate the following after appreciation...

1. 2% increase p.a. Amount = £4000 Amount after 3 years?
2. 6% increase p.a. Value = £700 Value after 2 years?
3. 4% increase p.a. Population = 10 000 Population after 5 years?

4. 3% increase p.a. Cost = £200 Cost after 7 years?

5. 5% increase per hour Temperature = 19°C Temperature after 3 hours?

6. 7% increase p.a. Value = £14 000 Value after 2 years?

Silver Questions

Calculate the following after appreciation...

1. 2·9% increase p.a. Amount = £7000 Amount after 4 years?
2. 3·9% increase p.a. Value = £700 Value after 2 years?
3. 0·5% increase p.a. Population = 40 000 Population after 3 years?

4. 4·73% increase p.a. Cost = £500 Cost after 6 years?

5. 5·2% increase per hour Temperature = 14°C Temperature after 3 hours?

6. 6·52% increase p.a. Value = £15 000 Value after 2 years?

Gold Questions

Calculate the following after appreciation...

1. A house bought for £200 000. The value of the house appreciates at the rate of 12% for the first year and 9% in the second year. Calculate the value of the house after 2 years.

2. The cost of petrol is £1·30 per litre. The value of petrol is expected to rise at the rate of 1% for the first year and 2% in the second year. Calculate the value of petrol after 2 years.

3. In a high school, 600 pupils own a mobile phone. This number is expected to rise at the rate of 20% for the first year and 15% in the second year. Calculate the number of pupils who own a mobile phone after 2 years.

Bronze Answers

1. £4244·83
2. £786·52
3. 12 166
4. £245·97
5. 21·99 °C
6. £16 028·60

Silver Answers

1. £7848·01
2. £755·66
3. 40 603
4. £659·78
5. 16·30 °C
6. £17 019·77

Gold Answers

1. £244 160
2. £1·34
3. 828 pupils