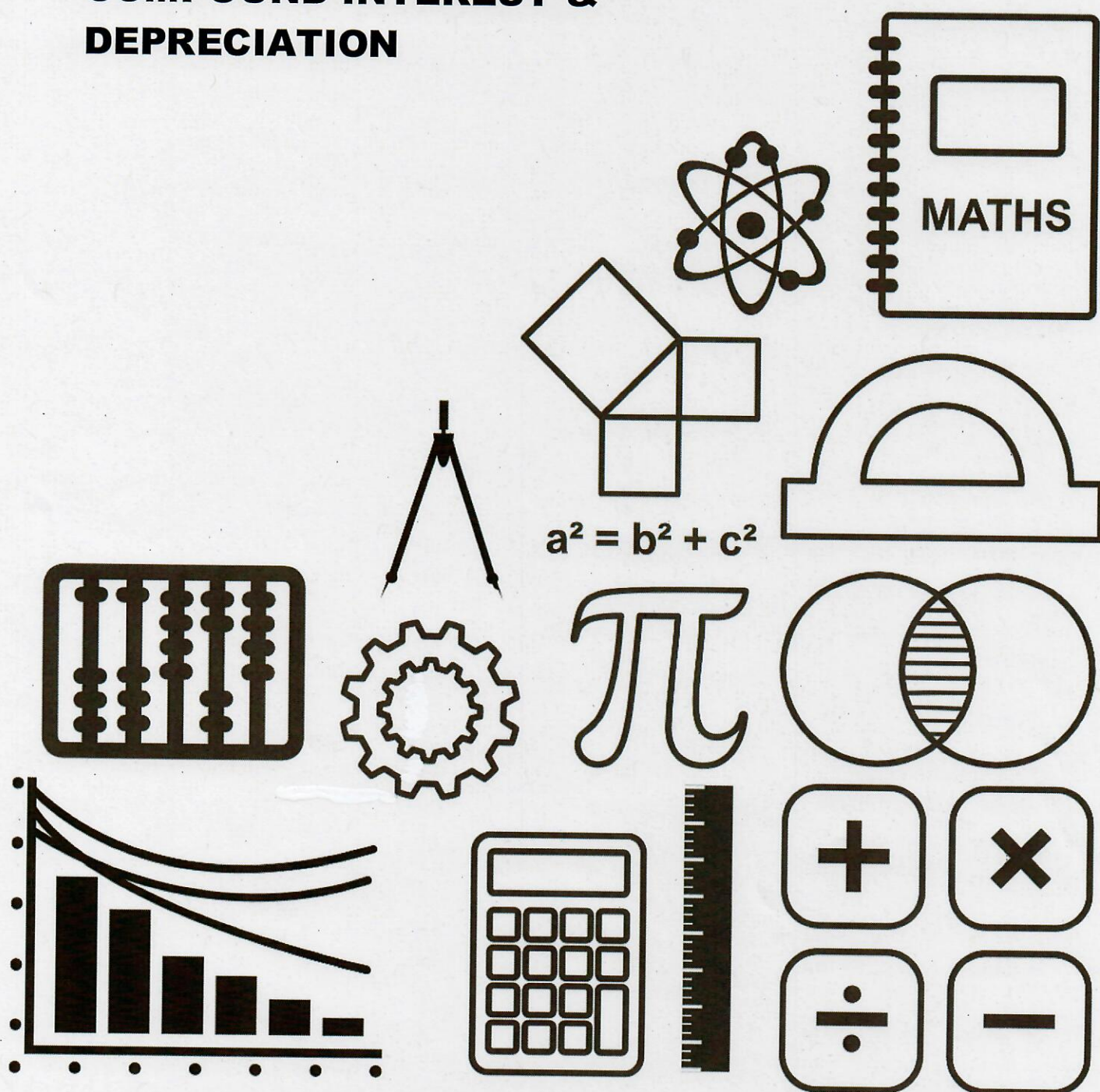


MATHSDIY

SOLUTIONS

GCSE TOPIC BOOKLET COMPOUND INTEREST & DEPRECIATION



1. Mal invests £5500 for 2 years at 6% per annum compound interest. What is the value of his investment after 2 years?

$$6\% \rightarrow \text{multiplier} = 1.06$$

$$2 \text{ years} \rightarrow \text{power} = 2$$

$$5500 \times (1.06)^2 = \underline{\underline{£6179.80}}$$

[3]

2. Judith invests £600 for 2 years at 4% per annum compound interest. What is the value of her investment after 2 years?

$$4\% \rightarrow \text{multiplier} = 1.04$$

$$2 \text{ years} \rightarrow \text{power} = 2$$

$$600 \times (1.04)^2 = \underline{\underline{£648.96}}$$

[3]

3. Theo invests £800 for 3 years at 5% per annum compound interest. How much money is in the account after 3 years?

$$5\% \rightarrow \text{multiplier} = 1.05$$

$$3 \text{ years} \rightarrow \text{power} = 3$$

$$800 \times (1.05)^3 = \underline{\underline{£926.10}}$$

[3]

4. The garden centre buys a delivery van at a cost of £6500.
Each year, the value of the van depreciates by 12% of its value at the start of the year.
At the end of two years by how much has the value of the van depreciated?

$$12\% \text{ depreciation} = 88\% \rightarrow \text{Multiplier} = 0.88$$

$$2 \text{ years} \rightarrow \text{power} = 2$$

$$6500 \times (0.88)^2 = \underline{\underline{£5033.60}}$$

But, be careful, the question asks for the value of the depreciation

$$= £5500 - £5033.60 = \underline{\underline{£466.40}}$$

[4]

5. Michael bought a scooter for £800 on 1st January 2008.
Every year the value of the scooter depreciates by 5% of its value at the start of the year.
Find the value of the scooter on 1st January 2010.

$$5\% \text{ depreciation} = 95\% \rightarrow \text{Multiplier} = 0.95$$

$$2 \text{ years} \rightarrow \text{power} = 2$$

$$800 \times (0.95)^2 = \underline{\underline{£722}}$$

[4]

6. Terry invests £600 for 2 years at 4% per annum compound interest. How much money is in the account after 2 years?

$$4\% \rightarrow \text{multiplier} = 1.04$$

$$2 \text{ years} \rightarrow \text{power} = 2$$

$$600 \times (1.04)^2 = \underline{\underline{£648.96}}$$

[3]

7. Find the compound interest, to the nearest penny, when £6000 is invested for 3 years at 4% per annum.

$$4\% \rightarrow \text{multiplier} = 1.04$$

$$3 \text{ years} \rightarrow \text{power} = 3$$

$$6000 \times (1.04)^3 = £6749.184$$

↑
nearest penny

$$= \underline{\underline{£6749.18}}$$

Careful! The question asks you to find the compound interest.

$$= \underline{\underline{£749.18}}$$

[4]

8. A business declares that, in each year, its office equipment depreciates at the rate of 18% of its value at the beginning of that year. Find, to the nearest £100, the value of its office equipment at the end of 3 years of depreciation, if its value at the beginning of the period was £35 000.

$$18\% \text{ depreciation} = 82\% \rightarrow \text{multiplier} = 0.82$$

$$3 \text{ years} \rightarrow \text{power} = 3$$

$$35\,000 \times (0.82)^3 = \pounds 19,297.88$$

$$= \pounds 19,300 \quad (\text{nearest } \pounds 100)$$

[4]

9.

- Sally invests £2500 for 2 years at 7% per annum compound interest. What is the value of her investment after 2 years?

$$7\% \rightarrow \text{multiplier} = 1.07$$

$$2 \text{ years} \rightarrow \text{power} = 2$$

$$2500 \times (1.07)^2 = \pounds 2862.25$$

[3]

10. Aaron bought a bike for £600 on 1st February 2010.
Every year the value of the bike depreciates by 12% of its value at the start of the year.
Find the value of the bike on 1st February 2012.

$$12\% \text{ depreciation} = 88\% \rightarrow \text{multiplier} = 0.88$$

$$2 \text{ years} \rightarrow \text{power} = 2$$

$$600 \times (0.88)^2 = \underline{\underline{£464.64}}$$

[4]

11. Kim bought a scooter for £1600 on 1st January 2010.
Every year the value of the scooter depreciates by 8% of its value at the start of the year.
Find the value of the scooter on 1st January 2012.

$$8\% \text{ depreciation} = 92\% \rightarrow \text{multiplier} = 0.92$$

$$2 \text{ years} = \text{power } 2$$

$$1600 \times (0.92)^2 = \underline{\underline{£1354.24}}$$

[4]