

3.5 Answers

GCSE (Year 10) Mathematics Percentages II

3.5.1 Solution to 3.2 Simple Interest

(i) $1\,000\,000 \times \frac{0.4}{100} = £4000$

(ii) Annual income = £48 000

(iii) The cautious approach is,

$$1\,000\,000 \times x = 1\,048\,000$$

$$x = \frac{1\,048\,000}{1\,000\,000}$$

$$x = 1.048$$

So the APR is 4.8%

Although caution is generally needed when adding percentages, in this situation the answer can be deduced from noticing that George received 0.4% of £1 000 000 twelve times giving 4.8% of £1 000 000 being received in total over the year.

3.5.2 Solution to 3.3 Compound Interest

(i) Year 1

$$£4000 \times 1.05 = £4200$$

Year 2

$$£4200 \times 1.05 = £4410$$

Year 3

$$£4410 \times 1.05 = £4630.50$$

(ii) $4000 \times 1.05^3 = £4630.50$

3.5.3 Solution to 3.4 Exercise

Answer 1

$$4000 \times 1.04^3 = £4499.45 \quad \text{Banks do not round up when paying out.}$$

Answer 2

$$1000 \times 1.12^3 = 1404.93 \quad \text{or } £1404.92 \text{ as he's my friend.}$$

Answer 3

$$5000 \times 1.03^3 = £5463.63 \quad \text{Banks do not round up when paying out.}$$

Answer 4

$$8000 \times 1.26^3 = £16\,003 \quad \text{To borrow £8000 has 'cost' £8000 - Expensive !}$$

Answer 5

£6.80

Answer 6

$$24 \times 0.85 = £20.40$$

Answer 7

$$47 \times 0.92 = £43.24$$

Answer 8

$$(i) \quad 1000 \times 1.08^{10} = £2158.92 \quad (ii) \quad 1000 \times 1.135^{10} = £3547.79$$

(Don't round up)

Answer 9

$$4000 \times 1.3 = £5200$$

$$5200 \times 0.7 = £3640 \quad \text{i.e. NOT } £4000$$

Answer 10

$$400 \times 0.8 = £320$$

$$320 \times 1.2 = £384$$

Answer 11

$$(i) \quad \text{Teacher :} \quad £7731.20$$

$$(ii) \quad \text{Policeman :} \quad £8263.84 \quad \text{*Highest (iv)}$$

$$(iii) \quad \text{Nurse :} \quad £7185.66$$

Answer 12

$$3000 \times x = 9000$$

$$x = \frac{9000}{3000}$$

$$x = 3$$

$$x = 1 + 2.00$$

∴ It's a 200% increase

Often, an incorrect answer of “300% increase” is given

Answer 13

(i)

$$1000000 \times \frac{0.11}{100} = 1000000 \times 0.0011$$

$$= £1100$$

(ii) £13 200

(iii) APR = $0.11 \times 12 = 1.32\%$ so it's less than the annual rate of inflation

(iv) The investment is not keeping pace with inflation

Answer 14

$$170\,000 \times 0.92^3 = \$132\,377$$

Answer 15

(i) $14\,000 \times 0.72 = \text{£}10\,080$

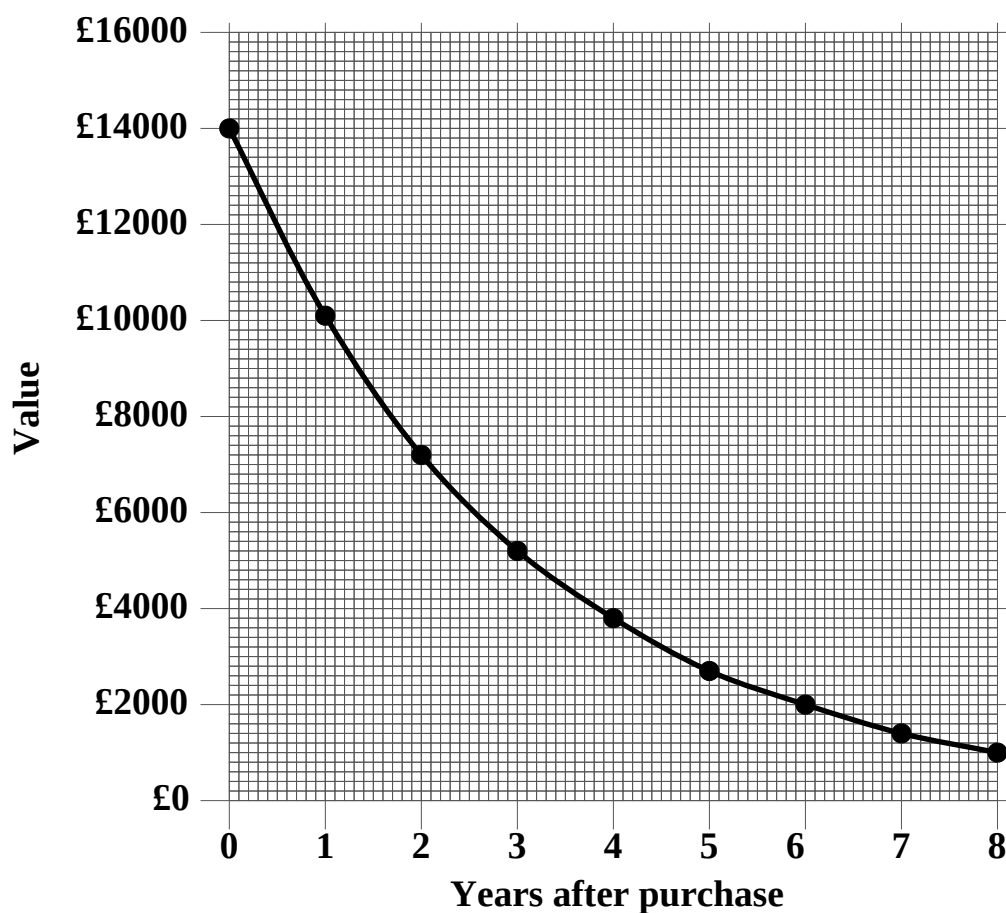
(ii) $14\,000 - 10\,080 = \text{£}3920$

(iii) $14\,000 \times 0.72^4 = \text{£}3762.34$

(iv) Keep multiplying by 0.72 : After 8 years it's worth £1011

After n years	0	1	2	3	4	5	6	7	8
Value, £	14000	10080	7258	5225	3762	2709	1950	1404	1011

Depreciation of Molly's Car



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Teachers may obtain detailed worked solutions to the exercises by email from MHHShrewsbury@Gmail.com