Name: _____

IGCSE (9-1) Maths
topics new to Foundation tier:
Compound interest and depreciation

Date:

Time: 30 minutes

Total marks available: 24

Total marks achieved: _____

Q1. A bank pays compound interest of 6% per annum on its savings accounts.
Julia invests $7500 for 3 years.

Calculate the total interest gained after 3 years.

$ .....

(Total 3 marks)

Q2. Amil invests £9000 for 3 years in a savings account.
He gets 1.8% per year compound interest.

How much money will Amil have in his savings account at the end of 3 years?

£ .....

(Total 3 marks)

Q3. The value of a boat depreciates by 16% each year.
At the end of 2012, the value of the boat is £65000

Work out the value of the boat at the end of 2015

£ .....

(Total 3 marks)

Q4. Micah invests $4000 for 3 years at 2.75% per year compound interest.

Work out the value of the investment at the end of 3 years.

$ .....

(Total 3 marks)

Q5. Kwo invests HK$ 40000 for 3 years at 2.5% per year compound interest.

Work out the value of the investment at the end of 3 years.

HK$.....

(Total 3 marks)

Q6. Serena bought a car that had a value of $16 000
At the end of each year, the value of her car had depreciated by 15%.

Calculate the value of her car at the end of 3 years.

$ .....

(Total 3 marks)

Q7. Liam invests £8000 in a savings account for 4 years.
The savings account pays compound interest at a rate of

4.5% for the first year
2.75% for all subsequent years.

Work out the value of Liam's investment at the end of 4 years.

£.....

(Total 3 marks)

Q8.

Lin bought a computer that had a value of $ 1500
At the end of each year, the value of her computer had depreciated by 40% of its value at the start of that year.

Calculate the value of her computer at the end of 3 years.

$ .....

(Total 3 marks)

Mark Scheme

Q1.

Question	Working	Answer	Mark	Notes	
	6/100 x 7500 (=450) {Ist Year} or 1.06 x 7500 (=7950) "450" + "477" + "505.62"	1432.62	3	M1 M1 A1	M2 for 1.06^3 x 7500 (=8932.62) Calculating 6% of previous capital for another 2 years M1A0 for 1350 or 8850
					Total 3 marks

Q2.

Question	Working	Answer	Mark	Notes	
	9000 × 0.018 (= 162) **or** 9000 × 1.018 (=9162)		3	M1	or for $\frac{3\times1.8}{100}\times$ 9000 (=486) or 9486
	(9000 + "162)×0.018 (=164.916) ("9162" + "164.916")×0.018 (= 167.88…) "9162" + "164.916" + "167.88"			M1	for complete method
		9494.8(0)		A1	accept 9494.8 - 9495
					Total 3 marks

Q3.

Question	Working		Answer	Marks	Comments	
	eg $\frac{16}{100} \times 65000$ oe or 10400	65000×0.84^3			M1 For $\frac{16}{100} \times 65000$ oe or 10400	(M2 for 65000×0.84^3) **or** (M1 for 65000×0.84 or 54600 or 65000×0.84^2 or 45864 or 65000×0.84^4 or 32361.63..)
	$\frac{16}{100} \times (65000 - \text{“}10400\text{”}) = 8736$ $\frac{16}{100} \times (65000 - \text{“}10400\text{”} - \text{“}8736\text{”}) = 7338.24$ $65000 - \text{“}10400\text{”} - \text{“}8736\text{”} - \text{“}7338.24\text{”}$			3	M1 For completing Method	
					Accept (1 – 0.16) as equivalent to 0.84 throughout	
					SC: If no other marks gained, award M1 for 65000 x 0.48 oe (=31200) or 65000 × 0.52 oe (=33800)	
			38525.76		A1 for 38525 – 38526	
						Total 3 marks

Q4.

Question	Working	Answer	Mark	Notes	
	0.0275 × 4000 (=110)		3	M1 for interest for first year **or** 330 **or** answer of 4330	M2 for $1.0275^3 \times 4000$ oe
	E.g. 0.0275 × (4000 + "110") (=113.025) **and** 0.0275 × (4000 + "110" + "113.025")			M1 for a complete method	
		4339.16		A1 Accept answer in range 4339 – 4340 NB: Answer in range 339 – 340 gets M2A0	
					Total 3 marks

Q5.

Q	Working	Answer	Mark	Notes	
	0.025 × 40 000 (=1000) **or** 1.025 × 40 000 (=41000) **or** 3000		3	M1	M2 for 40000×1.025^3
	"41000"×0.025(=1025) **and** "42025"×0.025(=1050.625) **OR** 3075.62 or 3075.625 or 3075.63			M1 (dep) method to find interest for year 2 **and** year 3	
		43075.63		A1 accept 43075.62 or 43075.625 NB. An answer of 3075.62 or 3075.625 or 3075.63 score M2A0	
					Total 3 marks

Q6.

Question	Working		Answer	Mark	Notes	
	eg $\frac{15}{100}\times 16000$ oe or 2400	OR 16000×0.85^3		3	M1 for eg $\frac{15}{100}\times 16000$ oe or 2400	OR M2 for 16000×0.85^3
	$\frac{15}{100}\times(16000-"2400")$ $=2040$ $\frac{15}{100}\times(16000-"2400"-"2040")$ $=1734$ $16000-"2400"-"2040"-"1734"$				M1 for completing method	(M1 for 16000×0.85 or 13600 or 16000×0.85^2 or 11560 or 16000×0.85^4)
					Accept $(1-0.15)$ as equivalent to 0.85 throughout	
					SC: If no other marks gained, award M1 for 16000×0.55 oe or 8800	
			9826		A1 cao	
						Total 3 marks

Q7. [part a only]

Question	Working	Answer	Mark	Notes	
a	8000×1.045 oe (=8360)			M1 or 8000×1.0275^3 (=8678.316375)	M2 for $8000\times 1.045\times 1.0275^3$
	"8360" $\times 1.0275^3$ oe			M1 "8678.316375" $\times$ 1.045	
		9068.84	3	A1 accept 9069 and answers in the range 9068.8(0) – 9068.9(0) SC: B1 for an answer of 9020 (8000 + 360 + 3×220)	
b	1 + 0.02 (=1.02)			M1	M1 for 100(%) + 2(%) (= 102(%))
	5763 ÷ "1.02" oe			M1 dep	M1 (dep) for 5763÷"102" × 100 oe
		5650	3	A1	
					Total 6 marks

Q8. [part c only]

Question	Working		Answer	Mark	Notes		
(a)	$\frac{12}{100}\times 675$ oe or 81			3	M1		M2 for 675×1.12 oe
	$675 + "81"$				M1	(dep)	
			756		A1	cao	
(b)	23% of amount = 2162 or $(1\% =)\frac{2162}{23}$ or 94 seen			3	M1	M2 for $\frac{2162}{23}\times 100$ oe	
	"94" × 100 or 9400 or "94" × 77				M1		
			7238		A1	cao	
(c)	$\frac{40}{100}\times 1500$ oe or 600	OR 1500×0.6^3		3	M1	for eg $\frac{40}{100}\times 1500$ or 600	OR M2 for 1500×0.6^3 (M1 for 1500×0.6 or 900 or 1500×0.6^2 or 540 or 1500×0.6^4)
	$\frac{40}{100}\times(1500-"600")$ $= 360$ $\frac{40}{100}\times(1500-"600"-"360")$ $= 216$ $1500-"600"-"360"-"216"$				M1	for completing method	
						Accept (1− 0.4) as equivalent to 0.6	
			324		A1	cao	
							Total 9 marks