REVISE
.wales

# 1.08 — APR, loans & mortgages

*Mark schemes for the 1.08 question pack*

*Spec 1.8.6 — Unit 1*

SOLUTIONS · 2025 SPECIFICATION

*Mark schemes for the 10 questions in the corresponding revise.wales question pack (74 marks total). Sources: legacy WJEC GCSE papers, WJEC SAM, and custom-authored mark schemes.* 

| | | |
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| 2. 49 × 20 | M1 | |
| (= £) 980 | A1 | |
| % Interest $\frac{980 - 400}{400}$ (×100) | m1 | FT 'their 980' provided M1 previously awarded |
| or $\frac{980}{400}$ (×100) - 1(×100) | | Award m1 for complete method to show what percentage 580 is of 400 |
| 145 (%) | A1 | |

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| 6(a)<br><br>$335\left(\frac{\left(\left(1+\frac{5.4/100}{12}\right)^{n}-1\right)\left(1+\frac{5.4/100}{12}\right)}{\frac{5.4/100}{12}}\right)$ or $335\left(\frac{((1+0.0045)^{n}-1)(1+0.0045)}{0.0045}\right)$<br><br>$335\left(\frac{\left(\left(1+\frac{5.4/100}{12}\right)^{28}-1\right)\left(1+\frac{5.4/100}{12}\right)}{\frac{5.4}{12\times 100}}\right)$ or $335\left(\frac{((1+0.0045)^{28}-1)(1+0.0045)}{0.0045}\right)$<br><br>= (£) 10017(.57…) or (£) 10018<br><br>(Date when Rebecca has £10000)<br>November 2024 | B1<br><br>M1<br><br>A1<br><br>A1 | For all the amounts of money shown below, accept other reasonable approximations e.g. nearest 10p, rounded or truncated<br>Only allow a misread of the amount deposited, not of the nominal annual rate<br><br>For any value of n<br><br>OR $335\left(\frac{\left(\left(1+\frac{5.4/100}{12}\right)^{n}-1\right)\left(1+\frac{5.4/100}{12}\right)}{\frac{5.4/100}{12}}\right)=10000$ (or $\geq$ 10000)<br>May be implied by amounts of (£)9259.52(1991) for n=26 AND (£)9637.69(734) for n=27<br><br>Or evidence that n = 28<br>An answer of 28 months with no incorrect work seen can be awarded B1M1A1 and possible final A1<br><br>CAO<br>If first B1 only awarded,<br>SC1 for a correct evaluation of the formula for any value of n from 20 to 30<br>• n=20 leads to (£)7025(.78…) or (£)7026<br>• n=21 leads to (£)7393(.906…) or (£)7394<br>• n=22 leads to (£)7763(.686..) or (£)7764<br>• n=23 leads to (£)8135(.13…)<br>• n=24 leads to (£)8508(.246…)<br>• n=25 leads to (£)8883(.04…)<br>• n=26 leads to (£)9259(.52…) or (£)9260<br>• n=27 leads to (£)9637(.697…) or (£)9638<br>• n=29 leads to (£)10399(.16…)<br>• n=30 leads to (£)10782(.46…)<br><br>If no marks awarded and from using a rate of $^{5.4}/_{12}$ = 0.45,<br>SC2 for (£)13467(.65…) or (£)13468 AND Feb 2023 from<br>$335\left(\frac{((1+0.45)^{7}-1)(1+0.45)}{0.45}\right)$, or<br>SC1 for (£)13467(.65) or (£)13468<br><br>If no marks awarded and from using a rate of 0.045,<br>SC2 for (£)10174(.426…) AND February 2024 from<br>$335\left(\frac{((1+0.045)^{19}-1)(1+0.045)}{0.045}\right)$, or<br>SC1 for (£)10174(.426...)<br><br>If no marks awarded and from using a rate of 0.054,<br>SC2 for (£)10312(.178…) AND January 2024 from<br>$335\left(\frac{((1+0.054)^{18}-1)(1+0.054)}{0.054}\right)$, or<br>SC1 for (£)10312(.178…) |
| 6(b) (AER =) $\left(1+\frac{5.4/100}{12}\right)^{12}-1$ or equivalent<br>= 5.54(%) | M1<br>A1 | Sight of an answer of 5.53(5675…%) is awarded M1A0 |

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| 6(c) | £ 236.84 | B1 | |

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| 7(a) (Monthly payments =)<br>$\frac{\frac{0.033}{12} \times 18000}{1-\left(1+\frac{0.033}{12}\right)^{-4\times12}}$ OR $\frac{0.00275 \times 18000}{1-(1+0.00275)^{-48}}$<br>or equivalent<br><br>= (£)400.81 | M2<br><br><br>A1 | <u>The correct answer alone, without any workings is awarded M0A0, since it is given in the question</u><br><br>M1 for an expression with only 1 (possibly repeated) incorrect substitution, but do not allow use of r = 3.3<br><br>Accept (£)400.80(89843…)<br>Convincing working must be seen |
| 7(b) (Saving =)<br>362.05×5×12 − 400.81×4×12 (− 2000)<br>or 362.05×60 − 400.81×48 (− 2000)<br><br>= (£)484.12 | M1<br><br><br>A2 | Use of accurate values of (£)362.05 and/or (£)400.81 can be accepted<br><br>FT if more accurate values used<br>e.g.<br>• (£)484.17 or (£)484.16(8755) from use of accurate Option B monthly payment<br>• (£)483.95 or (£)484.94(84006) from use of both accurate monthly payments<br><br>A1 for sight of any one of the following:<br>• an answer of (£)484 to (£)485 as a result of premature rounding<br>• (£) 2484.12<br>• (£)2484.17 or (£)2484.16(8755) from use of accurate Option B monthly payment<br>• (£)2483.95 or (£)2484.94(84006) from use of both accurate monthly payments |

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| 12(a) (Monthly payments =)<br>$\frac{\frac{0.075}{12}\times(22000-5000)}{1-\left(1+\frac{0.075}{12}\right)^{-7\times12}}$ OR $\frac{0.00625\times17000}{1-(1+0.00625)^{-84}}$<br>or equivalent<br>= (£)260.75 | M2<br><br>A1 | M1 for an expression with only 1 (possibly repeated) incorrect substitution, but do not allow use of r = 7.5<br><br>Accept (£)260.75(068…) |
| 12(b) 260.75×7×12 − 293.93×6×12<br>= (£)740.04 | M1<br><br>A1 | FT 'their (£)260.75' from (a)<br>Allow use of their unrounded answer to part (a) and their unrounded (£)293.93 if the formula has been used to calculate it<br><br>Use of:<br>• (£)260.75(068…) leads to (£)740.09(79…) or 740.10<br>• (£)260.75(068…) and (£)293.93(19…) leads to (£)739.96 |

(a) $(1 + r)^{12} = 1.069$ [M1]

r = 1.069^(1/12) − 1 = 0.005576… ≈ 0.00558 [A1]

(b) L = 12 000, n = 60, r = 0.00558 [B1 for substitution]

$M = (0.00558 \times 12\,000) / (1 - 1.00558^{-60})$

M = 66.96 / (1 − 0.71601…) = 66.96 / 0.28399 [M1]

M = £235.78 (accept £235.75–£235.85 depending on rounding) [A1]

(c) Total paid = 60 × 235.78 = £14 146.80 [M1]

Interest = 14 146.80 − 12 000 [M1]

= £2 146.80 (allow ft from (b)) [A1]

(a) BikeFinance: r = 1.084^(1/12) − 1 = 0.006744… [M1]

n = 36

M = (0.006744 × 6500) / (1 − $1.006744^{-36}$) [M1]

M = 43.84 / 0.21422 = £204.65 (accept £204.50–£204.80) [A1]

RideNow: r = 1.069^(1/12) − 1 = 0.005576… [M1]

n = 48

M = (0.005576 × 6500) / (1 − $1.005576^{-48}$) [M1]

M = 36.24 / 0.23379 = £155.04 (accept £154.90–£155.20) [A1]

(b) BikeFinance total = 36 × 204.65 = £7 367.40, interest = £867.40 [M1]

RideNow total = 48 × 155.04 = £7 441.92, interest = £941.92 [M1]

Disagree: BikeFinance costs less in total interest (~£74.50 less) even though monthly payments are higher, because the loan is repaid over a shorter period [A1 — must reference total cost AND term]

(a) r = 1.045^(1/12) − 1 [M1]

= 0.003675… [A1]

(b) L = 180 000, n = 300

M = (0.003675 × 180 000) / (1 − $1.003675^{-300}$) [M1]

= 661.50 / 0.66739 [M1]

= £991.16 (accept £990.50–£991.80) [A1]

(c) n = 360

M = (0.003675 × 180 000) / (1 − $1.003675^{-360}$) = £908.85 (accept £908.00–£910.00) [M1, A1]

(d) Total A = 300 × 991.16 = £297 348; interest = £117 348 [M1 for either total]

Total B = 360 × 908.85 = £327 186; interest = £147 186 [M1]

Both partially correct — Megan is right that monthly payments are lower for B, but Dafydd is right that the total amount repaid is about £29 800 more on Mortgage B because of the extra 5 years of interest [A1]

(a) r = 1.072^(1/12) − 1 = 0.005809… [M1]

M = (0.005809 × 9000) / (1 − 1.005809$^{-48}$) = £216.16 (accept £216.00–£216.30) [M1, A1]

(b) r = 1.085^(1/12) − 1 = 0.006821… [M1]

M = (0.006821 × 6944.21) / (1 − 1.006821$^{-36}$) [M1]

= £218.50 (accept £218.30–£218.70) [A1]

(c) Product 1 total = 48 × 216.16 = £10 376; interest = £1 376

Product 2 total ≈ 12 × (Year 1 payment) + 36 × 218.50 — student must reference a comparison; accept reasoned comment that Product 2 is more expensive overall because of the higher APR for 3 of the 4 years [B1]

(a) 60 × 374.92 = £22 495.20 [B1]

(b) 22 495.20 − 18 500 = £3 995.20 [B1]

(c) Trial: try r corresponding to APR 8.0%: r = 0.006434, M = (0.006434 × 18500)/(1 − $1.006434^{-60}$) = £374.89 [M1 for any sensible trial value]

Try APR 8.0% gives M ≈ £374.89 — very close to £374.92 [M1 for systematic trial]

Try APR 8.1% gives M ≈ £375.74 — too high [M1 for bracketing]

APR ≈ 8.0% (accept 8.0% or 8.1%) [A1]

Allow alternative method by solving 374.92 = (r × 18500)/(1 − $(1+r)^{-60}$) for r and then APR = $(1+r)^{12}$ − 1.

(a) r = 1.065^(1/12) − 1 = 0.005262… ≈ 0.00526 [B1]

(b) Using $M = (0.00526 \times L) / (1 - 1.00526^{-60})$:

£21 600 → M = £422.06, total paid = £25 323.60, interest = £3 723.60 [M1, A1]

£18 000 → M = £351.72, total paid = £21 103.20, interest = £3 103.20 [M1, A1]

£14 400 → M = £281.37, total paid = £16 882.20, interest = £2 482.20 [M1, A1]

(Accept ±£0.30 on each monthly payment)

(c) Saving = 3 723.60 − 3 103.20 = £620.40 [M1, A1 — allow ft from table]