

Mark Scheme

Edexcel Foundation Mock Set B Paper 2

For Pearson Edexcel GCSE Mathematics (1MA1)

Foundation tier • Paper 2 (Calculator)

Total 80 marks

Key to the marks

M	Method mark: for a correct method or a correct part of a method.
P	Process mark: for a correct step in the process of solving a problem.
A	Accuracy mark: for a correct answer or value after a correct method or process.
B	Unconditional accuracy mark: no method needs to be seen.
C	Communication mark: for a fully correct statement or conclusion with no contradiction.
()	A mark in brackets, e.g. (B1), is an alternative partial mark when full marks are not given.
oe	Or equivalent.
cao	Correct answer only.
ft	Follow through from an earlier answer.
isw	Ignore subsequent working once the correct answer is seen.
awrt	Answer which rounds to.
sc	Special case.
dep	Dependent on the mark before it.
“ ”	A value in quotation marks, e.g. “12” $\times$ 5, must come from a correct method, but may contain an arithmetic slip.

Give credit for any correct method, including ones not listed here. A correct answer with no working scores full marks unless the question asks for working (for example “show that” or “you must show your working”). If a correct answer is followed by further work that does not change it, ignore the further work. Probabilities must be written as fractions, decimals or percentages.

Indicative grade boundaries

Grade	5	4	3	2	1
Whole set: Papers 1, 2 and 3 (out of 240)	180	148	109	70	31
This paper alone, rough guide (out of 80)	60	49	36	23	10

Indicative only. Based on the real Pearson Edexcel boundaries for June 2023 to June 2026 (median), adjusted for how this set compares in difficulty with the real papers. Grades are awarded on the total for all three papers; the single-paper guide is about one third of the set boundaries.

These are estimates to help you judge performance on a practice paper; real boundaries change every year.

Marking guidance

Q	Answer	Marks	Guidance
1	4.083, 4.308, 4.38, 4.8	B1	cao
2	8 litres	B1	cao
3	7470	B1	cao
4	$24k$	B1	for $24k$ oe <i>Additional guidance:</i> Accept $k24$. Do not accept $24 \times k$.
5	3	B1	cao
6(a)	$(3, -4)$	B1	cao
6(b)	A vertical line through $(-2, 0)$	B1	for a correct line, at least 4 squares long <i>Additional guidance:</i> Ignore any label.
Total for Question 6: 2 marks			
7	BK, BP, BS, KP, KS, PS	B2 (B1)	for all 6 pairs (BK, BP, BS, KP, KS, PS) and no others for at least 4 correct pairs (ignore repeats such as BK and KB)) <i>Additional guidance:</i> Pairs may be written in words or with letters. A pair of the same fruit (eg BB) counts as an extra pair: B2 cannot be awarded, but B1 can.
8	£132.10	P1 P1 P1 A1	for $36\,703 - 36\,418 (= 285)$ for $(“285” - 27) \times 45 (= 11\,610)$ or $\times 0.45 (= 116.10)$ for adding $5 \times 3.20 (= 16)$ to their mileage pay for 132.10 cao <i>Additional guidance:</i> $285 \times 0.45 + 16 (= 144.25)$ scores P1P0P1A0. 13 210 (pence) given as the answer in pounds scores P1P1P1A0. Adding the readings scores P0 for the first mark.
9	Bar chart with a linear scale from 0, labelled axes, and bars of equal width at heights 18, 25, 12, 21, 9	B3 (B2) (B1)	for a fully correct bar chart: a linear scale starting at 0, bars of equal width at the correct heights, axes labelled (or days under the bars) for all 5 bars correct with a linear scale but no axis labels, or 3 or 4 bars correct with a linear scale and labels) for a linear scale on the frequency axis with a label, or for at least 2 bars of the correct heights)

(continued)

Q	Answer	Marks	Guidance
			<i>Additional guidance:</i> Bars may be horizontal. Bars do not need gaps between them but must be of equal width. A scale with unequal steps (eg 0, 5, 10, 20, 25) is not linear. Accept a vertical line chart only for B2.
10(a)	7	B1	cao
10(b)	$\times 5$ and $+24$	B2 (B1)	for two different correct operations, eg $\times 5$ and $+24$ for one correct operation <i>Additional guidance:</i> Accept other correct operations, eg $\div 0.2$ or $-(-24)$. Two equivalent operations (eg $\times 5$ and $\div 0.2$) score B1 only. 5 or 24 without an operation sign scores B0.
Total for Question 10: 3 marks			
11	29	P1 P1 A1	for a correct first step, eg $150 - 72 (= 78)$ or $41 - 19 (= 22)$ or $150 - 56 - 41 (= 53)$ for a process to find Year 10 drama, eg $72 - 23 - "22" (= 27)$, or Year 9 art $(= 30)$ with Year 9 total 78 for 29 cao <i>Additional guidance:</i> Values may be seen in the table. 29 in the Year 9 drama cell with no answer on the line scores full marks.
12	No: the drawing would be 30 cm long, which is more than 29.7 cm	M1 A1 C1	for $3600 \div 120$ or $2200 \div 120$ oe, eg $36 \div 120 (= 0.3)$ with a conversion to cm for 30 (cm) for No with 30 (cm) and 29.7 (cm) compared <i>Additional guidance:</i> Alternative: the longest real length that fits is $29.7 \times 120 = 3564 \text{ cm} = 35.64 \text{ m}$, which is less than 36 m (M1A1, C1 for No). The width (18.3 ... cm) does not need to be found. $36 \div 120 = 0.3$ with no conversion leading to "Yes" scores M0A0C0.
13	£819	P1 P1 A1	for $0.35 \times 520 (= 182)$ oe for "182" $\times 4.50$ or $520 \times 4.50 \times 0.35$ for 819 cao <i>Additional guidance:</i> Accept 819.00. $520 \times 4.50 (= 2340)$ alone scores P0P0A0; 2340×0.35 scores P1P1 (complete process).
14(a)	4.2 m^2	M1	for $\pi \times 1.15^2$

(continued)

Q	Answer	Marks	Guidance
		A1	for answer in the range 4.15 to 4.2 <i>Additional guidance:</i> Using $\pi = 3.14$ gives 4.15 ... which rounds to 4.2: full marks. $\pi \times 2.3^2 (= 16.6)$ scores MOA0.
14(b)	No: the circumference is 301.6 cm, which is more than 300 cm	M1	for $\pi \times 96$ oe, eg $2 \times \pi \times 48$
		C1	for No with 301.(5 ...) cm and 300 cm, or 3.01(5 ...) m and 3 m <i>Additional guidance:</i> Using $\pi = 3.14$ gives 301.44 and can score M1C1. $\pi \times 48 (= 150.7 \dots)$ leading to "Yes" scores MOC0. $\pi \times 48^2$ (area) scores MOC0.
Total for Question 14: 4 marks			
15(a)	£130	B1	for 130
15(b)	£232	M1	for a method to find the cost per mile, eg $(100 - 40) \div 100 (= 0.6)$, or a correct method using values from the graph, eg $\text{£}160 + 120 \times 0.6$
		A1	for 232 cao <i>Additional guidance:</i> Accept 232.00. $2 \times$ cost of 160 miles $(= 272)$ or $160 \times 320 \div 200 (= 256)$ scores MOA0. Using the graph to find the cost of 120 miles (£112) and adding it to the cost of 200 miles (£160) to get 272 scores MOA0.
Total for Question 15: 3 marks			
16	The medium bag (£2.15 per kg, compared with £2.20 and £2.18)	P1	for a process to find a comparable figure for one bag, eg $1.65 \div 750$ or $4.30 \div 2 (= 2.15)$ or $10.90 \div 5 (= 2.18)$
		P1	for a complete process to find comparable figures for all three bags
		C1	for Medium (bag) with correct comparable figures for all three bags <i>Additional guidance:</i> Comparable figures: per kg 2.20, 2.15, 2.18; per 100 g 22p, 21.5p, 21.8p; per 250 g 55p, 53.75p, 54.5p; grams per £1: 454.5 ..., 465.1 ..., 458.7 ...; cost of 30 kg: £66, £64.50, £65.40. Figures may be truncated or rounded if they still allow a correct comparison.
17	7.526217228	M1	for 40.19 or 5.34 seen
		A1	for 7.526217228(...)

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Q	Answer	Marks	Guidance
			<i>Additional guidance:</i> Accept 7.5262172 or better (at least 8 figures correct) for A1. $6.2^2 + 1.75 \div 8.4 - 3.06$ (= 35.588 ...) scores MOA0.
18(a)	£37.26	M1 A1	for 34.50×1.08 oe or 34.50×0.08 (= 2.76) for 37.26 cao
18(b)	$37.26 \times 0.92 = \text{£}34.28$, which is less than £34.50	M1 C1	for "37.26" $\times 0.92$ oe or "37.26" $\times 0.08$ (= 2.98(08)) for 34.27(92) or 34.28 with a statement that it is not 34.50, or 2.98 and 2.76 compared <i>Additional guidance:</i> Alternative: $1.08 \times 0.92 = 0.9936$ (not 1) scores M1C1 with a statement. Follow through their answer to (a) for M1 and C1. An explanation with no figures scores MOC0.
Total for Question 18: 4 marks			
19(a)	$6y^2 - 21y$	B1	cao
19(b)	$5m^2(2m - 3)$	B2 (B1)	for $5m^2(2m - 3)$ for $5(2m^3 - 3m^2)$ or $m^2(10m - 15)$ or $5m(2m^2 - 3m)$ or $5m^2(\dots)$ with one correct term in the bracket)
19(c)	$t = \frac{P - 3r}{4}$	M1 A1	for $P - 3r = 4t$ or $\frac{P}{4} = \frac{3r}{4} + t$ for $t = \frac{P - 3r}{4}$ oe <i>Additional guidance:</i> Accept $t = \frac{P}{4} - \frac{3r}{4}$ or $t = \frac{1}{4}(P - 3r)$. $t = P - 3r \div 4$ (no brackets or fraction line) scores M1A0.
Total for Question 19: 5 marks			
20(a)	3.125	B1	for 3.125 oe <i>Additional guidance:</i> Accept $\frac{100}{32}$ or $\frac{25}{8}$ or $3\frac{1}{8}$.
20(b)	$6250 \leq m < 6350$	B1 B1	for 6250 in the correct position for 6350 in the correct position <i>Additional guidance:</i> Accept 6349.9 for 6350. Do not accept 6349 or 6349.9. $6295 \leq m < 6305$ scores BOB0.
Total for Question 20: 3 marks			
21(a)	$2^2 \times 19$	M1	for at least two correct steps in repeated division by prime factors or a complete factor tree with one error

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Q	Answer	Marks	Guidance
		A1	for $2 \times 2 \times 19$ or $2^2 \times 19$ <i>Additional guidance:</i> 2, 2, 19 as a list scores M1A0.
21(b)	He has found the HCF. 30 is not a multiple of A (= 120); the LCM is $2^3 \times 3^2 \times 5 = 360$	C1	for a correct explanation, eg he has found the HCF, or 30 is not a multiple of A (or 120), or the LCM is 360 (or $2^3 \times 3^2 \times 5$) <i>Additional guidance:</i> Do not accept “he should multiply them all” or “it is too small” without further explanation.
Total for Question 21: 3 marks			
22	No: the ladder reaches 6.3 m up the wall, which is less than 6.4 m	M1	for $6.5^2 - 1.6^2$ (= 39.69)
		A1	for 6.3
		C1	for No with 6.3 (m) and 6.4 (m) <i>Additional guidance:</i> Alternative methods: a ladder that reaches 6.4 m with its foot 1.6 m away needs length $\sqrt{6.4^2 + 1.6^2} = 6.59 \dots$ m, which is more than 6.5 m (M1 for $6.4^2 + 1.6^2$, A1 for 6.59 ..., C1 No); or the foot would need to be $\sqrt{6.5^2 - 6.4^2} = 1.13 \dots$ m from the wall (M1A1C1). $6.5^2 + 1.6^2$ (= 44.81, 6.69 ...) leading to “Yes” scores M0A0C0.
23	220	M1	for 115% = 253 or 1.15 seen
		M1	for $253 \div 1.15$ oe
		A1	for 220 cao <i>Additional guidance:</i> 253×0.85 (= 215.05) or $253 - 0.15 \times 253$ scores M0M0A0.
24	£463.40	M1	for 680×0.88 (= 598.4) or 680×0.12 (= 81.6)
		M1	for 680×0.88^3 oe or a complete year-by-year method
		A1	for 463.40 cao <i>Additional guidance:</i> Year by year: 598.40, 526.59(2), 463.40(096). 680×0.64 (= 435.20) scores M1M0A0. Accept 463.4.
25	153	P1	for $1 - (0.15 + 0.2 + 0.12 + 0.25)$ (= 0.28)
		P1	for “0.28” $\div 2$ (= 0.14)
		P1	for “0.14” + 0.12 + 0.25) $\times 300$ oe, eg 42 + 36 + 75
		A1	for 153 cao

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Q	Answer	Marks	Guidance
			<i>Additional guidance:</i> 0.28 used for P(2) (not halved) gives $(0.28 + 0.12 + 0.25) \times 300 = 195$: P1POP1A0. 0.51 or $\frac{153}{300}$ as the final answer scores P1P1POA0.
26	Yes, with £441.60	P1 P1 P1 A1 C1	for $0.8 \times 840 (= 672)$ or $840 - 0.2 \times 840$ for “672” $\div 7 \times 4 (= 384)$ for “384” $\times 1.15$ for 441.6(0) for Yes with 441.6(0) and 450 <i>Additional guidance:</i> Ignoring the 20%: $840 \div 7 \times 4 \times 1.15 = 552$ leading to “No” scores POP1P1A0C0. Using $\frac{3}{7}$ instead of $\frac{4}{7}$ gives 331.20: P1POP1A0C0. Alternative: $450 \div 1.15 = 391.3 \dots$ litres compared with 384 litres scores full marks with a correct decision.
27	7.61 cm	M1 A1	for $\sin 41 = \frac{QR}{11.6}$ or $11.6 \times \sin 41$ oe for answer in the range 7.6 to 7.611 <i>Additional guidance:</i> $11.6 \times \cos 41 (= 8.75 \dots)$ scores M0A0. A complete method using $\cos 41$ to find PQ then Pythagoras scores M1.
28	3.5×10^6	M1 A1	for $(8.4 \times 10^{-2}) \div (2.4 \times 10^{-8})$ oe or 3 500 000 seen for 3.5×10^6 cao <i>Additional guidance:</i> Dividing the wrong way $(= 2.857 \dots \times 10^{-7})$ scores M0A0. 35×10^5 scores M1A0.
29(a)	(2, –6)	B1	cao
29(b)	–0.45 and 4.45	B1	for both values: one in the range –0.5 to –0.4 and one in the range 4.4 to 4.5 <i>Additional guidance:</i> Accept coordinates, eg (–0.4, 0) and (4.4, 0). One value only scores B0.
29(c)	No: the lowest value of $x^2 - 4x - 2$ is –6 (at the turning point), so it can never equal –7	C1	for No with a correct reason, eg the minimum (lowest) value is –6, or the line $y = -7$ does not cross the graph, or the turning point is at $y = -6$ <i>Additional guidance:</i> “No” with no reason, or “–7 is not on the graph” alone, scores C0.
			Total for Question 29: 3 marks