revise.wales — Mark Scheme

Mock Paper A — Unit 2: Non-Calculator (Foundation Tier)

65 marks. R.WM-MNF-U2-001 (MS).

Notation. Mn = method mark; An = accuracy / answer mark; Bn = independent unsupported correct value; Cn = communication (OCW); ft = follow through from a prior error; oe = or equivalent; cao = correct answer only.

Question 1 **(5 marks)**

(a) **M1** $3-(-4)$ or counts 7 intervals between P and Q on the number line.

A1 $=$ **7** (cao).

(b) **B1** **70** (cao). The digit 7 in $38{,}472$ sits in the tens place, so its value is 70. Accept "seventy" or "tens" written in words. Do not accept "7" on its own (that is the digit, not the value) and do not accept "400" (that is the value of the digit 4).

(c) **M1** Identifies the hundreds digit as 4 and the next digit (tens) as 8; applies the round-up rule.

A1 $=$ **6,500** (cao).

Question 2 **(7 marks)**

(a) **M1** Common denominator 8: $\frac{1}{4}=\frac{2}{8}$ (seen).

A1 $\frac{2}{8}+\frac{3}{8}=\mathbf{\frac{5}{8}}$ (cao). Already in simplest form.

(b) **M1** Recognises $4\times 3=12$ (oe $\frac{4}{10}\times\frac{3}{10}=\frac{12}{100}$).

M1 Places the decimal point correctly: 2 decimal places in the product (one from each factor).

A1 $=$ **0·12** (cao). Do not accept $1{\cdot}2$ or $0{\cdot}012$.

(c) **M1** Converts to a common form (all decimals): $\frac{1}{2}=0{\cdot}5$, $\frac{3}{5}=0{\cdot}6$, $\frac{2}{5}=0{\cdot}4$ (any two correct conversions seen).

A1 Correct order: $\mathbf{\frac{2}{5}}$, **0·45**, $\mathbf{\frac{1}{2}}$, $\mathbf{\frac{3}{5}}$, **0·7** (cao). All five required.

Question 3 **(6 marks)**

(a) **M1** Completes factor tree: $6=2\times 3$ and $10=2\times 5$ (all four leaf nodes correct).

A1 $60=$ **2 × 2 × 3 × 5** or $\mathbf{2^2\times 3\times 5}$ (oe). Accept any correct product-of-primes form.

(b) **M1** Lists multiples of each: $8,16,24,\ldots$ and $12,24,\ldots$; identifies the first common multiple (oe: prime factorisation $8=2^3$, $12=2^2\times 3$, so LCM $=2^3\times 3$).

A1 $=$ **24** (cao).

(c) **M1** Lists factors of each: $18=1,2,3,6,9,18$ and $24=1,2,3,4,6,8,12,24$; identifies the largest common factor (oe: $18=2\times 3^2$, $24=2^3\times 3$, HCF $=2\times 3$).

A1 $=$ **6** (cao).

Question 4 **(7 marks)**

(a) **M1** Substitutes both values: $3 \times 5 + 4 \times (-2)$ seen (with the negative carried).

A1 $15 + (-8) =$ **7** (cao). Penalise sign errors.

(b) **M1** Collects like terms: $5a - 2a$ and $3b + 4b$ (both groups identified).

A1 $=$ **3a** $+$ **7b** (cao). Accept $7b + 3a$.

(c) **B1** $=$ **8x** $-$ **12** (cao). Both terms required; penalise $8x - 3$ or $8x + 12$.

(d) **M1** Identifies the common factor of 3 ($6n = 3 \times 2n$, $9 = 3 \times 3$).

A1 $=$ **3**(**2n** $+$ **3**) (cao). Penalise partial factorisation such as "$3 \times 2n + 9$".

Question 5 **(8 (6 + 2 OCW) marks)**

() **M1** Identifies the common difference: each pattern adds 3 tiles ($7 - 4 = 3$, $10 - 7 = 3$).

M1 Writes a rule for Pattern n: **3n** $+$ **1** (oe in words: "three times the pattern number, plus one").

A1 Rule **3n** $+$ **1** explicitly stated.

M1 Sets up an equation using the rule: **3n** $+$ **1** $=$ **85**.

M1 Rearranges: $3n = 85 - 1 = 84$.

A1 $n = 84 \div 3 =$ **28** (cao). Pattern **28** uses 85 tiles.

C1 Working laid out in clear sentences with the rule, equation and solution all visible and correctly labelled.

C1 Final answer expressed in context ("Pattern 28" rather than a bare number) with correct algebraic notation throughout.

Question 6 **(7 marks)**

(a) **B1** $A(-3, 2)$ plotted within ± 2 mm and labelled A.

B1 $B(4, 5)$ plotted within ± 2 mm and labelled B.

(b) **M1** Constructs a table of values for $y = 2x - 1$ with at least three correct pairs. Expected values:
$x = -2 \Rightarrow y = -5$; $x = -1 \Rightarrow y = -3$; $x = 0 \Rightarrow y = -1$; $x = 1 \Rightarrow y = 1$; $x = 2 \Rightarrow y = 3$; $x = 3 \Rightarrow y = 5$.

M1 Plots at least three correct points on the grid (± 2 mm tolerance).

A1 Draws a single straight line through the plotted points across the full range $x = -2$ to $x = 3$. Penalise short, broken or free-hand lines.

(c) **M1** Reads the coefficient of x directly from $y = 2x - 1$; or computes "rise over run" from two points on the drawn line (e.g. from $(0, -1)$ to $(1, 1)$: $\frac{2}{1}$).

A1 Gradient $=$ **2** (cao).

Question 7 **(8 marks)**

(a) **M1** States that angles on a straight line sum to $180°$ (reason).

M1 $180 - 65 - 40$ (oe).

A1 $x =$ **75**° (cao). Reason mark withheld if the $180°$ fact is not given.

(b) **M1** Uses interior-angle formula: $\frac{(n-2)\times 180}{n}$ with $n = 6$ (oe: sum of interior angles $= (6-2)\times 180 = 720°$ then $720 \div 6$).

M1 Carries out the calculation: $\frac{4\times 180}{6}$ or $\frac{720}{6}$.

A1 $y =$ **120**° (cao).

(c) **M1** $(10-2)\times 180$ (oe).

A1 $=$ **1440**° (cao). Penalise division by 10 — the question asks for the sum, not one angle.

Question 8 (9 marks)

(a) **B1** P$(1) = \mathbf{\frac{3}{8}}$ (cao). Accept $0{\cdot}375$ or $37{\cdot}5$%.

B1 P(even) $= \mathbf{\frac{3}{8}}$ (cao; two 2s and one 4 out of 8 sections). Accept $0{\cdot}375$ or $37{\cdot}5$%.

B1 P$(6) =$ **0** (cao). The spinner has no 6. Accept "impossible".

(b) **M1** Fills in at least 8 of the remaining 13 blank cells correctly.

M1 Recognises symmetry of the sample space about the leading diagonal (oe: every cell entry equals row label + column label).

A1 Full table correct:

$+$	1	2	3	4
1	2	3	4	5
2	3	4	5	6
3	4	5	6	7
4	5	6	7	8

(c) **M1** Counts the cells in the completed sample space giving a total of 5: $(1,4), (2,3), (3,2), (4,1)$ — four outcomes (ft from (b)).

M1 Identifies total number of equally-likely outcomes $= 16$.

A1 P(total $= 5) = \frac{4}{16} = \mathbf{\frac{1}{4}}$ (cao). Accept $0{\cdot}25$ or 25% or any equivalent fraction.

Question 9 (8 marks)

(a) **M1** Reflects at least one vertex of A correctly in the y-axis (e.g. $(1,1) \mapsto (-1,1)$).

M1 Reflects all three vertices correctly: $(1,1) \mapsto (-1,1)$, $(3,1) \mapsto (-3,1)$, $(1,4) \mapsto (-1,4)$.

A1 Triangle P drawn with vertices $(-\mathbf{1},\mathbf{1})$, $(-\mathbf{3},\mathbf{1})$, $(-\mathbf{1},\mathbf{4})$ and labelled P (± 2 mm tolerance).

(b) **M1** Recognises mapping for $90°$ clockwise rotation about the origin: $(x,y) \mapsto (y,-x)$ (oe: tracing-paper rotation sketched).

M1 Applies the mapping to all three vertices: $(1,1) \mapsto (1,-1)$; $(3,1) \mapsto (1,-3)$; $(1,4) \mapsto (4,-1)$.

A1 Triangle Q drawn with vertices $(\mathbf{1},-\mathbf{1})$, $(\mathbf{1},-\mathbf{3})$, $(\mathbf{4},-\mathbf{1})$ and labelled Q (± 2 mm tolerance).

(c) **M1** Identifies the transformation as a *rotation* (not "reflection" — A and B are not mirror images about either axis).

A1 **Rotation of** $180°$ **(half-turn) about the origin** $(0,0)$. All three elements required: rotation, $180°$, centre. Accept "centre of rotation $(0,0)$".

Total: $5 + 7 + 6 + 7 + 8 + 7 + 8 + 9 + 8 =$ **65** *marks.*