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Mark Scheme
Mock Paper

GCSE

GCSE Applications of Mathematics (Pilot)
Paper: 5AM2F / 01

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5AM2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		5,2,1	1	B1 for 5,2,1 in any order
(b)(i)		7p	2	B1 cao
(ii)		19p		B1 cao
2 (a)		300 or 3 hundreds	1	B1
(b)		7/100 or 7 hundredths	1	B1
(c)		2.42	1	B1
3 (a)		16-17	2	B2 for answer in range 16-17 (B1 for answer in range 14-19 excluding 16-17)
(b)		57	1	B1 cao
4	eg 2×1.50=3.00 4×2.15=8.60 3×2.80=8.40	4,3	4	M1 deducing basic calculators are £3, or deducting from total (eg using £17) M1 for finding multiples of two other types of calculators (or addition) M1 for finding totals and comparing with £20 or £17 A1 for 4, 3 **OR** M1 deducing basic calculators are £3, or deducting from total (eg using £17) M1 for deducting cost of two other types of calculators from £20 M1 for finding money remaining A1 for 4, 3

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Question		Working	Answer	Mark	Notes
5	(a)		30	1	B1 cao
	(b)		15	1	B1 cao
	(c)	Use of Kerri "30" from (a) and Asad 20+"15" (=35) from (b)	Asad 35>30	2	M1 use of figures from (a) & (b) for Kerri and Asad A1 conclusion eg Asad because 35 > 30 oe
	(d)		11 00	1	B1 for 11 00 oe eg 11am 11 o'clock, etc.
	(e)		Beeston & Heaton	2	B2 Wintown then 2cm Beeston (×) 4cm Heaton (×) 3 cm Deeking ±2mm (B1 for any one of these distances correct)
6	(a)		Cross at 0	1	B1 at or within 2mm from 0
	(b)		Cross at 1	1	B1 at or within 2mm from 1
	(c)		Cross at ½	1	B1 at or within 2mm from ½
7	(a)		$h=3+c$	2	B2 $h=3+c$ (B1 for h=expression in c or for $3+c$)
	(b)	3×15+5=	50	2	M1 for substitution of 15 for x in $3x+5$ A1 cao

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Question		Working	Answer	Mark	Notes
8	(a)		19.2	1	B1 for answer in range 19 to 19.9
	(b)		6.2	1	B1 for answer in range 6 to 6.4
	(c)		160	3	M1 for selection of a factor of 20 and attempting to read this from the graph M1 10 × (16 to 17) or 5 × (32 to 33) oe A1 for 150 – 175
9		Maximum capacity of Precinct & Leisure centre = 680 Total cars: 8 am: 150+170+180 = 500 12 noon: 240+240+380 = 860 4 pm: 150 + 150 + 380 = 680	Not enough room at 12 noon	5	M1 works out total capacity at Precinct & Leisure centre (= 680) M2 works out total number of cars for all three times (M1 works out total number of cars for one time) A1 correct figures for all three times C1 conclusion stated: not enough room at 12 noon, but there is enough room at the other times
10	(a)	(7+8+4) × 150 = 19 × 150 = or (7×150) + (8×150) + (4×150) =	2850	3	M1 attempts to sum (eg 7+8+4) or times by 150 (eg ×150) M1 (7+8+4) × 150 or 19 × 150 or (7×150) + (8×150) + (4×150) A1 cao
	(b)	2850 ÷ 9 = 316.66	316 or 317	2	M1 "2850" ÷ 9 eg 316.66 A1 316 or 317 but could be ft from (a)

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Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)(i)		1/7	3	B1 oe
(ii)		6/7		B1 oe or ft 1 – (i) oe
(iii)		0		B1 cao
(b)		Six outcomes	2	B2 for all 6 outcomes (ignore repeats) including the one given. (B1 for three outcomes including the one given).
12 (a)	3 × 35 + 50	155	2	M1 for 3 × 35 + 50 or digits 155 seen A1 cao
(b)	260 – 50 = 210 210 ÷ 35	6	3	M1 for 260-50 or 210 seen M1 for "260-50"÷35 or 210÷35 A1 cao SC B1 for starting at a number between 100 and 170 and adding at least two 35s and showing a total between 230 and 290 OR For adding at least three 35s perhaps with other numbers, and showing a total between 180 and 240 (or between 230 and 290 if 50 is included in the sum).

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Question		Working	Answer	Mark	Notes
13	(a)		130°	2	B2 for 128-132 (B1 for 126-134 if not B2)
	(b)	6 × 50 =	290-310	2	B2 for 290-310 (B1 for 6 ± 0.2 (cm) seen or for d×50 with $3 \leq d \leq 9$)
	(c)		Point C marked	2	B1 for BC = 7 ± 0.2 cm B1 for bearing = 60 ± 2°
14		3 kg of peaches is £2.96 £4.28 - £2.96 = £1.32 £1.32 ÷ 2 = £0.66	£0.66 or 66p	3	M1 2 × £1.48 or digits 296 seen M1 (dep) digits 428 – digits "296" or digits 132 seen A1 £0.66 or 66p (units consistent with answer)
15	(a)	1-(0.2+0.4+0.1)	0.3	2	M1 for 1-(0.2+0.4+0.1) A1 for 0.3
	(b)	200 × 0.2	40	2	M1 for 200 × 0.2 A1 for 40 NB: B2 for 40 out of 200, B1 for 40/200 oe
16	(a)		10 10	1	B1 10 10 or equivalent statements of time
	(b)		6-7 km	1	B1 6-7 km
	(c)		Line	2	B1 for a horizontal line from (1040,20) to (1100,20) B1 for a line from (1100,20) to(1150,0), or from (1040, 20) to (1150, 0)

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Question	**Working**	**Answer**	**Mark**	**Notes**
17 (a)		Diagram	2	B2 for trapezium (base 5cm, ht 2cm, top 3cm) (B1 for a trapezium with exactly two right angles)
(b)		Diagram	2	B2 for a rectangle with length 5 cm and width 2cm and a line at 3cm from one edge (B1 for rectangle of length 5 cm or width 2 cm or for a rectangle with an interior line parallel to the shorter sides, do not accept a square). (B0 for nets) Note: orientation must be correct in (a), ignore in (b) Do not accept extra lines in (a) or (b).
(c)	area of front face: ½ × 2 × (3+5) (=8) 8 × 2 =	16	3	M1 for substitution of figures into trapezium formula: ½ × 2 × (3+5) oe eg division in to triangle & rectangle M1 for "area" × 2 A1 cao
18	eg 2*n*, 3*n*, 4*n* (any integer *n*) 4*n* – 2*n* = 12 *n* = 6	12 18 24	3	M1 for writing multiples of 2:3:4 or for two figures for Amy & Colin with a difference of 12, or 12:24 seen, or introduces an algebraic equivalent M1 for 2:3:4 × 12, or a factor of 12 used with algebra A1 for all of 12, 18, 24 SC B2 for 12, 18, 24 given but on the wrong answer lines

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Question		**Working**	**Answer**	**Mark**	**Notes**
19		18 30 to 22 15 is 3 h 45 min 23 15 to 00 30 is 1 h 15 min 3 h 45 min + 1 h 15 min = 5 h 600 ÷ 5 =	120	5	M1 attempt at a single time duration eg 3 h 45 min, 1 h 15 min or in minutes M1 "3 h 45 min" + "1 h 15 min" A1 for 5 h oe M1 distance ÷ time A1 cao
20	(a)	$\frac{135}{18} \times 12$ = 7.5 × 12 =	90	2	M1 for 135/18 or sight of 7.5 or 18:12=135:*x* A1 cao
	(b)	5:1 → 54 5 + 1 = 6; 54 ÷ 6 = 9 5 × 9 =	45	2	M1 for 5:1 is 54 or 5÷(5+1)×54 or 1÷(5+1)×54 or 54 ÷"5+1" or 54 ×5 or 270 or 9:45 A1 for 45 cao
21	(a)		Line	2	B2 line drawn ±2mm from accurate line, crossing AB and CD (B1 a straight line which crosses AB within a line drawn ±2mm from accurate line, and also crossed CD) NB: accept dotted or dashed lines, but not curves; accept freehand if considered to be straight
	(b)		Region	2	B2 correct arc ±2mm and shaded within. Allow dotty or continuous arc. (B1 inaccurate arc and shaded or accurate arc unshaded).

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Question	**Working**	**Answer**	**Mark**	**Notes**
22	5 × 5 × 6 Alternative: 40×40×60 ÷ 8×8×10	150	4	M1 for attempt at 1 division (eg 40÷8), may be implied by marks or number on one edge of diagram or by 5 or 6 seen M1 for attempt at 3 division (40÷8, 40÷8, 60÷10), may be implied by marks or numbers on diagram or by 5,5 and 6 seen. M1 (dep on 1st M1) for "5" × "5" × "6" A1 cao Alternative M1 for 40×40×60 or 8×8×10 or 96000 or 640 seen M1 for 40×40×60 and 8×8×10 or 96000 and 640 seen M1 (dep on 1st M1) for "(40×40×60)" ÷ "(8×8×10)" A1 cao
23 (a)		0.85 0.95,0.15,0.85	2	B1 0.85 B1 0.95,0.15,0.85
(b)	0.15 × 0.05 =	0.0075	2	M1 0.15 × 0.05 A1 0.0075 oe