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Mark Scheme
Mock Paper

GCSE

GCSE Applications of Mathematics (Pilot)
Paper: 5AM1F / 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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

5AM1F_01					
Question		Working	Answer	Mark	Notes
1	(a)		Fountain	1	B1 cao
	(b)		Vector	1	B1 cao
	(c)	4×2.35	9.40	2	M1 4×2.35 A1 cao
	(d)	40÷1.92=20.8	20	2	M1 40÷1.92 (=20.8) A1 cao
2	(a)		2	1	B1 cao
	(b)		Wednesday	1	B1 cao
	(c)(i)		9	4	M1 for reading off 4 and 5 eg 4+5A1 cao A1 cao
	(c)(ii)	C:11 S:9(ft) OR Friday Simon watched 1 hour more, Saturday Cath watched 3 hours more, Hence Cath watched 2 hours more than Simon	Cath		B1 for Cath 11 h OR Friday Simon watched 1 hour more, Saturday Cath watched 3 hours more B1 for deducing who has greatest hrs (ft (i))

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Question		Working	Answer	Mark	Notes
3	(a)		97	1	B1 cao
	(b)		London & Reading	1	B1 for both
	(c)	L,R,S,P is 137 L,S,R,P is 212	L,R,S,P 137	3	M1 writes down a single route involving the four towns M1 adds up the total distance for a single stated route A1 states L,R,S,P with the least distance stated
4	(a)		4.6	1	B1 cao
	(b)(i)		2.2	2	B1
	(ii)		11		B1 ft (i)×5
5	(a)		£123-£127	1	B1 £123-£128 inclusive
	(b)		35-36	1	B1 35-36 inclusive
	(c)	8.6×5=43 → "£180"	£175-£185	3	M1 8.6 × 5 A1 43 A1 £175-£185 SC: B2 for 43

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Question	**Working**	**Answer**	**Mark**	**Notes**
6	3.6-2.4=1.2 7×1.2=8.4 extra space needed 8.4÷2.4=3.5 less spaces 20-4=16 spaces or total length 20×2.4=48 7×3.6=25.2 48 – 25.2 =22.8 22.8÷2.4=9.5 or 9 spaces 9 + 7 disabled = 16 or for equivalent calculations using area	16	4	M1 3.6-2.4 (=1.2) M1 7×1.2 (=8.4) extra space needed M1 8.4÷2.4 (=3.5 or 4) less spaces A1 cao **OR** M1 total length 20×2.4 (=48) M1 7×3.6 (=25.2) M1 (48 – 25.2)÷2.4 (=9.5 or 9) A1 cao
7		Data collection sheet	3	B3 for a completely correct data collection sheet, including 3 columns with headings: type, tally, frequency. (B2 for partially correct data collection sheet) (B1 for one column correctly labeled)

5AM1F_01					
Question		Working	Answer	Mark	Notes
8	(a)	2658-2430 = 228 "228" × 32	72.96	4	M1 2658 – 2430 A1 228 M1 "228" × 32 or "228" × 0.32 or digits 7296 seen A1 cao **OR** M1 for 2430 × 32 (or digits 77760 seen) or 2658 × 32 (or digits 85056 seen) A1 if 1 correct M1 for "85056" – "77760" or 7296 seen A1 cao
	(b)	2/5 × 145 = 58 145 – 58	87	3	M1 for 1/5 × 145 or 145 ÷ 5 or 29 seen M1 for 145 × 2/5 or 145 – 2× "29" oe A1 for 87 cao
9	(a)	30 + (7×4)	£58	2	M1 30 + 7×4 or 30 + 28 A1 cao
	(b)	51 – 30 = 21 21 ÷ 7 = 3	3	3	M1 51-30 or sight of 21 M1 (dep) "21" ÷ 7 A1 cao NB: a correct answer that is embedded gets B1
10			Chart or graph	4	B1 for suitable labels or key to differentiate David and Emily B1 for each month clearly labelled B1 for accurately representing the data C1 for a fully correct graph or chart

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Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)(i)		200	2	B1 cao
(ii)		30		B1 cao
(b)	(6+3+3)+(8+8)+(5+5)= 12+1+10=	38	3	M1 at least 6 correct lengths added M1 correct lengths added A1 cao
12 (a)	(12÷4)×3 (=9) 9×50 Alternative: 4 tins = 50×3 = 150 12 tins = 150×3	4.50	3	M2 for 50×(12÷4)×3 or better (inc adding 9 lots of 50p) (M1 for using 2 of the 3 operations or 9 seen) A1 cao **OR** M1 for 4 tins = 50×3 (=150 or 1.50) M1 for "150"×3 or "1.50"×3 A1 cao SC if M0 scored: B2 for digits 45, or B1 for 150 or 1.5 or 1.50]
(b)	9/12 × 100	75	2	M1 for 9/12 oe A1 cao

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Question		Working	Answer	Mark	Notes
12	(c)	15/100 × 40 = 6 OR 10% = 40÷10=4 5%=4÷2=2 15%=4+2=6 40-6 Alternative: 40×0.85	34	3	M1 for 15/100 × 40 oe or a correct method to work out 10% and 5% of 40, or 4 and 2 seen A1 for 6 cao A1 ft for 40-"6" dependent on M1 scored, or 34 as answer. Alternative: B1 cao for 85 or 0.85 seen M1 for [("100-15")/100] × 40 or 1-"0.15" × 40 or 6 cao. A1 for 34 or ft for 1-"0.15" × 40 evaluated correctly SC B2 for £6
13	(a)			1	B1 for explanation relating to the mode eg Ali needs to use the greatest frequency not the greatest number of TVs, The mode is the largest frequency, the mode is 7, he needs to use the quantity with the frequency 12 not the 2
	(b)	(4×4)+(5×7)+(6×10)+(7×12)+(8×5)+(9×2)= 16+35+60+84+40+18	253	2	M1 (4×4)+(5×7)+(6×10)+(7×12)+(8×5)+(9×2)= A1 cao

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Question	**Working**	**Answer**	**Mark**	**Notes**
14 (a)		1.5 – 2.0	1	B1 for height of man 1.5m – 2.0 m
(b)	Height of man × "2.5"	Conclusion	3	M1 for multiplying (a) by a number between 2 and 3 A1 for height 3m – 6m C1 conclusion based on comparing their answer with 5.4m
15 (a)(i)		500	2	B1 cao
(ii)		800		B1 cao
(b)		A × 0.15 D= C+50	3	B1 cao B1 cao B1 cao
16 (a)		8	1	B1 8 or 8.00
(b)(i)	eg 7.50÷10	£0.75 or 75p	3	M1 use of $\frac{y_2 - y_1}{x_2 - x_1}$ or right angled triangle drawn oe A1 0.75
(ii)				B1 "£0.75" or "75p" using their gradient from (i)

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Question	**Working**	**Answer**	**Mark**	**Notes**
16 (c)		Draw straight line graph	2	B2 for graph drawn, from origin to at least (10,12.00) (B1 for evidence of at least one point on the line, or coordinates calculated in minutes and £, or a partial line from the origin and when extended would cross between (10,11.75) and (10,12.50)
(d)		7.6-7.8	2	M1 for identification of the point of intersection, or evidence of its use A1 for answer in the range 7.6 to 7.8 minutes, 456 to 468 seconds, oe.
17	Change $ to £: 25.20÷1.40 = £18 Change € to £: 19.80÷1.08 = £18.33 £18<£18.33 so Miami cheaper OR Change $ to €: 25.20 ÷ 1.40 × 1.08 or 25.20 ÷ 1.296 or 25.20 × 0.1714 =19.44≤19.80 so Miami OR Change € to $: 19.80 ÷ 1.08 × 1.40 or 19.80 ÷ 0.7714 or 19.80 × 1.296 25.66>25.20 so Miami	Miami cheaper	3	M1 for 25.20÷1.40 (=18) M1 for 19.80÷1.08 (= 18.33) C1 £18<£18.33 so Miami cheaper OR M2 25.20 ÷ 1.40 × 1.08 or 25.20 ÷ 1.296 or 25.20 × 0.1714 C1 19.44≤19.80 so Miami cheaper OR M2 19.80 ÷ 1.08 × 1.40 or 19.80 ÷ 0.7714 or 19.80 × 1.296 C1 25.66>25.20 so Miami cheaper

5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
18	1.72÷2 (=0.86) 7.65 ÷ 9 (=0.85)	Large box with reasons	3	M1 for 1.72 ÷ 2 (=0.86) M1 for 7.65 ÷9 (=0.85) C1 for large box or 9kg with correct calculations OR M1 for 2 ÷ 1.72 (=1.162…) M1 for 9 ÷ 7.65 (=1.176…) C1 for large box or 9kg with correct calculations M2 for 7.65×2÷9 (=1.70) or for (1.72÷2)×9 (=7.74) C1 for large box or 9kg with correct calculations OR M1 for 1.72×9 (=15.48) M1 for 7.65×2 (=15.30) C1 for large box or 9kg with correct calculations (Accept equivalent methods for comparison)
19	LCM (40,24) = 120 Buns 120 ÷ 40 Burgers 120 ÷ 24 OR Buns: 40 is 2×2×2 (×5) Burgers: 24 is 2×2×2 (×3)	Buns 3 Burgers 5	3	M1 attempt to find LCM by eg lists of multiples, or summing of 40s and summing of 24s, with at least 3 numbers in each list A1 identify 120 as LCM A1 cao (both) OR M1 expansion of either number into its prime factors in a factor tree or 8×5 or 8×3 A1 both expansions correct A1 cao (both) SC B2 if answers the wrong way around

5AM1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
20	5 miles = 8km (70 miles ÷ 5) × 8 = 112 km OR (120 km ÷8) ×5 = 75 miles	Pablo	3	M1 5 miles = 8 km OR 1km = 0.6(25) miles OR 1 mile = 1.6km oe M1 (70÷5)×8 (=112) or (120 ÷8)×5 (=75) A1 (dep on at least M1) Pablo with correct calculations Refer to both answer line and working NB Pablo or 75 miles or 112 km without working scores 0 marks
21 (a)		Points plotted	1	B1 cao
(b)		Negative	1	B1 cao
(c)		Line of best fit drawn	1	B1 for a reasonable line of best fit
(d)		10-12.5	1	B1 for 10-12.5 or ft from line of best fit
22		=B2*2+C2 D2*2	3	B1 for =B2*2+C2 or =B2+B2+C2 oe B1 for =D2*2 or =D2÷50*100 or =D2/50*100 oe B1 for using correct spreadsheet notation in at least one; condone missing "=" throughout, and/or use of × instead of *