General Certificate of Secondary Education

Mathematics 4360

Unit 1 Higher Tier 43601H

Mark Scheme

Specimen Paper

Mark Schemes

Principal Examiners have prepared these mark schemes for specimen papers. These mark schemes have not, therefore, been through the normal process of standardising that would take place for live papers.

Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
Q	Marks awarded for quality of written communication.
M dep	A method mark dependent on a previous method mark being awarded.
ft	Follow through marks. Marks awarded following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
oe	Or equivalent. Accept answers that are equivalent. eg, accept 0.5 as well as $\frac{1}{2}$
eeoo	Each error or omission.

Unit 1 Higher Tier

Q	Answer	Mark	Comments
1(a)	Longer taxi rides always cost more and cost per mile should be about same	B1	oe
1(b)	Yes, positive correlation	B1	Accept: No, correlation is weak positive

Q	Answer	Mark	Comments
2	Σboys scores $12 + 18 + 12 + 19 + 9 + 20 + 11 + 9 + 18 + 12$	M1	$= 140$
	(Mean $=$) 14	A1	
	Boys range $= 11$	B1	
	Conclusion using data comparing mean and range with all information clearly and coherently organised	Q2	Strand (iii) eg, girls are better as mean higher and range about same There is no difference as means and ranges about the same Q1 partial conclusion or lack of clarity

Q	Answer	Mark	Comments
3(a)	Too small a sample or other sensible reason	B1	eg, may not have anyone whose surname begins with X or Z
3(b)	Method 2, all patients have equal chance	B1	

Q	Answer	Mark	Comments
4	$P(13) = \frac{3}{20}$ implies 15 winners in 100 plays	B1	Award partial marks for stages shown
	(Chocolate costs) £ 7.50	B1	
	(Takings) 100×20 (= £ 20)	B1	
	(Profit) £ 20 $-$ £ 7.50 (= £ 12.50)	B1	

Q	Answer	Mark	Comments
5(a)	Σxf ($3 \times 0 + 4 \times 4 + 5 \times 4 + 6 \times 9 + 7 \times 8 + 8 \times 5$)	M1	
	186	A1	
	6.2	A1 ft	ft Their total ÷ 30 if M1 awarded
5(b)(i)	Reference to cumulative totals for French (1, 5, 13, 21, 30)	M1	eg, 'I added the frequencies'
	5	A1	
5(b)(ii)	5 Spanish level 5 and 6 17 French level 5 and 6	B1	Lots of zeros in top right hand of table The numbers above zero are on or below the leading/main diagonal

6(a)	2.12×10^5 or 212 000	B1	
6(b)	6.25×10^{10}	B1	62 500 000 000
6(c)	5000	B1	5×10^3

7	642.60 − 630	M1	
	Their 12.6 ÷ 630	M1	
	2%	A1	

8(a)	$\dfrac{3}{8}$, $\dfrac{3}{8}$, $\dfrac{5}{8}$, $\dfrac{3}{8}$	B1	
8(b)	$\dfrac{3}{8} \times \dfrac{3}{8}$	M1	
	$\dfrac{9}{64}$	A1	
8(c)	P(1 red) $= \dfrac{1}{5}$	M1	oe $\dfrac{1}{5} \times \dfrac{1}{5} = \dfrac{1}{25}$
	$\dfrac{3}{15}$ or 15 seen	A1	
	7 (green balls added)	A1	

Q	Answer	Mark	Comments
9(a)	Evidence that line at 90 drawn or used	M1	Line from 40 days drawn or used
	40 - 41 days	A1	87 - 89 patients
	False as just over 40 or just about true as nearly 40	A1	Must make a conclusion and refer to values False as 88 < 90 or just about true as 88 nearly 90
9(b)	Range marked from 1 to 8	B1	
	Median and quartiles marked at 4.1, 5, 5.8	B1	
	Box formed and whiskers correctly joined	B1	
9(c)	80 ÷ 746 (× any value in table)	M1	
	9 $\quad$ 37 $\quad$ 5 4 $\quad$ 21 $\quad$ 4 $\quad$ All values ± 1	A2	Award A1 A0 if total is not 80

Q	Answer	Mark	Comments
10(a)	f ÷ class width for at least 3 values	M1	
	0.068, 0.056, 0.022, 0.008	A1	Allow scaled values
	Fully labelled correct histogram	A1	
10(b)	P(first over 500) = $\dfrac{66}{100}$	B1	
	$\dfrac{66}{100} \times \dfrac{65}{99}$	M1	
	$\dfrac{13}{30}$	A1	0.4333 …

Q	Answer	Mark	Comments
11(a)	Ratio is $1:11^3$ and $11^3 = 1331$	B1	
11(b)	$\dfrac{1}{1^3} : \dfrac{320}{11^3}$	M1	oe
	1 : 0.24	A1	

Q	Answer	Mark	Comments
12	Coffee < 130.5 174.5 ≤ cup (20.5 ≤) milk < 21.5	B2	All three inequalities correct B2 One correct B1
	Their min cup – their max coffee –2 × their max milk	M1	174.5 – (130.5 + 2 × 21.5) (= 1)
	No as 1 ml to spare	A1	Must show all stages and reach conclusion
	Logical argument (ft their inequalities) with M1 awarded	Q1	Strand (ii)