Mark Scheme (Results)

November 2010

GCSE Mathematics (1380)
Paper 2F

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NOTES ON MARKING PRINCIPLES

1   Types of mark
         M marks: method marks   A marks: accuracy marks
         B marks: unconditional accuracy marks (independent of M marks)

2   Abbreviations
         cao – correct answer only   ft – follow through   isw – ignore subsequent working
         SC: special case   dep – dependent   oe – or equivalent (and appropriate)
         indep - independent

3   No working
         If no working is shown then correct answers normally score full marks
         If no working is shown then incorrect (even though nearly correct) answers score no marks.

4   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
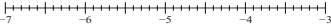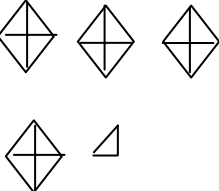   replaced by alternative work.
         If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send
         the response to review, and discuss each of these situations with your Team Leader.
         If there is no answer on the answer line 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.
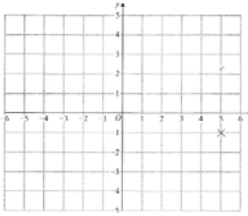   If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes
         clear the method that has been used.

5 **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.

6 **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.

7 **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.

8 **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.

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

10 **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)

1380/2F

Question		Working	Answer	Mark	Notes
1	(a)		58	1	B1 cao
	(b)		14	1	B1 cao
	(c)		100.5	1	B1 accept $100\frac{1}{2}$
	(d)		number line −7 to −3	1	B1
2	(a)		8	1	B1 cao
	(b)		18	1	B1 cao
	(c)		diagram	2	B1 cao
			diagram		B1 (can be any orientation)

1380/2F				
Question	Working	Answer	Mark	Notes
3	4.38 + 0.45 + 0.29 + 0.29 = 5.41 10 − 5.41 Or 10 – 4.38 = 5.62 5.62 – 0.45=5.17 5.17 – 0.29=4.88 4.88 – 0.29 = 4.59	4.59	3	M1 for adding 3 or 4 items with consistent units (eg 4.38 +0.45 + 0.29 + 0.29 or eg 45 + 29 + 29) or digits 541 or 512 or 103 or 496 seen M1(dep) for subtracting their total from 10 or 1000 (consistent with their monetary units) or for an answer which when added to their total gives 10 or 1000 A1 for £4.59 or £4.59p or 459p if £ sign crossed out Or M2 Repeated subtraction from 10 or 1000 of 3 or 4 items with consistent units SC B2 for digits 459, 488 or 897 or 504 seen if M0 scored
4 (a)		12.3 cm or 123 mm	2	B1 for 12.1 − 12.5, $12\frac{1}{2}$, or 121 − 125 or $4\frac{14}{16} - 5\frac{1}{16}$ or 4.8 to 5.1 B1 for appropriate sensible unit: cm or mm or inches, or for eg 12 cm 3 mm
(b)		47 ± 2°	1	B1 for 45 − 49 (could be on the diagram)

1380/2F				
Question	Working	Answer	Mark	Notes
5 (a)		10	1	B1 cao
(b)		6	1	B1 cao
(c)		A and E	1	B1 for both
(d)		2	1	B1 for 2, ×2, 2×, times 2, 2 times
6 (a)		$\dfrac{6}{11}$	1	B1 any equivalent fraction to $\dfrac{6}{11}$ (Accept $0.0.5\overset{\bullet}{4}\overset{\bullet}{}$)
(b)		$\dfrac{2}{5}$	1	B1 any equivalent fraction to $\dfrac{2}{5}$ (Accept 0.4)
7 (a)		$5k$	1	B1 cao
(b)		$4m$	1	B1 cao
(c)		5	1	B1cao
(d)		3	1	B1 cao

1380/2F				
Question	Working	Answer	Mark	Notes
8 (a)(i)		(1, 2)	2	B1 (allow (x=1, y=2)
(ii)		(−4, −3)		B1(allow (x = -4, y = -3))
(b)		plot(5, −1) on grid	1	B1 for plotting at (5, −1)
9 (a)		Pattern 5	1	B1 for squares 7 across and 6 down drawn in or in outline
(b)		12, 14	2	B1 cao for 12 on or by the table B1 ft for "12" + 2
(c)		625 is odd all terms are even	1	B1 for 625 is odd oe or all the terms in the sequence are even oe
10 (a)		1.5	1	B1 cao
(b)		10.4	1	B1 10.3 – 10.5

1380/2F					
Question		Working	Answer	Mark	Notes
11	(a)	$87 - 45$	42	2	M1 for identifying 45 and 87 A1 cao
	(b)	45+49+49+57+72+75+87 434 ÷ 7	62	2	M1 for (45+49+49+57+72+75+87) ÷ 7 or adding any 6 of the 7 values and dividing by 6 A1 cao
12	(a)		× at 1	1	B1 for × at 1 ± 0.5 cm
	(b)		× at $\frac{1}{2}$	1	B1 for × at $\frac{1}{2}$ ± 0.5 cm
	(c)		× at $\frac{1}{3}$	1	B1 for × between 1 cm and 4 cm to the left of $\frac{1}{2}$
13	(a)		hexagon	1	B1 cao
	(b)		arrows drawn	1	B1 cao
	(c)		obtuse	1	B1 (accept interior)

Question	Working	Answer	Mark	Notes
14		Jim's store with reason	3	M1 for 180 ÷ 5 oe or 105 ÷ 3 oe or 36 or 35 oe seen A1 36 and 35 or 0.36 and 0.35 OR M1 for 180 ÷ 5 oe or 180×3 oe or 36 or 540 oe seen A1 108 oe or 1.08 OR M1 for 105 ÷ 3 oe or 105 ×5 oe or 35 or 125 oe seen A1 175 or 1.75 OR M1 for 180 × 3 oe or 105 × 5 oe or 540 or 525 oe seen A1 540 and 525 or 5.4(0) and 5.25 OR M1 for 5 ÷ 1.80 oe and 3 ÷ 1.05 (oe) or 2.7(77 or 2.8(57... seen A1 for 2.7(7..) and 2.8(5..) oe
	Alternative: FM: 10 pots cost 3.60 JS: 10 pots cost 3.15 + 35p = £3.50			Alternative:(provided the same number of pots are considered from each shop) M1 for 1.80 ×2 oe or 1.05×3+1.05÷3oe or 3.6(0) or 3.5(0) A1 for 3.6(0) and 3.5(0) A1 for correct decision based on their values dep on M1 scored NB units can be ignored

1380/2F				
Question	Working	Answer	Mark	Notes
15 (a)		2	1	B1 cao
(b)		1, 2, 7, 14	2	B2 for all 4 factors and no extras (B1 for 2 or 3 correct factors and no extras or 4 correct factors and no more than 2 extra)
16 (a)		0.068, 0.3, 0.306, 0.63	1	B1 cao
(b)	$\frac{18}{24}, \frac{14}{24}, \frac{20}{24}, \frac{9}{24}$ 0.3(75), 0.5(83), 0.7(5), 0.8(33) or better or 37%, 58%, 75%, 83% or better	$\frac{3}{8}, \frac{7}{12}, \frac{3}{4}, \frac{5}{6}$	2	M1 for using a common denominator for all that is a multiple of 24, at least one fraction correct A1 oe or M1 all to decimals (at least 1dp) or % (at least 2SF) with at least one correct A1 oe Answer can be written with original fractions or any equivalent form. SC B1 for 3 in the correct position or B1 for all in the reverse order

1380/2F					
Question		Working	Answer	Mark	Notes
17	(a)	$(2 \times 459) + (3 \times 289)$ $= \quad 918 \quad + \quad 867$	1785	2	M1 for $(2 \times 459) + (3 \times 289)$ or figures 1785 A1 cao
	(b)	$322 \div 1.84$	175	2	M1 for $322 \div 1.84$ A1 cao
	(c)	$7120 \div 8$	890	2	M1 for $7120 \div 8$ or $7120 \div 480$ A1 cao
18	(a)	$8 \times 3 + 2$ $= 24 + 2$	26	2	M1 for $8 \times 3 + 2$ A1 cao
	(b)	$42 = 3x + 6$ $36 = 3x$	12	2	M1 for $42 - 6$ or 36 or $42 = 3x + 6$ A1 cao

1380/2F				
Question	Working	Answer	Mark	Notes
19 (a)(i)	360 − (125 + 67 + 80)	88		M1 for 360 − (125 + 67 + 80) or 360 − 272 or 125 + 67 + 80 + x = 360 A1 cao
(ii)		Reason		B1 for sum of angles in a quadrilateral is 360°
(b)(i)	144 − 69 Or 180 – 144 = 36 180 – 36 – 69	75		M1 for 144 − 69 or 180 – 144 = 36 and 180 – '36' – 69 A1 cao
(ii)		Reason		B1 for exterior angle = sum interior opp angles or sum of angles on a line = 180 with sum of angles in a triangle = 180
20 (a)		24 12 × × │ × × × 6 11 │ 46 × 21 × 19 │ ×	3	B3 cao (B2 for 4, 5 or 6 entries correct) (B1 for 2 or 3 entries correct)
(b)		20	1	B1 cao
(c)		84	1	B1 cao

1380/2F				
Question	Working	Answer	Mark	Notes
21		2.42927(0474)	2	B2 for 2.42927 or better (B1 for 19.56 or 8.0518 seen) (B1 for 2.43, 2.429, 2.4292, 2.4293 or the digits 24927 or for $\frac{97800}{40259}$)
22	$BC^2 + 5^2 = 9^2$ $9^2 - 5^2 = 56$ $BC = \sqrt{56}$	7.48(3314774)	3	M1 for correct use of Pythagoras or 56 seen M1 (dep) for $\sqrt{"(9^2 - 5^2)"}$ A1 for 7.48 – 7.485
23	$(8 \div 20) \times 100$	40	2	M1 for $(8 \div 20) \times 100$ or $\frac{40}{100}$ or $\frac{8}{20} = \frac{8 \times 5}{20 \times 5}$ A1 cao
24	B = 20 × 2 = 40 C = 3 ÷ 4 × 20 = 15 D = 10÷100×20+20 = 22 20 + 40 + 15 + 22	97	4	M1 for 20 × 2 or 40 seen M1 for 3 ÷ 4 × 20 or 15 seen M1 for 10 ÷ 100 × 20 + 20 oe or 22 seen or 1.1 × 20 A1 cao

1380/2F				
Question	Working	Answer	Mark	Notes
25 (a)			2	B2 cao B1 for shape in the correct orientation or for shape elongated or shortened by one square but with either top or bottom in the correct position. The shape must be above the line $y = x$)
(b)			3	B3 for correct enlargement in correct position (B2 for enlargement SF3 in incorrect position or enlargement, centre O but different scale factor ($\neq 1$) (B1 for 4 lines enlarged by SF3 anywhere or enlargement, not from O, different scale factor ($\neq 1$)

1380/2F				
Question	Working	Answer	Mark	Notes
26 (a)		Reason	1	B1 for valid reason eg only best students, Biased, sample is too small
(b)		Wrong	1	B1 for valid thing wrong eg The choices are all positive, question does not reference liking
(c)		Question	2	B1 for question with time frame or references 'normal' homework B1 for at least 3 valid non-overlapping boxes, need not be inclusive NB Response boxes must be intervals, but allow 0 on its own

1380/2F				
Question	Working	Answer	Mark	Notes
27 (a)	$2x = 10 - 3 = 7$ $x = 7 \div 2$	3.5	2	M1 for $2x = 10 - 3$ oe or $2x = 7$ oe or $(10-3) \div 2$ A1 for 3.5 oe T&I B2 for 3.5 on the answer line.
(b)(i)		c^{11}	2	B1 accept c^{5+6}
(ii)		e^{8}		B1 accept e^{12-4}
(c)	$7x - 2x + 6y - 4y$	$5x + 2y$	3	M1 for expansion of the bracket eg $-2 \times x \; -2 \times -3y$ or sight of $-2x \pm 6y$ M1 for collecting like terms with at least one of $5x$ or $+2y$ A1 cao SC B2 for $5x - 10y$