Mark Scheme

Q1.

Paper_5MB1H_01					
Question		Working	Answer	Mark	Notes
	(a)		Point plotted	1	B1 for point plotted at (6,35)
	(b)			1	B1 for description of dynamic relationship or negative correlation
	(c)			1	B1 for single straight line of best fit which could be used to take readings
	(d)		21 - 26	1	B1 for answer in the range 21 - 26 or ft from single straight line segment (if previous B0)

Q2.

PAPER: 5MB1H_01				
Question	Working	Answer	Mark	Notes
(a)		The greater the hand = length the greater the foot length	1	B1 for the greater the hand = length the greater the foot length oe (accept positive correlation)
(b)		24 – 25	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit **or** an indication on the diagram from 18.5 on the *x*-axis A1 for answer in range 24 – 25

Q3.

		Working	Answer	Mark	Notes
		0 5 5 8 2 4 5 7 9 2 5 8 4 6 2 5	Ordered stem and leaf diagram	3	M1 for an unordered stem and leaf diagram with no errors or omissions **OR** an ordered stem and leaf diagram condoning two errors or omissions A1 for a correctly ordered stem and leaf diagram B1 for an appropriate key

Q4.

Paper_5MB1H_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
		12 | 3 5 9 13 | 0 3 3 5 7 8 14 | 7 7 8 9 15 | 0 1	3	B2 for a fully correct ordered diagram (B1 for correct unordered diagram or ordered with at most two errors) B1 for correct key eg 12 | 3 means 123 (cm)

Q5.

Question	Working	Answer	Mark	Notes
(a)	5×16 = 80 12.5×18 = 225 17.5×10 =175 27.5×6 =165 645÷50 =12.9 or 5.5×16 = 88 13×18 = 234 18×10 =180 28×6 =168 670 ÷ 50 = 13.4	12.9	4	M1 for fx consistently within interval including ends (allow 1 error) M1 consistently using appropriate midpoints M1 (dep on first M1) for $\Sigma fx \div \Sigma f$ A1 for 12.9 or 13.4
(b)	$\frac{6}{50} \times \frac{5}{49} = \frac{30}{2450}$	$\frac{3}{245}$	2	M1 for $\frac{6}{50} \times \frac{5}{49}$ A1 for $\frac{3}{245}$ oe If M0A0, SC B1 for $\frac{9}{625}$ oe

Q6.

PAPER: 5MB1H_01				
Question	Working	Answer	Mark	Notes
(a)		$10 < a \leq 15$	1	B1 cao
(b)		12.5	4	M1 for finding 4 products fx consistently within interval (including end points) M1 (dep) for use of at least 4 correct mid points M1 (dep on first M1) for $\sum fx \div \sum f$ A1 cao

Q7.

5MB1H/01 June 2015				
Question	Working	Answer	Mark	Notes
(a)		1	1	B1 cao
(b)		2.4	3	M1 for Σ(number of books × frequency) (=60) M1 for "60" ÷ "25" A1 cao SC B2 for an answer of 2.48
(c)		3.15	3	M1 for 15 × 4.4 (=66) M1 for a complete method eg ("60" + "66") ÷ (15 + "25") A1 cao

Q8.

Question		Working	Answer	Mark	Notes
	(a)	12 ÷ 20 = 0.6 20 ÷ 10 = 2 17 ÷ 10 = 1.7 6 ÷ 15 = 0.4	Correct histogram	3	B3 for fully correct histogram (B2 for 3 correct blocks or all 4 frequency ÷ class interval, y-axis labelled and 1 correct block) (B1 for 2 correct blocks of different widths or for correct key eg 1cm^2 = 1 egg or for frequency ÷ class interval for at least 3 frequencies) Due to scale accept to within 1mm on plotting
	(b)		19	3	M1 for splitting one of relevant rectangles or for $\frac{7}{10} \times 20$ (=14) or $\frac{3}{10} \times 17$ (=5.1) M1 for (area of 53 – 63 interval) ÷ (total area) × 55 or for "14" + "5.1" A1 for 19

Q9.

Question		Working	Answer	Mark	Notes
		900 ÷ 360 2.5 × 100 900 − 250 − 225 − 125 − 162.50	£250, £137.50	3	M1 for (900÷360) × 100 or (100÷360)×900oe or (55÷360) × 900oe or implied by one correct value A1 for (£)250 or (£)137.5(0) seen A1 for (£)250 and (£)137.5(0) in correct positions

Q10.

5MB1H_01 November 2015					
Question		Working	Answer	Mark	Notes
	(a)		0.2	2	M1 for 1 – (0.15 + 0.41 + 0.24) A1 cao
	(b)		12	2	M1 for 50 × 0.24 oe A1 cao

Q11.

Paper_5MB1H_01				
Question	Working	Answer	Mark	Notes
(a)		0.05	3	M1 for correct method using sum of probabilities = 1 eg 1 – 0.6 – 0.25 (=0.15) or 0.6 + 0.25 + 2x + x = 1 M1 (dep) for correct method to use P(blue) = 2 × (Green) Eg "0.15" ÷ 3 A1 cao
(b)		30	2	M1 for 0.6 × 50 oe A1 cao

Q12.

		Working	Answer	Mark	Notes
		<table><tr><th></th><th>B</th><th>G</th><th>Tot</th></tr><tr><td>F</td><td>10</td><td>35</td><td>45</td></tr><tr><td>H</td><td>12</td><td>26</td><td>38</td></tr><tr><td>T</td><td>8</td><td>29</td><td>37</td></tr><tr><td>Tot</td><td>30</td><td>90</td><td>120</td></tr></table> <table><tr><th></th><th>F</th><th>H</th><th>T</th><th>Tot</th></tr><tr><td>B</td><td>10</td><td>12</td><td>8</td><td>30</td></tr><tr><td>G</td><td>35</td><td>26</td><td>29</td><td>90</td></tr><tr><td>Tot</td><td>45</td><td>38</td><td>37</td><td>120</td></tr></table>	29	4	M1 for a complete correct method to find the total number of girls eg 120 – 30 (=90) M1 for complete correct method to find the number of girls who play football or hockey eg 26 + 35 (=61) M1 for '90' – '61' A1 for identifying 29 as the answer **OR** M1 for a complete correct method to find the total number playing tennis M1 for a complete correct method to find the number of boys playing tennis M1 for 'total for tennis'-'boys playing tennis' A1 for identifying 29 as the answer

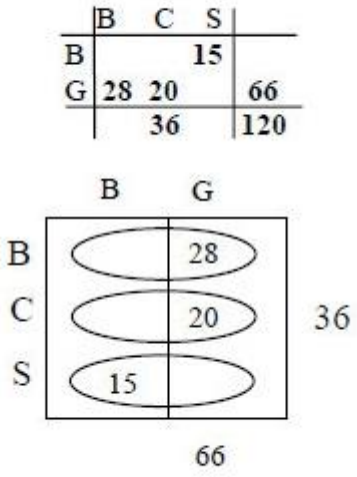
Q13.

5MB1H_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
(a)		Reasons	2	1st aspect: no time frame 2nd aspect: overlapping boxes 3rd aspect: not exhaustive ie no <1, no "other", no >20 B2 for two aspects (B1 for one aspect)
(b)		Question and responses	2	1st aspect: question including time frame (or question and time frame in response boxes) 2nd aspect: at least 3 non overlapping response boxes, with discrete values or a range; need not be inclusive of all OR a set of at least 3 boxes which are exhaustive (but which may over lap) B2 for two different aspects (B1 for one aspect)

Q14.

Question	Working	Answer	Mark	Notes
(a)		Overlapping response boxes Leading/biased question Age too personal Missing units	2	B2 for any two of: overlapping response boxes, too personal to ask person's age, a leading or biased question, no units (B1 – just one of the above).
(b)		How many pieces of fruit do you eat each day? 0 to2, 3 to 4, over 4	2	B1 for a sensible question including a time period B1 for at least 3 response boxes. Any pairs of response boxes must not overlap
(c)	$\frac{73}{536+384+48+73}$ ×100	7	2	M1 for $\frac{73}{536+384+48+73}$ ×100 Or $100 \div \left\langle \frac{536+384+48+73}{73} \right\rangle$ Or 7.01… A1 for 7

Q15.

Question	Working	Answer	Mark	Notes
		51	4	M1 for a two-way table or Venn diagram with bowling, cinema, skating, boys and girls labelled or list of at least two combinations clearly labelled. M1 for attempt to find the value of an unknown entry in the table oe eg 66 − 28 − 20, 120 − 66, 36 – 20 A1 for 16 or 18 or 54 or 23 or 33 A1 cao (Note: 36 + 15 = 51 scores no marks)

Q16.

Question	Working	Answer	Mark	Notes
(i)	<table><tr><td></td><td>Y 4</td><td>Y 5</td><td>Y 6</td><td>Tot</td></tr><tr><td>S</td><td></td><td>21</td><td>18</td><td></td></tr><tr><td>NS</td><td>11</td><td></td><td></td><td>37</td></tr><tr><td>Tot</td><td></td><td></td><td>30</td><td>96</td></tr></table> OR 96 – 37 = 59 children can swim 18 + 21 = 39 children in Y5 or Y6 can swim 59 – 39	20	4	M1 for including 4 of the 6 pieces of information given in a clearly labeled two-way table A1 for 20 or 20 out of 96 or 20/96 OR M1 for a correct method that leads to the number of children in year 4 that can swim eg 96 – 37 (= 59) children can swim 18 + 21 = (39) children in Y5 or Y6 can swim '59' – '39' A1 for 20 or 20 out of 96 or 20/96
(ii)	<table><tr><td></td><td>Y 4</td><td>Y 5</td><td>Y 6</td><td>Tot</td></tr><tr><td>S</td><td>20</td><td>21</td><td>18</td><td>59</td></tr><tr><td>NS</td><td>11</td><td>14</td><td>12</td><td>37</td></tr><tr><td>Tot</td><td>31</td><td>35</td><td>30</td><td>96</td></tr></table> OR 20 + 11 = 31children in Y4 30 + 31 = 61 children in Y4 or Y6 96 – 61	35		M1 for one correct calculation leading to a 'new', piece of information in a clearly labeled two-way table A1 for 35 or 35 out of 96 or $^{35}/_{96}$ OR M1 for a correct method that leads to the total number of children in year 5 eg '20' + 11 (= 31) children in Y4 30 + '31' (=61) children in Y4 or Y6 96 – '61' children in Y5 A1 for 35 or 35 out of 96 or $^{35}/_{96}$ SC If M1 not earned then award B1 if ans(ii) = 55 – ans (i)

Q17.

Question	Working	Answer	Mark	Notes
	$^{127}/_{370}$ × 50 = 17.16... = 17.1.... OR 243+ 370 +127 = 740 $^{370}/_{740}$ = 0.5 so sample size = 100 $^{127}/_{740}$ × 100 17.1....	17	2	M1 for $^{127}/_{370}$ × 50 oe A1 for 17 (accept 18) SC B1 for $^{17}/_{127}$ or $^{18}/_{127}$ (Note: 50 ÷ 3 = 16.6(...) = 17 scores no marks)

Q18.

5MB1H_01 November 2015					
Question		Working	Answer	Mark	Notes
			400 and correct assumption	4	M1 for partial working eg $\frac{60}{12}$ oe or 20% or $\frac{1}{5}$ seen or $80 \div 12$ (= 6.66..) or $\frac{12}{80}$ oe M1 for complete method eg $\frac{80 \times 60}{12}$ or 80×5 or $6.66.. \times 60$ or $\frac{12}{60} = \frac{80}{n}$ oe or $80 \div 0.2$ oe A1 cao C1 for a correct mathematical assumption eg population has not changed overnight or mark which does not wear off or sample is random etc

Q19.

5MB1H_01					
Question		Working	Answer	Mark	Notes
			7	2	M1 for $\frac{35}{156} \times 30$ (=6.7....) A1 for 6 or 7

Q20.

Paper_5MB1H_01					
Question		Working	Answer	Mark	Notes
			56	3	M1 for correct method to find 20% of 120 (=24) or $\frac{1}{3}$ of 120 (= 40) M1 (dep) for 120 − "24" − "40" A1 cao OR M1 for $1 - \frac{20}{100} - \frac{1}{3} (= \frac{7}{15})$ oe or $\left\{\frac{20}{100} + \frac{1}{3}\right\} \times 120$ (= 64) oe M1 (dep) for "$\frac{7}{15}$" × 120 oe or 120 − "64" A1 cao (if M0, then SCB1 for 64)

Q21.

		Working	Answer	Mark	Notes
		342 ÷ 88 = 3.886… 570 ÷ 195 = 2.923… 1500 ÷ 399 = 3.759… OR 88 ÷ 342 = 0.257… 195 ÷ 570 = 0.342… 399 ÷ 1500 = 0.266	Small bottle with correct calculations	4	M1 for one of 342 ÷ 88 (= 3.886…), 570 ÷ 195 (= 2.923…), 1500 ÷ 399 (= 3.759…) OR one of 88 ÷ 342 (= 0.257…), 195 ÷ 570 (= 0.342…), 399 ÷ 1500 (= 0.266) OR any other calculation that could lead to a comparative figure M1 for calculations that could lead to comparative figures for 2 bottles M1 for calculations that could lead to comparative figures for 3 bottles, e.g. all three from the above lists C1 for correct comparative figures for all 3 bottles leading to a correctly stated comparison: small or 342g best value

Q22.

PAPER: 5MB3H_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
*	179 ÷ 70 = 2.5(571.....) 275 ÷ 100 = 2.7(5) 399 ÷150 = 2.6(66....) 70 ÷ 179 = 0.39(11....) 100 ÷ 275 = 0.36(36...) 150 ÷399 = 0.37(59....)	70 m/ tube with reason	4	**Using pence per m/** M1 for a correct method of finding the cost per millilitre (or cost/10 m/ etc) for one of the sizes M1 for a correct method of finding the cost per millilitre (or cost/10 m/ etc. must be consistent) for each of the sizes A1 for 2.5(571.....) (70 m/) and 2.7(5) (100 m/) and 2.6(66....) (150 m/) or equivalent depending upon units used. These values can be rounded or truncated as long as they remain different C1 (dep on M1) for selecting the tube with the best value for money based upon a comparison of their 3 values. OR **Using m/ per 1p** M1 for a correct method of finding the volume per pence (or £) for one of the sizes M1 for a correct method of finding the volume per pence (or £) for each of the sizes, with consistent units A1 for 0.39(11....) (70 m/) and 0.36(36...) (100 m/) and 0.37(59....) (150 m/) or equivalent depending upon units used. These values can be rounded or truncated as long as they remain different C1 (dep on M1) for selecting the tube with the best value for money based upon a comparison of their 3 values.

Q23.

5MB3H/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
		28	3	M1 for 240 × 1.2 (=288) M1 for "288" ÷ 10 (=28.8) A1 cao OR M1 for 10 ÷ 1.2 (=8.33) M1 240 ÷ "8.33" (=28.8) A1 cao

Q24.

Paper: 5MB3H_01					
Question		Working	Answer	Mark	Notes
			7.4	3	M1 for a correct method to find the weight of 1 metre of hosepipe, eg. (1 ÷ 0.5) × 150 (= 300) M1 (dep) for a correct method to find the weight of the hosepipe alone, eg. "300" × 20 (= 6000) A1 for 7.4 (accept 7400 g)

Q25.

PAPER: 5MB3H_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*			Medium	4	M1 for 52 ÷ 23 (= 2.26…) **or** 170 ÷ 72 (= 2.36...) **or** 960 ÷ 416 (= 2.30…) **or** 23 ÷ 52 (= 0.44...) **or** 72 ÷ 170 (= 0.42...) **or** 416 ÷ 960 (= 0.43...) M1 for 52 ÷ 23 (=2.26…) **and** 170 ÷ 72 (= 2.36...) **and** 960 ÷ 416 (= 2.3…) OR 23 ÷ 52 (= 0.44...) **and** 72 ÷ 170 (=0.42...) **and** 416 ÷ 960 (= 0.43...) A1 for 2.26… **and** 2.36…**and** 2.3… OR 0.44... **and** 0.42... **and** 0.43... C1 (dep on M1) for conclusion ft from three comparable figures [could use different figures relating to the three boxes]

Q26.

Question	Working	Answer	Mark	Notes
	1200×1.035^3 Or $1200 \times 1.035 = 1242$ $1242 \times 1.035 = 1285.47$ $1285.47 \times 1.035 =$ 1330.46	1330.46	3	M2 for 1200×1.035^3 A1 1330.46 – 1330.47 Or M1 1200×1.035 M1(dep) for '1242' × 1.035 and '1285.47' × 1.035 A1 1330.46 – 1330.47 [SC: B1 for 42 or 84 or 126 or 1242 or 1284 or 1326 seen, if M0 scored]

Q27.

5MB3H/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
		4	3	M1 $\frac{4.5}{100} \times 300$ (=13.5) or $\frac{104.5}{100} \times 300$ (=313.5) oe M1 50 ÷ "13.5" (=3.7) or at least 3 repeated addition of "13.5" A1 cao SC B1 for $1.045^n \times 300$

Q28.

		Working	Answer	Mark	Notes
			600, 150, 75, 375	3	M2 a complete correct method seen to calculate the required ingredients (M1 for a method to find a scale factor or the weight of one scone or dividing ALL by the same number or multiplying by 30) A1 cao **SC** B2 for three out of four ingredients correct

Q29.

		Working	Answer	Mark	Notes
			13	2	M1 for 7.8(0) ÷ 6 × 10 or 7.8(0) ÷ 6 or 7.8(0) × 10 or $^{10}/_{6}$ oe or $^{6}/_{10}$ oe A1 cao

Q30.

PAPER: 5MB1H_01				
Question	Working	Answer	Mark	Notes
(a)		120	2	M1 for $\frac{2}{3} \times 180$ oe A1 cao
(b)		75	2	M1 for 1000 ÷ 400 × 30 or 30 + 30 + 15 oe A1 cao OR M1 for 3 × 25 : 40 × 25 oe or 75 : 1000 A1 cao

Q31.

		Working	Answer	Mark	Notes
	(a)	$\sqrt{30}$ = 5.4772255...	0.876	2	M1 for $\sqrt{30}$ ÷ 6.25 or 5.4(7...) ÷ 2.5^2 A1 for any answer in the range 0.876 to 0.877
	(b)	$2.5^2 = 6.25$ 5.4772255...÷ 6.25 = 4.5 × 1000 × 1000	4 500 000	2	M1 for complete method equivalent to 4.5 × 1000 × 1000 A1 for 4 500 000 oe

Q32.

PAPER: 1MA0_1H					
Question		Working	Answer	Mark	Notes
	(a)		$\frac{1}{5}$	1	B1 oe
	(b)		$\frac{1}{9}$	1	B1 cao
	(c)	$9\times10^4\times3\times10^3$	2.7×10^8	2	M1 27×10^7 oe or $9\times3\times10^{4+3}$ A1 cao

Q33.

PAPER: 5MB2H 01					
Question		Working	Answer	Mark	Notes
		$\frac{90\times0.5}{5}=\frac{45}{5}$	8.9 – 9.5	2	M1 for at least two of 90, 0.5 and 5 A1 for 8.9 – 9.5

Q34.

PAPER: 1MA0/1H				
Question	Working	Answer	Mark	Notes
*		95° with reasons	4	M1 for angle *DBC* = 180 – 125 (= 55) **or** angle *EAC* = 180 – 125 (=55) (May be on diagram) A1 for x = 95 C2 (dep on M1) with full reasons for their given method, e.g. angles on a straight line add up to 180° **and** angles in a triangle add up to 180° **and** corresponding angles are equal **or** allied angles / co-interior angles add up to 180° **and** angles in a triangle add up to 180° (C1 (dep on M1) for one appropriate reason linked to parallel lines) M1 for angle *CDB* = 125 – 30 (= 95)) (May be on diagram) A1 for x = 95 C2 (dep on M1) for full reasons, for their given method, e.g. exterior angles are equal to the sum of the interior opposite angles **and** corresponding angles are equal (C1 (dep on M1) for one of these appropriate reasons linked to parallel lines)

Q35.

Question	Working	Answer	Mark	Notes
	180−140(= 40) 360÷"40"	9	3	M1 for 180−140(= 40) M1 (dep) for 360÷"40" A1 cao

Q36.

Question		Working	Answer	Mark	Notes
			124° with reasons	4	M1 for a method to find any angle, eg. angle *DEF* = 180 – 70 – 54 (= 56) or angle *AEB* = 70 or angle *EAB* = 54 or angle *GEB* = 180 – 70 (= 110) A1 for $x = 124$ NB: angles may be just shown on the diagram C2 for full reasons, appropriate to their given method, with no additional reasons (C1 for one appropriate reason relating to parallel lines) Possible reasons: corresponding angles are equal; alternate angles are equal; co-interior angles (allied) add up to 180 angles on a straight line add up to 180 ; angles in a triangle add up to 180; vertically opposite angles are equal ; the exterior angle of a triangle is equal to the sum of the interior opposite angles; angles at a point add up to 360;

Q37.

5MB2H_01 November 2015					
Question		Working	Answer	Mark	Notes
			7.21 (am)	3	M1 for listing multiples 9,18,27,36 and 12,24,36 (condone 1 arithmetic error) or method to find LCM M1 for identifying 36 as LCM A1 cao OR M1 for listing times 6.54, 7.03, 7.12, 7.21 or for listing times 6.57, 7.09, 7.21 (condone one arithmetic error) M1 for listing times 6.54, 7.03, 7.12, 7.21 **and** 6.57, 7.09, 7.21 (condone one arithmetic error) A1 cao

Q38.

PAPER: 5MB2H_01					
Question		Working	Answer	Mark	Notes
	(i)		candles 3 holders 5	5	M1 for listing multiples of either 30 or 18 (at least 3 but condone errors if intention is clear) M1 for listing multiples of both 30 and 18 (at least 3 but condone errors if intention is clear) M1 (dep on M1) for division by 30 or 18 or counts up multiples (implied if one answer is correct or answers are reversed) A1 candles (packs) 3, holders (packs) 5 or any same multiple of 3,5 OR M1 expansion of either number in factors M1 demonstrates one of the expansions that includes 6 oe M1 demonstrates second expansion that includes 6 oe A1 candles (packs) 3, holders (packs) 5 or any same multiple of 3,5
	(ii)		90		B1 for 90 or ft on both their packs or ft "common multiple" NB: accept consistent multiples of the given answer

Q39.

PAPER: 1MA0_1H					
Question		Working	Answer	Mark	Notes
	(a)		$2\times2\times3\times3\times5$	3	M1 for a continual prime factorisation (at least two consecutive steps correct) or at least two stages of a factor tree correct M1 for a fully correct factor tree or list 2,2,3,3,5 A1 for $2\times2\times3\times3\times5$ or $2^2\times3^2\times5$
	(b)		Eg 6, 30	2	M1 for two numbers with an HCF of 6 **or** for two numbers with a LCM a multiple of 15 A1 for two numbers with an HCF of 6 **and** a LCM a multiple of 15 (eg (6, 30), (12, 30), …) **OR** M1 for 2×3 **and** 3×5 **or** for $2\times3\times5$ A1 for two numbers with an HCF of 6 **and** a LCM a multiple of 15 eg (6, 30) (12, 30) …

Q40.

Question		Working	Answer	Mark	Notes
			230	2	M1 for 180 + 50 A1 cao **OR** M1 for 360 – (180 – 50) or 360 – 130 A1 cao **OR** M1 for 50 + (90 – 50) + 90 + 50 or 50 + 40 + 90 + 50 A1 cao **OR** M1 for a suitable diagram (sketch) with bearing of lighthouse from ship indicated and 50° marked at lighthouse; diagram only intended to indicate position of 50°; ignore other labels and markings unless they create ambiguity. A1 cao

Q41.

Question		Working	Answer	Mark	Notes
	(a)		150	2	M1 for 180 – (360 – 330) or 180 – 30 or 330 – 180 or a complete diagram showing the bearing of 330° A1 cao
	(b)		11 40	4	M1 for 200 ÷ 120 (=1 2/3 h) M1 for conversion between hours and minutes A1 for 1 h 40 min or 100 minutes B1 (ft dep on M1) for 11 40

Q42.

Question		Working	Answer	Mark	Notes
			Correct line drawn	2	M1 for two pairs of relevant arcs drawn A1 correct line drawn (with arcs) SC B1 Correct line no arcs visible

Q43.

PAPER: 1MA0 2H				
Question	Working	Answer	Mark	Notes
		Loci drawn	3	B1 for line parallel to BC and 3 cm from BC B1 for arc drawn, centre C, with radius 4 cm B1 ft for shading a region below their horizontal line **and** inside their arc

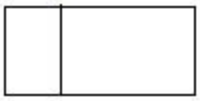
Q44.

		Working	Answer	Mark	Notes
*			4 rolls	4	M1 for $\pi \times 2.4$ M1 for $(\pi \times 2.4) \div 2$ or 7.5 to 7.541 M1 for or 3.75 or 3.76... or 3.77... or (2, 4,) 6 , 8 C1 for a clear statement that 4 (rolls) are needed

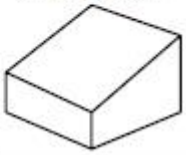
Q45.

PAPER: 1MA0_2H					
Question		Working	Answer	Mark	Notes
			Translation $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$	2	B1 for translation B1 for $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$ NB No marks if more than one transformation given.

Q46.

5MB2H November 2016					
Question	Working	Answer	Mark	Notes	Type
		Plan 	2	M1 for 7 × 4 rectangle A1 for correct plan with dividing line	G

Q47.

Question		Working	Answer	Mark	Notes
	(a)		6 by 4 rectangle drawn	2	B2 for a 6 by 4 rectangle drawn (B1 for a rectangle drawn with one correct dimension)
	(b)		3-D sketch 	2	M1 for an attempt at a 3-D sketch with a trapezoidal face A1 for a correct 3-D sketch

Q48.

5MB3H_01 November 2015					
Question		Working	Answer	Mark	Notes
			$t = \frac{ap^2}{3}$	3	M1 for squaring both sides of the equation as the first step M1 (dep) for isolating the t term A1 for $t = \frac{ap^2}{3}$ oe

Q49.

PAPER: 5MB3H_01					
Question		Working	Answer	Mark	Notes
			$q = \frac{3r+4}{2}$	3	M1 for multiplying both sides by 3 M1 (dep) for isolating the term in q A1 for $q = \frac{3r+4}{2}$ oe OR M1 for $(r =) \frac{2q}{3} - \frac{4}{3}$ oe M1 (dep) for isolating the term in q A1 for $q = \frac{3}{2}\left(r + \frac{4}{3}\right)$ oe

Q50.

Question	Working	Answer	Mark	Notes
(a)		$3y + 7x + 3$	1	B1 cao
(b)		$2x(x - 2)$	2	B2 for $2x(x - 2)$. Accept $2x(x + -2)$. (B1 for $x(2x - 4)$ or $2(x^2 - 2x)$ or $2x$(linear expression in x) or $(x - 2)$(linear expression in x)
(c)	$11-3x - 6$	$5-3x$	2	M1 for expansion of $-3(x + 2)$ A1 cao
(d)	$3x^2+7x-18x-42$	$3x^2 - 11x - 42$	2	M1 for 4 terms correct with or without signs or 3 out of exactly 4 terms correct (the terms may be in an expression or table) **OR** $x(3x+7)-6(3x+7)$ or $3x(x - 6) + 7(x - 6)$ A1 cao

Q51.

Question	Working	Answer	Mark	Notes
(a)		$3x + 6$	2	M1 for attempted expansion of the bracket eg $3\times x$ and 3×2 seen or $3x + k$ or $kx + 6$ A1 for $3x + 6$
(b)		$6xy(2x^2 - 3y)$	2	M1 or $6xy$ (two terms involving x and/or y) or correct partial factorisation by taking out two from 6 (or 3 or 2) or x or y A1 cao
(c)	$2x^2 + 8x - 3x - 12$	$2x^2 + 5x - 12$	2	
(d)		$10\ x^7\ y^5$	2	M1 for 3 out of 4 correct terms with correct signs, or all 4 terms ignoring signs A1 cao B2 for $10\ x^7\ y^5$ (B1 for product of two of 5×2 oe, x^{4+3}, y^{3+2} ignore $\times$ signs)

Q52.

PAPER: 5MB2H_01				
Question	Working	Answer	Mark	Notes
(a)		$2a(3b + 5c)$	2	B2 cao (B1 for $a(6b + 10c)$ or $2(3ab + 5ac)$ or $2a$(linear term in b and c))
(b)		$x^2+2x-35$	2	M1 for 3 terms out of 4 correct including signs or all 4 terms correct ignoring signs A1 cao
(c)		$\frac{2t^4}{m^2}$	2	B2 for $2m^{-2}t^4$ oe (B1 $\frac{2t^4}{m^n}, n \neq 2$ oe or $\frac{2t^k}{m^2}, k \neq 4$ oe or $m^{-2}t^4$ oe)
(d)		$(y-4)(y+4)$	1	B1 cao
(e)		h^{-6}	1	B1 for h^{-6} or $\frac{1}{h^6}$

Q53.

5MB3H_01 November 2015				
Question	Working	Answer	Mark	Notes
	x | $x^3 - 9x$ 4 | 28 4.1 | 32.(021) 4.2 | 36.(288) 4.3 | 40.(807) 4.4 | 45.(584) 4.5 | 50.(625) 4.6 | 55.(936) 4.7 | 61,(523) 4.8 | 67.(392) 4.9 | 73.(549) 5 | 80 4.41 | 46.0(7612) 4.42 | 46.5(7089) 4.43 | 47.0(6831) 4.44 | 47.5(6838) 4.45 | 48.0(7113)	4.4	4	B2 for a trial $4.4 \leq x \leq 4.5$ (B1 for a trial evaluated correctly for $4 \leq x \leq 5$) B1 for a different trial evaluated correctly for $4.41 \leq x \leq 4.5$ B1 (dep on at least one previous B1) for 4.4 [Note trials should be evaluated to at least accuracy indicated in the table, truncated or rounded] [NB B0 No working scores 0 marks]

Q54.

PAPER: 5MB3H_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
(a)		Equation	2	M1 for $2x \times x \times (x + 4)$ A1 for clear working leading to $x^3 + 4x^2 = 90$
(b)	3 63 4 128 3.1 68.231 3.2 73.728 3.3 79.497 3.4 85.544 3.5 91.875 3.45 88.67363 3.46 89.30814 3.47 89.94552 3.48 90.58579	3.5	4	B2 for trial evaluated using $3 < x < 4$ (B1 for trial evaluated using $3 \leq x \leq 4$) B1 for a different trial evaluated using $3.4 \leq x \leq 3.5$ B1 (dep on at least one previous B1) for 3.5 Accept trials correct to the nearest whole number (rounded or truncated) if the value of x is to 1 dp but correct to 1dp (rounded or truncated) if the value of x is to 2 dp. NB: no working scores no marks even if the answer is correct.

Q55.

Question		Working	Answer	Mark	Notes
		x | $x^3 - x$ 3.1 | 26.(691) 3.2 | 29.(568) 3.3 | 32.(637) 3.4 | 35.(904) 3.5 | 39.(375) 3.6 | 43.(056) 3.7 | 46.(953) 3.8 | 51.(072) 3.9 | 55.(419) 3.25 | 31.0(78) 3.26 | 31.3(85) 3.27 | 31.6(95) 3.28 | 32.0(07) 3.29 | 32.3(21)	3.3	4	B2 for trial $3.2 \leq x \leq 3.3$ (B1 for trial $3 < x < 4$) B1 for different trial $3.25 \leq x < 3.3$ B1 cao (dep on at least one previous B1) Accept trials correct to the nearest whole number (rounded or truncated) if the value of x is to 1dp but correct to 1dp (rounded or truncated) if the value of x is to 2dp

Q56.

Question		Working	Answer	Mark	Notes
		Table of values x −2 −1 0 1 2 y −7 −5 −3 −1 1 OR Using $y = mx + c$ Gradient 2 intercept -3	Single line drawn from (-2, -7) to (2, 1)	3	**(Table of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 (dep) ft for correctly plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for the correct line from (-2, -7) to (2, 1) OR **(No table of values)** M2 for at least 2 correct points (and no incorrect points) correctly plotted or for a line segment of the graph of $y = 2x - 3$ drawn (ignore any additional incorrect line segments) [M1 for at least 3 correct points plotted with no more than 2 incorrect points] A1 for the correct line from (-2, -7) to (2, 1) OR **(Use of $y = mx + c$)** M2 for a single straight line of gradient 2, passing through (0, -3) [M1 for a single straight line of gradient 2 or for a single straight line passing through (0, - 3)] A1 for the correct line from (-2, -7) to (2, 1)

Q57.

PAPER: 5MB3H_01					
Question		Working	Answer	Mark	Notes
	(a)		−2, −1, 0, 1, 2	2	B2 for −2, −1, 0, 1, 2 (B1 for one error or omission)
	(b)		$x > 3$	2	M1 for isolating either the constant terms or algebraic terms or for $x = 3$ A1 cao

Q58.

		Working	Answer	Mark	Notes
	(a)		−3, −2, −1,0,1	2	B2 for all 5 values and no others (B1 for 4 correct values and no others or -4,-3,-2,-1,0,1 or -3,-2,-1,0,1,2
	(b)		$-2 \leq x < 4$	2	B2 for $-2 \leq x < 4$ (B1 for $-2 \leq x$ or $x < 4$ or $-2 < x \leq 4$) [Note: accept the use of any letter other than x throughout and ignore any attempt to list integer values]

Q59.

5MB3H_01 November 2015					
Question		Working	Answer	Mark	Notes
	(a)		$x > -4$	1	B1 cao
	(b)		$y \leq 3$	2	M1 for intention to isolate y or for $y = 3$ or $y < 3$ A1 cao
	(c)		−1,0,1	2	M1 for listing −3, −2, −1,0,1 or −1, 0,1,2,3 or for $-2 < ? < 2$ A1 for −1,0,1

Q60.

		Working	Answer	Mark	Notes
	(a)	$24.5^2 + 10.6^2$ (= 712.61) $\sqrt{712.61}$	26.7	3	M1 for (GJ^2 =) $24.5^2 + 10.6^2$ or 600.25 + 112.36 or 712.61 M1 for $\sqrt{24.5^2 + 10.6^2}$ or $\sqrt{712.61}$ A1 for answer in the range 26.69 – 26.7
	(b)	$\cos x = {}^{7}/_{18}$ $x = \cos^{-1}({}^{7}/_{18})$	67.1	3	M1 for $\cos(x) = {}^{7}/_{18}$ oe M1 for (x =) $\cos^{-1}({}^{7}/_{18})$ or $\cos^{-1}$ (0.388…) or $\cos^{-1}$ (0.38) A1 for answer in the range 67.1 – 67.17 SC: B2 for an answer of 1.1(713…) or 1.2 or 74.5(717…) or 74.6