Year 10 into 11 Bridging Project H Answers

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
1		98	P1	for process to find P(1), eg. 1 – 0.17 – 0.18 – 0.09 – 0.15 – 0.1 (= 0.31) or for a process to find P(1 or 3), eg. 1 – 0.17 – 0.09 – 0.15 – 0.1 (= 0.49)
			P1	for process to find the number of 3s eg. 0.18 × 200 (=36) or process to find the number of 1s, e.g. P(1) × 200 (= 62), or process to find the number of (1 or 3)s, eg [P(1) + 0.18] × 200 or for process to find any expected frequency using any probability × 200 eg. 0.17 × 200
			A1	cao
				OR
			P1	for process to find P(2 or 4 or 5 or 6), eg. 0.17 + 0.09 + 0.15 + 0.1 (= 0.51)
			P1	for process to find the number of (2 or 4 or 5 or 6)s, eg. "0.51" × 200 (= 102)
			A1	cao

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
2		Yes	P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
		(supported)	P1	(dep P1) for process to work out total number of adults or the total number of people, e.g. "468" × 5 ÷ 2 (= 1170) or "468" × 7÷ 2 (= 1638)
			A1	for 1170 or 1638
			P1	for process to work out the percentage of theatre full, e.g. $\frac{"468"+"1170"}{2600}\times 100$ (= 63) or for a process to work out 60% of 2600 (= 1560)
			C1	for a correct conclusion supported by correct figures e.g. 63% or 1560 **and** 1638
				OR
			P1	for a process to work out 60% of 2600, eg. $\frac{60}{100} \times 2600$ (= 1560)
			P1	(dep P1) for process to work out this total number of children, e.g. "1560" × 2 ÷ 7 (= 445(.7…))
			A1	for 445(.7…)
			P1	for process to work out children in the circle, eg. "445(.7…)" ÷ 4 (= 111 to 112)
			C1	for a correct conclusion supported by correct figures e.g. 111 to 112 [Where appropriate accept rounded or truncated values]

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
2 cont.				OR
			P1	for a process to find the maximum number of children, eg. 2600 × 2 ÷ 7 (= 742(.8…))
			P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			A1	for 468 and 742(.8…)
			P1	for $\frac{"468"}{"742(.8..)"} \times 100$ (= 63) or process to work out 60% of "742(.8...)" (= 445(.7…))
			C1	for a correct conclusion supported by correct figures e.g. 63% or 468 and 445(.7…) [Where appropriate accept rounded or truncated values]
3		Side elevation	C2	for the side elevation (4 cm by 2 cm rectangle with a solid line drawn 1 cm from the 2 cm edge, and correct orientation)
			[C1	for the side elevation as a rectangle]
		Front elevation	C2	for the front elevation as a trapezium in correct orientation with base 4 cm, parallel sides 1 cm and 4 cm
			[C1	for the front elevation as a trapezium with two right angles] [Ignore incorrect or no labelling]

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
4 (a)		57.1	P1	for a process to find time from Liverpool to Manchester, eg. 56 ÷ 70 (= 0.8 (hrs) or 48 (mins))
			P1	for a process to find total distance, eg. 56 + 61 (= 117) or the total time, eg. "48" + 75 (= 123) or "0.8" + $\frac{75}{60}$ (= 2.05) with consistent units of time
			P1	(dep P2) for a correct process to find average speed with consistent units of time, eg."117" ÷ "2.05" or "117" ÷ "123"
			A1	for answer in the range 57 to 57.1
(b)		explanation	C1	for explaining that the time taken for the two parts of the journey must be the same or the distance from Leeds to York is $\frac{3}{4}$ of the distance from Barnsley to Leeds
5 (a)		3.9	M1	for a ratio of $\frac{8.1}{5.4}$ (=1.5) oe or $\frac{5.4}{8.1}$ (=0.66..) oe or $\frac{2.6}{5.4}$ (= 0.48..) oe or $\frac{5.4}{2.6}$ (= 2.07..) oe
			A1	cao
(b)		2.05	M1	for $\frac{5.4}{8.1} \times 6.15$ oe (= 4.1) or $\frac{2.7}{8.1} \times 6.15$ oe or ft "scale factor" from (a)
			A1	cao

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
6		Secure Bank (supported)	P1 P1 C1	for a process to work out the interest after one year e.g. 0.02 × 25000 (=500) or 0.043 × 25000 (=1075) or for 1.02 or 25500 or 1.043 or 26075 for process to find value of the investment after 3 years or the multiplicative factor for 3 years at one of the banks, e.g. 25000 × 1.02 × 1.02 × 1.02 oe (= 26530…) or 1.02^3 (= 1.0612…) or 25000 × 1.043 × 1.009 ×1.009 oe (= 26546…) or 1.043 × 1.009 ×1.009 (= 1.0618.....) [accept total interest of 1530.. or 1546.. if final values of investment are not found] for Secure Bank from correct figures, eg. 26530.. and 26546.. or 1530… and 1546… or 1.0612... and 1.0618…
7		$4.755 \leq n < 4.765$	B2 [B1	for $4.755 \leq n < 4.765$ for 4.755 or 4.765 or 4.764$\dot{9}$]
8		12	M1 A1	for evidence of taking a reading from the graph from $h = 160$ for answer in the range 11.8 to 12.2
9		No (supported)	M2 [M1 C1 M2 C1	for the correct position of C or E for a correct position of B or D] for No with correct supporting evidence, eg. showing C and E in the correct positions OR for C is a rotation of 90° anticlockwise about *O* **or** E is a rotation of 90° clockwise about *O* for No with supporting evidence, eg. C is a rotation of 90° anticlockwise about *O* **and** E is a rotation of 90° clockwise about *O*.

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
10 (a)		Jupiter	B1	for Jupiter (accept 1.898×10^{27})
(b)		4.5388×10^{24}	B1	for 4.5388×10^{24} oe (e.g. 45.388×10^{23})
(c)		Yes (supported)	M1	for $(4.35 \times 10^9) \div (4.14 \times 10^7)$ (= 105(.07..)) or $(4.14 \times 10^7) \times 100$ (= 4.14×10^9) or $(4.35 \times 10^9) \div 100$ (= 4.35×10^7)
			A1	for Yes with correct supporting evidence
11		$9\frac{1}{3}$	M1	for writing at least 2 fractions with a common denominator eg. $\frac{3(3x-2)}{12}, \frac{4(2x+5)}{12}, \frac{2(1-x)}{12}$ with at least one correct numerator or for $\frac{3x}{4} - \frac{2}{4} - \frac{2x}{3} - \frac{5}{3} = \frac{1}{6} - \frac{x}{6}$ (accept $+\frac{5}{3}$ instead of $-\frac{5}{3}$)
			M1	(dep) for a method to eliminate all fractions in an equation, ignore errors in any expanded terms eg. $3(3x-2) - 4(2x+5) = 2(1-x)$ or $6\times[3(3x-2) - 4(2x+5)] = 12 \times [1-x]$ or $3 \times 3x - 3 \times 2 - 4 \times 2x - 4 \times 5 = 2 \times 1 - 2 \times x$ OR for the correct expansion of brackets leading to $\frac{9x-6-8x-20}{12} = \frac{2-2x}{12}$
			M1	(dep on M2) for correctly isolating terms in x and number terms of their linear equation e.g. $9x - 8x + 2x = 2 + 6 + 20$
			A1	for $9\frac{1}{3}$ oe

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
12 (a)		comment	C1	for comment e.g. incorrect denominator for the 2nd student or probabilities for 2nd student do not add up to 1
(b)		No (supported)	C1	for "no" with supporting evidence, e.g. probabilities should be multiplied together or 0.4×0.25
13		7	P1	for correct process to find any frequency, eg. "1.1" × 10 (= 11) or "2.8" × 10 (= 28) or "2.3" × 20 (= 46) or "1.4" × 20 (= 28) or "1.4" × 10 (= 14) or "0.7" × 30 (= 21) or for a correct process to find the total area and an area of any block, eg. using 1 cm^2 = 1 unit of area to get 53.6 and one of 4.4, 11.2, 18.4, 11.2, 5.6, 8.4
			P1	(dep P1) for complete process to find 20% of ("1.4" × 10 + "0.7" × 30), eg. $\frac{20}{100} \times "35"$ or $\frac{"5.6"+"8.4"}{"53.6"} \times 134 \times \frac{20}{100}$
			A1	cao
14		C, F, A, H	B3	for a fully correct table
			[B2	for 2 or 3 correct]
			[B1	for 1 correct]

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
15		Proof	C1	for identifying one pair of equal angles with a correct reason, e.g. (angle) *BAE* = (angle) *CDE*; angles in the same segment are equal or angles at the circumference subtended on the same arc are equal or for identifying two pairs of equal angles with no correct reasons given (angles must be within the appropriate triangles)
			C1	for identifying a second pair of equal angles with a correct reason, e.g. (angle) *AEB* = (angle) *DEC*; opposite angles or vertically opposite angles are equal or for identifying the three pairs of equal angles with no correct reasons given
			C1	for stating the three pairs of equal angles of the two triangles e.g. *ABE* = *DCE*, *BEA* = *CED*, *EAB* = *EDC* with fully correct reasons
16			M1 M1 C1	for the start of a method to convert 0.22.. to a fraction, eg10y = 2.22.. or (y=) $\frac{2}{9}$ for the start of a method to convert 0.13636... to a fraction, 10x = 1.3636.. or 100x = 13.6363… or 1000x = 136.3636.. or (x=)_ $\frac{13.5}{99}$ or (x=) $\frac{135}{990}$ for correct arithmetic and concluding the proof
			M1 M1 C1	OR for $0.1\dot{3}\dot{6} \times 0.\dot{2} = 0.\dot{0}\dot{3}$ (= z) for complete method to find two appropriate recurring decimals the difference of which is a rational number, eg. 100z = 3.0303…,(z =) 0.0303… or $\frac{3}{99}$ for correct arithmetic and concluding the proof

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
17		66.5	B1	for recognising an angle of 60 at *AOB*
			P1	for a process to find the area of the sector, e.g. $\frac{"60"}{360} \times \pi \times 11^2$ (= 63.3.. or $\frac{121\pi}{6}$)
			P1	for a process to find the area of the triangle, e.g. $\frac{1}{2} \times 7^2 \times \sin "60"$ (=21.2.. or $\frac{49\sqrt{3}}{4}$)
			P1	for a process to find the required percentage, eg. $\frac{"63.3.."-"21.2.."}{"63.3.."} \times 100$
			A1	for answer in the range 66.5 to 66.6
18		1.45	P1	for converting to a common base with at least one correct conversion, eg. (16 =) 2^4 or (8 =) 2^3
			P1	(dep) for correct use of index laws to derive an equation, eg. $4 \times \frac{1}{5} + x = 3 \times \frac{3}{4}$ oe
			A1	for 1.45 oe (accept $2^{1.45}$)
				OR
			P1	for a process to find the value of 2^x , eg. $8^{\frac{3}{4}} \div 16^{\frac{1}{5}} = 2.73\ldots$
			A2	for 1.45 oe (accept $2^{1.45}$)
19		$a = 4$, $b = -42$	M1	for at least two terms from $2(x-3)(x+3)$, $(x+2)(x+3)$, $(x-6)(x-3)$
			M1	(dep) for the correct expansion of at least two expressions, irrespective of signs, eg. $2x^2 - 18$, $x^2 + 2x + 3x + 6$, $x^2 - 6x - 3x + 18$ oe
			M1	for $2x^2 - 18 - x^2 - 5x - 6 - x^2 + 9x - 18$
			A1	for $a = 4$, $b = -42$ (accept $4x - 42$)

Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
20 (a)		–0.4 to –0.2 and 3.2 to 3.4	M1	for (y =) x + 4
			A1	for answers in the range –0.4 to –0.2 and 3.2 to 3.4
(b)		1.6 to 2.5	M1	for drawing a tangent to the curve at x = 2
			M1	for method to find gradient of their tangent
			A1	for answer in the range 1.6 to 2.5
21		8600	P1	for process to find the length of the rectangle, e.g. 24 × 4 (= 96)
			P1	for process to find the perpendicular height of an equilateral triangle of side (24 × 2) cm, e.g. 48sin60 (= 41.5(69..)) or $\sqrt{48^2 - 24^2}$ (= $24\sqrt{3}$ oe)
			P1	for complete process to find the width of rectangle, e.g. "41.5(69..)" + 24 + 24 (= 89.5(69..))
			A1	for answer in the range 8592 to 8602
22		$2n^2 + n + 1$	M1	for a correct start to a method to find nth term, eg. equal 2nd differences imply a term in n^2 or sight of $an^2 + bn + c$
			M1	for a method leading to $2n^2$ and either n or 1
			A1	for $2n^2 + n + 1$ oe
23		$y = \frac{-3}{\sqrt{7}}x + \frac{8}{\sqrt{7}}$	M1	for method to find gradient of OP, eg $\frac{\sqrt{7}}{2} \div \frac{3}{2}\left(= \frac{\sqrt{7}}{3} \text{ or } 0.88 \ldots\right)$ oe
			M1	(dep) for method to find gradient of tangent, m, eg. $\frac{\frac{\sqrt{7}}{2}}{\frac{3}{2}} \times m = -1 \left(m = \frac{-3}{\sqrt{7}} \text{ or } -1.13..\right)$
			A1	for $y - \frac{\sqrt{7}}{2} = \frac{-3}{\sqrt{7}}(x - \frac{3}{2})$ or $y = \frac{-3\sqrt{7}}{7}x + \frac{8\sqrt{7}}{7}$ oe or y – 1.32.. = −1.13..(x – 1.5)