Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Non-Calculator) Paper 1F

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

General marking guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

1. All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.

    Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

2. All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no 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.

    Questions where working is not required: In general, the correct answer should be given full marks.
    Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

3. **Crossed out work**
    This should be marked **unless** the candidate has replaced it with an alternative response.

4. **Choice of method**
    If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.

    If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

5. **Incorrect method**
    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 for your Team Leader to check.

6   Follow through marks
Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, 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.

7   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 or its context. (eg. an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (eg. incorrect algebraic simplification).

8   Probability
Probability answers must be given as a fraction, percentage or decimal. 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 fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9   Linear equations
Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified 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 (embedded answers).

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 all numbers within the range.

| **Guidance on the use of abbreviations within this mark scheme** |

M method mark awarded for a correct method or partial method

P process mark awarded for a correct process as part of a problem solving question

A accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)

C communication mark

B unconditional accuracy mark (no method needed)

oe or equivalent

cao correct answer only

ft follow through (when appropriate as per mark scheme)

sc special case

dep dependent (on a previous mark)

indep independent

awrt answer which rounds to

isw ignore subsequent working

Question	Working	Answer	Mark	Notes
1		16	B1	cao
2		7.265	B1	cao
3 (a) (b)		56*ef* 12.5	B1 B1	cao oe
4		80	B1	cao
5		42	M1 A1	for showing method to work out 60% of 70, eg 0.6 × 70 **or** (70 ÷ 10) × 6 (= 42) cao
6 (i) (ii)		× at ½ × at 0	B1 B1	
7		No (supported)	P1 P1 C1	process to work with either cost of 3 sausages e.g. 3 × 2.30 (=6.9(0)) **or** division of a cost by 3 process to work with costs of at least 3 of bread rolls, bread rolls, ketchup, change, sausages e.g. 2 × 1.50 + 1.60 **or** 1.50 + 1.60 + 0.30, **or** 10 − 1.50 − 1.60 − 0.30 **or** 10 − 1.50 − 1.50 − 1.60 E.g. No **and** (£)5.10 and (£)6.90 No **and** (£)5.40 and (£)6.90 No **and** (£)1.70 No **and** (£)11.50 **or** (£)11.80 **or** shows cost of sausages at £2.30 and cost of any 2 other items is greater than (or equal to) £10 NB can work in £ or p throughout. Condone 5.1 etc

Question	Working	Answer	Mark	Notes
8 (a)		$\dfrac{15}{32}$	B1	oe
(b)		$\dfrac{5}{12}$	M1	uses a correct common denominator with at least one correct matching numerator e.g. $\dfrac{8}{12}$, $\dfrac{3}{12}$
			A1	
9		126	P1	for working with time,eg $10 - 8(=2)$ **or** $12 \times 8(=96)$ **or** $12 \times 10(=120)$
			P1	for working with overtime, eg $12 \div 4(=3)$ **or** $1.25 \times$ "2" $(=2.5)$ **or** $0.25 \times$ "2" $(=0.5)$ **or** $1.25 \times 12(=15)$
			P1	for a complete process, eg $(10 - 8) \times$ overtime rate $+ 12 \times 8$ **or** $12 \times 10 +$ "0.5" $\times 12$
			A1	cao
10		1 : 10	M1	for $12 : (20 \times 6)$ oe **or** $10 : 1$ **or** 1 with 10 in incorrect notation
			A1	cao
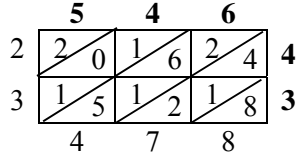
Paper: 1MA1/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		36	M1	demonstrates the start of a method that could lead to the answer, eg recognition of square numbers, **or** use of differences, **or** diagrams
			A1	cao
(b)		80	M1	demonstrates the start of a method that could lead to the answer, eg repeated addition of 4, **or** 20 × 4
			A1	cao
(c)			C2	conclusion with supportive evidence, eg odd × odd = odd, **or** all odd numbers squared will be odd.
			(C1)	(e.g. starts to work with (generate) square numbers for odd patterns or $(2n + 1)^2$ eg 1 × 1 = 1, or generates sequence for squares using differences)
12		$\dfrac{7}{17}$	M1	for $\dfrac{a}{17}$ where a ≠7 but < 17 or $\dfrac{7}{b}$ where b≠17 but > 7
			A1	oe
13 (a)		1.5 to 2	B1	in the range 1.5 to 2
(b)		7.5 to 12	M1	for scale factor in the range 5 to 6
			A1	(ft) or for answer in the range 7.5 to 12

Question	Working	Answer	Mark	Notes
14 (a)		168°, 120°, 72°	M1	for correct working to find an angle (could be implied by one angle drawn correctly on the pie chart)
			A1	for all three angles drawn ±2°
			B1	(dep on M1) for correct labels (languages)
(b)		No and reason	C1	NO and reason given e.g. "don't have actual figures for Lowry"
15		13.5	P1	process shown to find the area of the triangle e.g. ½ × 8 × 9 (=36)
			P1	for calculating 6 × (area) (=216)
			P1	for process shown of dividing their area of rectangle by 16 (oe)
			A1	oe
16		$-\dfrac{1}{2}$	M1	for substitution with operations shown e.g. $1 + -3 \times \dfrac{1}{2}$ **or** $1 - \dfrac{3}{2}$ **or** $1\frac{1}{2}$ **or** $-1\frac{1}{2}$
			A1	oe
17		1110	M1	method to find the weight of 1 tin of soup e.g. 1750 ÷ 5 (=350)
			M1	method to find the weight of 3 packets of soup e.g. 1490 – (4 × "350") (=90)
			M1	method to find the weight of 3 tins and 2 packets e.g. 3 × "350" + "90" ÷ 3 × 2
			A1	cao

Paper: 1MA1/1F					
Question		Working	Answer	Mark	Notes
18	(a)		6 to 8	M1	evidence of recall of area formula with correct radius e.g. $\pi \times 10^2$
				M1	calculation to find number of boxes, (area) ÷ (coverage figure)
				M1	(indep) evidence of estimation, eg π in range 3 to 3.2, or coverage figure of 40, 42, 45, 48 or 50
				A1	(dep on M3) answer in the range 6 to 8
	(b)		underestimate	C1	e.g. (ft from (a)) underestimate: true area greater so could need more boxes. Must relate to estimation, not rounding of answer.
19	(a)		9.5	M1	expands brackets or divides by 4 as a first step
				A1	oe
	(b)		−2, −1, 0, 1, 2	B2	cao
				(B1)	(for the numbers −2, −1, 0, 1 (accept with −3 and/or 2 only), or 4 correct with no incorrect)
20			1545	M1	shows a method to find 3% eg 1500 × 0.03 (=45)
				A1	cao

Question		Working	Answer	Mark	Notes
21	(a)		10,19	B1	cao
	(b)		Positive	C1	positive (correlation)
	(c)		12 to 13	M1	for an appropriate line of best fit drawn, or a point marked at (x, 16.4) or a horizontal line drawn from 16.4 across to (x, 16.4) where x is in the range 12 to 13
				A1	hours given in the range 12 to 13
	(d)		explanation	C1	(yes) e.g. as the majority of points for high temperature appear when there are more hours of sunshine (positive correlation)
22			2×2×2×7	M1	for complete method to find prime factors; could be shown on a complete factor tree with no more than 1 arithmetic error
				A1	accept $2^3 \times 7$

Question	Working	Answer	Mark	Notes
23	21840 1638 23478 	234.78	M1	for complete method with relative place value correct including addition of all the appropriate elements of the calculation e.g. two lines of 1st method, internal numbers of grids, or complete structure shown of partitioning methods
			A1	for digits 23478
			A1	(ft dep M1) for correct placement of the decimal point into their final answer
24		$x^2 + 6x = 1$	M1	writes the area using algebraic terms e.g. $(x + 3) \times (x + 3)$ or at least two correct area expressions, may be written on the diagram or x given as $\sqrt{10} - 3$
			M1	expands and includes the given 10 e.g. $x^2 + 3x + 3x + 9 = 10$; condone one error in the four terms when expanding or $10 - 3\sqrt{10} - 3\sqrt{10} + 9 + 6\sqrt{10} - 18$ (=1) condone 1 error in the 6 terms
			A1	rearranges to give the given equation or shows surd expression simplifies to 1

For question 23 working, the grid values:

	500	40	6
40	20000	1600	240
3	1500	120	18

20000 + 1600 + 240 + 1500 + 120 + 18 = 23478

Paper: 1MA1/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
25		70.5	P1	starts process of Pythagoras e.g. $5^2 + 12^2$
			P1	complete process for Pythagoras e.g. $\sqrt{5^2 + 12^2}$ or $\sqrt{25+144}$ or $\sqrt{169}$ (=13)
			P1	(dep P1 for Pythagoras) process of adding all the lengths e.g. 5 + 5 + 12 + 12 + "13" (=47)
			P1	(indep) process of multiplying at least 2 lengths by 1.5
			A1	cao SC: any evidence of working with Pythagoras award the P1 or P2
26		comparison	M1	starts to manipulate expression e.g. $3y = 9x - 6$ or $3y = 9x - 5$
			A1	gives equation(s) which can be used to show that the gradients of the two lines are the same e.g. $y = 3x - 5/3$
27 (a)		**2b**	B1	oe
(b)		**b − a**	B1	oe
(c)		**− a − b**	B1	ft oe

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
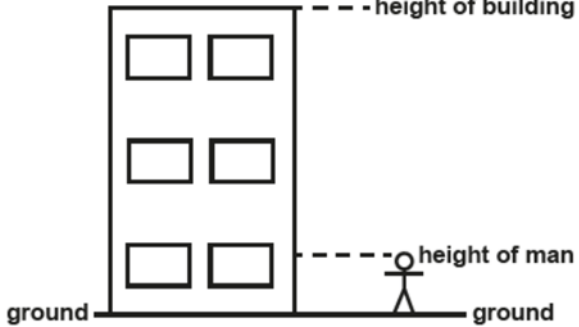Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
3	(a)	Braille only: e and f changed to p and q.	Standard mark scheme but read e and f for p and q.
6	i	Diagram enlarged. Spinner redrawn. The wording 'with a cross (x)' has been removed.	Apply a greater tolerance when judging the mark for the probability; allow indicators other than crosses and arrows.
6	ii	Diagram enlarged. Spinner repeated above the probability scale. The wording 'with a cross (x)' has been removed.	Apply a greater tolerance when judging the mark for the probability; allow indicators other than crosses and arrows.
11		Diagrams enlarged and stacked vertically. Question wording changed to 'There is a sequence of patterns made with circular tiles and square tiles: pattern number 1, pattern number 2 and pattern number 3.' A key has been added to the diagram.	Standard mark scheme
13		See notes at end	
14		Rows French and Spanish swapped around so Spanish comes first. Numbers on the table changed so that: French – 55; Spanish – 40; German – 25 Diagram enlarged and 10° intervals added.	In part (a) angles drawn are to be French: 165; Spanish: 120; German: 75 to a tolerance of ±5°. Part (b) standard mark scheme.
15		Diagram enlarged. Labels on the rectangle moved above and to the left of the diagram. Braille only: will add labels A B C D etc. and information about the diagrams.	Standard mark scheme

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
18		Diagram enlarged. 10 metres label moved above the line.	Standard mark scheme
21		Diagram enlarged. Right axis has been labelled. Crosses have been changed to solid circles.	Standard mark scheme but in (c) accept 12 to 14
24		Diagram enlarged. Arrows removed. Dashed lines at the top and left of the square extended. Dashes made longer and thicker.	Standard mark scheme
25		Diagram enlarged. Left hand side and top of shape labelled as well. Wording added 'The marked angles are right angles.' Braille only: will add labels A B C D etc. and information about the diagrams.	Standard mark scheme
27		Diagram enlarged.	Standard mark scheme

PAPER: 1MA1_1F		
Question	**Modification**	**Mark scheme notes**
13	Question 13 Diagram changed as shown. The height of the building is 10cm and that of the man is 2cm. For Braille the height of the building is 15cm and that of the man is 3 cm.	B1 in the range 1.6 to 2 M1 for scale factor in the range 4 to 6 A1 ft for answer in the range 6.4 to 12

Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 2F

edexcel

Question	Working	Answer	Mark	Notes
1 (a)		$3p$	B1	cao
(b)		$2m^3$	B1	cao
(c)		$10 - 4c + 6d$	M1	for $-4c$ or $6d$ (accept $+-4c$)
			A1	for $10 - 4c + 6d$
2		60	B1	cao
3 (a)		Walk	B1	cao
(b)		7 on chart	B1	for bar of height 7 drawn for girls walking
(c)		4	B1	cao
(d)		96	M1	for method to find number of Year 6 students in the survey e.g. $5 + 9 + 6 + 4 + 9 + 7 + 4 + 1 + 2 + 1$ $(= 48)$ or $14 + 10 + 16 + 5 + 3$ $(= 48)$
			A1	for 96 or ft from (b), eg 82 if no bar in (b)
4		$\dfrac{11}{30}, \dfrac{2}{5}, \dfrac{7}{15}, \dfrac{1}{2}$	M1	converts fractions to a common form, e.g. fractions with a denominator of 30, decimals or percentages, at least two conversions correct or any 3 fractions in correct order
			A1	correct order

Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
5 (a)		Monday wrong	C1	for seeing difference in tally marks and frequency for Monday
(b)		Comment	C1	for suitable comment, eg extra picture for Tuesday needed or explains that 0.5 of a CD is not possible
6		268.20	P1	for a process to work out the value of the £1 coins, eg. 495 ÷ 3 (= 165) or 495 × 0.33...or of the 50p coins, eg. 124 ÷ 2 (= 62)
			P1	for process to find the number of 20p coins, eg. (495 – 124 – ("165") (= 206)
			P1	for complete process to find total value using consistent units., eg. ("165") + (124 ÷ 2) + ("206" × 0.2) or 165 + 62 + 41.2
			A1	cao (accept 268.2)
7		0.985	B1	oe
8 (a)		25	B1	for 25 (accept 5^2)
(b)		24	B1	cao
(c)		23, 29	B1	for 23 and 29 and no extras
9		54	M1	for method to form equation, eg $90 + 2x + 3x = 360$ or for $360 – 90$ (= 270)
			M1	for $5x = 360 – 90$ or for $2x + 3x = 360 – 90$ or for $2x = 108$ or for $3x = 162$ or for $270 ÷ 5$
			A1	cao

Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
10		Letters2send (supported)	P1	for the start of a process to find comparable costs at either shop, e.g. 150 ÷ 25 (= 6) or 150 ÷ 30 (= 5), 150 ÷ 10 (= 15), 2.10 ÷ 15 = (=0.14)
			P1	for process to find cost from Letters2send, e.g. (150 ÷ 25) × 3.49 (= 20.94)
			P1	for process to find cost at Stationery World, e.g. (150 ÷ 30) × 2 × 2.10 (= 21)
			C1	for correct conclusion with correct values from each shop (20.94 and 21)
				OR
			P1	for the start of a process to find comparable costs, eg 3.49 ÷ 25 (= 0.1396), 2.10 ÷ 10 (= 0.21), 25 ÷ 3.49 = (7.1...), 2.10 ÷ 15 = (= 0.14)
			P1	for process to take into account the offer at Stationery World, eg buy 30 envelopes pay for 20,
			P1	for complete process to find values that can be used for comparison, eg 30 × 0.13(96) and 2 × 2.10 (= 4.2(0))
			C1	for correct conclusion with correct values from each shop (4.1(88) and 4.2(0))

Question	Working	Answer	Mark	Notes
11 (a)		29	B1	answer in the range 29 to 30
(b)		186 to 195	M1	for changing 6ft 3 inches to inches e.g. $6 \times 12 + 3$ (= 75) or changing 1ft to 30 cm
			M1	for a method to convert to cm, e.g. $25 \rightarrow 63$ then $\times 3$, $6 \times 30 + \frac{1}{4} \times 30$
			A1	for answer in the range 186 to 195 or ft from correct use of graph
12		0.0733(03...)	M1	for correct numerator (3.4496...........) or correct denominator (47.0596) or 0.073
			A1	for 0.0733(03.....)
13 (a)		Rotation	B2	for a fully correct rotation at (–4,–1), (–3,–1), (–4,–4), (–1,–2)
			[B1	for the quadrilateral in correct orientation and size or rotated 90º anticlockwise about the origin]
(b)		Reflection in the *y*-axis	B1	for reflection
			B1	for *y*-axis (or *x* =0) [A combination of transformations scores 0 marks]

Question	Working	Answer	Mark	Notes
14 (a)		$5(1 - 2m)$	B1	cao
(b)		$2ab(a + 3b)$	M1	for $2a(ab + 3b^2)$ or $2b(a^2 + 3ab)$ or $ab(2a + 6b)$ or $2ab$(2 term expression with terms in a or b or ab, can include constants), eg $2ab(1a + 3ab)$, $2ab(1 + 3b)$
			A1	for $2ab(a + 3b)$
15 (a)		0.47	B1	
(b)		2.28×10^9	M1	for correct value but not in standard form, eg $22.8 \times 10^{3+5}$, 228×10^7, 2 280 000 000 or for 2.28×10^n, $n \neq 9$
			A1	cao
16		T shown on the map	C1	for showing a perpendicular bisector or point T equidistant from points B and C.
			C1	for a circle or arc of circle of radius 2.5 cm or point T 2.5 cm from point A
			C1	for T shown in correct position

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
17		98	P1	for process to find P(1), e.g. $1 - 0.17 - 0.18 - 0.09 - 0.15 - 0.1$ (= 0.31) or for a process to find P(1 or 3), e.g. $1 - 0.17 - 0.09 - 0.15 - 0.1$ (= 0.49)
			P1	for process to find the number of 3s, e.g. 0.18×200 (=36) or process to find the number of 1s, e.g. $P(1) \times 200$ (= 62), or process to find the number of (1 or 3)s, eg $[P(1) + 0.18] \times 200$ or process to find any expected frequency, using any probability $\times$ 200, eg 0.17×200
			A1	cao
				OR
		98	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" $\times$ 200 (= 102)
			A1	cao

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

Question	Working	Answer	Mark	Notes
18 cont.				OR
			P1	for a process to find the maximum number of children, eg. $2600 \times 2 \div 7 \ (= 742(.8…))$
			P1	for process to work out the total number of children, e.g. $117 \times 4 \ (= 468)$
			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]
19		Side elevation	C2 [C1	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) for the side elevation as a rectangle]
		Front elevation	C2 [C1	for the front elevation as a trapezium in correct orientation with base 4 cm, parallel sides 1 cm and 4 cm for the front elevation as a trapezium with two right angles] [Ignore incorrect or no labelling]

Question	Working	Answer	Mark	Notes
20 (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 the 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 $\frac{3}{4}$ the distance from Barnsley to York oe
21 (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 $\frac{5.4}{8.1} \times 6.15$ (= 4.1) or $\frac{2.7}{8.1} \times 6.15$ oe or ft "scale factor" from (a)
			A1	cao

Question	Working	Answer	Mark	Notes
22		Secure Bank (supported)	P1	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
			P1	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]
			C1	for Secure Bank from correct figures eg 26530.. and 26546..or 1530.. and 1546.. or 1.0612.. and 1.0618
23		$4.755 \le n < 4.765$	B2	for $4.755 \le n < 4.765$
			[B1	for 4.755 or 4.765 or 4.764$\dot{9}$]
24		$x = -8, x = 3$	M1	for factorisation or for substitution into quadratic formula $(x \pm a)(x \pm b)$ where product of a and b = 24, eg $(x \pm 4)(x \pm 6)$ or difference of a and b = 5, eg $(x \pm 2)(x \pm 7)$ $\dfrac{-5 \pm \sqrt{5^2 - 4 \times 1 \times -24}}{2}$ oe (condone one sign error)
			M1	for $(x + 8)(x - 3)$ or for $\dfrac{-5 \pm \sqrt{121}}{2}$ oe
			A1	cao

Paper 1MA1: 2F				
Question	Working	Answer	Mark	Notes
25 (a)		$5n - 2$	B2	for $5n - 2$ oe
			[B1	for $5n + k$, k may be 0]
(b)		No (supported)	C1	for No with evidence, e.g. $3 \times 4^2 = 48$, $\sqrt{48}$ is not an integer, he has multiplied by 3 first but should have squared first

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
1	(c)	MLP and braille: *c* and *d* changed to *s* and *t*.	Standard mark scheme but change *c* & *d* to *s* & *t*
3		Grid enlarged. Key moved above the diagram. Right axis has been labelled. Boys shading has been changed to dotty. The vertical axis label has been moved above the vertical axis	Standard mark scheme
5	(b)	Pictogram enlarged. Key moved above the diagram.	Standard mark scheme
8		Wording 'nine' added	Standard mark scheme
9		Diagram enlarged. Angle sizes moved outside the angle arcs; the arcs have been made smaller.	Standard mark scheme
11		Grid enlarged. Right axis labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis. In (a) Number '74' changed to '90'.	(a) becomes 35 to 37. In (b) suggest 180 to 200
13	(a)	Question reversed. Rotation drawn on the diagram and labelled as 'shape B'. Grid enlarged and *y* axis reduced so it finishes at 2. Shapes labelled 'shape A' and 'shape B'. Wording changed 'It shows shape A and shape B given on a grid. Describe fully the single transformation that maps shape A onto shape B.'	Award B1 for "rotation" Award B1 for "90° clockwise about centre O [or (0,0)] NB: award B0 for any indication of a mention of other transformations
13	(b)	Grid enlarged and y axis reduced so it starts at -2. Wording 'B' and 'C' deleted and shapes labelled as 'shape P' and 'shape Q'. Triangles P and Q moved above the *x* axis. Wording added 'It shows shape P and shape Q given on a grid.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
14	(b)	MLP only: *a* changed to *x* and *b* changed to *y*.	Standard mark scheme but change *a* & *b* to *x* & *y*
16		Number '250 metres' changed to '500 metres'. Points *B* and *C* moved to the right to allow for use of specialist equipment. Points *B* and *C* joined with a line. Scale moved above the diagram.	Standard mark scheme, but given the alternations to the given diagram, the relative positions of any constructions and the position(s) of *T* will change.
17		Table turned to vertical format.	Standard mark scheme
19		Alternative question. Model has been provided for all candidates. Diagram enlarged and also provided for MLP. The measurements on the prism have been doubled. Wording added next to the diagram of the trapezium 'Diagram NOT accurately drawn'. Four shapes have been provided below the trapezium labelled A to D. Wording added above the four shapes 'scale: 2 cm to 1 metre'. Question wording has changed and has been split into two parts: 'Look at the model or at the diagrams for Question 19 in the Diagram Book. They show a prism with a cross section in the shape of a trapezium. All measurements are in metres. Below the prism there are four shapes A, B, C and D. (i) Which shape shows the front elevation of the prism? (ii) Which shape shows the side elevation of the prism?'	Mark scheme amended as follows: (i) B2 for C (ii) B2 for A (B1 for B or D)
21		Diagram enlarged. Measurements '2.6 cm' and '5.4 cm' added to the diagram.	Standard mark scheme

Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 3F

Question		Working	Answer	Mark	Notes
1	(a)		Don, Mersey, Trent, Thames, Severn	B1	accept 112, 113, 297, 346, 354
	(b)		Shown	C1	shown with correct values eg (112 × 3 =) 336 (and 346) or 112 + 112 + 112 + 10 = 346 or 346 ÷ 3 = 115(.3..) (and 112) or 346 ÷ 112 = 3.089.. oe
2			12*p* + 18*b*	M1 A1	12*p* or 18*b* or *p* + *b* 12*p* + 18*b*
3	(i)		15	B1	cao
	(ii)		196	B1	cao
4			40	M1 A1	for 32 ÷ 4 (= 8) or 32 × 5 (= 160) or complete method eg 32 ÷ 4 × 5 oe (= 40) cao
5	(a)		1 : 3	B1	oe
	(b)		42	M1 A1	ft 56 ÷ 4 (= 14) or complete method to find number of grey tiles eg 56 − (56 ÷ 4), 56 ÷ 4 × 3 oe (= 42) for 42 or ft

Paper: 1MA1/3F				
Question	Working	Answer	Mark	Notes
6 (a)		Reason	C1	reason, eg must order numbers first
(b)		10	M1 A1	for 22 − 12 or 12 − 22 or 12 to 22 cao
(c)		16	M1 A1	for adding the numbers and dividing by 7 cao
7		SP, SR, SB, FP, FR, FB MP, MR, MB	B2 (B1)	all 9 combinations given with no extras or repeats at least 6 correct combinations given, condone repeats and incorrect combinations
8		84	M1 A1	for (372 − 36) ÷ 4 cao
9		No (supported)	P1 P1 C1	for finding a time difference e.g. length of day (=7 h or 420 min) or adding at least two of the five times on to 9 am or adding all the room times given (= 5 h 55 min or 355 min) or adding all five times given (=7 h 10 min or 430 min) for a complete process to inform final decision eg finds length of day (= 7 h) and total of all five times (=7 h 10 min) **or** starts at 9am and adds on all five times to find finishing time (= 4.10 pm) NO supported by correct values eg 4.10 pm **or** 7 h and 7 h 10 min **or** 420 min and 430 min

Question	Working	Answer	Mark	Notes
10		75	P1	for 90 ÷ 6 (= 15) or for connecting *AB* and *BC* by ratio or proportion eg 5 and 1 on the diagram
			P1	for a complete method to find the length *AB* eg 90 ÷ 6 × 5 (= 75)
			A1	cao
11 (a)		11	M1	substitutes *v* = 2 eg 4 × 2 + 3 or 8 + 3
			A1	cao
(b)		$v = \dfrac{T-3}{4}$	M1	correct first step to rearrange by isolating 4*v* or dividing each term by 4, eg *T* – 3 = 4*v*
			A1	fully correct answer
12 (a)		Yes (supported)	M1	method to find volume of one cube, eg 2 × 2 × 2 or 2^3 (= 8) or draws a solid of 6 cubes
			C1	Yes with supporting evidence eg 2 × 2 × 2 = 8, 8 × 6 = 48
(b) (i)		cuboid drawn	B1	either a 1 by 6 by 1 cuboid (2 cm by 12 cm by 2 cm) or a 2 by 3 by 1 cuboid (4 cm by 6 cm by 2 cm) drawn
(ii)		104 or 88	M1	ft for finding areas of 3 or more faces of their cuboid and adding
			A1	for 104 or 88

Question	Working	Answer	Mark	Notes
13		92, 65, 23	P1 P1 P1 P1 A1	for two of x, $4x$ and $4x – 27$ (where x is the smallest angle) (dep) for equation summing their three angles to 180, eg $x + 4x + 4x – 27 = 180$ (dep P1) for correct process to simplify their algebraic expression, eg $9x – 27$ (=180) for correct process to solve their equation of the form $ax + b = 180$ for three correct angles (order irrelevant)
14 (a)	$ £ 5 2.631... 60 31.578... 196 103.157... 2744 1444.21... 2804 1475.789...	2975.79	P1 P1 P1 P1 A1	for process to find total room cost eg 196 × 14 (= 2744) for process to find total wifi cost eg 5 × 12 (= 60) for using exchange rate appropriately (could be used earlier in the question), eg "2804" ÷ 1.90 (= (£)1475.789...) or 1500 × 1.90 (= ($)2850) for process to find the total cost in £, eg "1475.79(..)" + 1500 or in $, eg "2850" + "2804" (= 5654) 2975 to 2976
(b)		Statement	C1	Statement about the total price rising May comment that flights will not change but the rest will rise

Question	Working	Answer	Mark	Notes
15 (a)		Venn Diagram	B1 M1 M1 C1	for labels on diagram for just 15 in the intersection for just 5 and 25 in only set B or just 3, 9, 21 and 27 in only set A or just 1, 7, 11, 13, 17, 19, 23, 29 in $(A \cup B)'$ for all numbers correctly placed in the Venn Diagram Ignore all entries except the region you are marking for each method mark
(b)		$\dfrac{7}{15}$	P1 A1	ft for $\dfrac{"7"}{a}$ where $a \geq$ "7" or $\dfrac{b}{"15"}$ where $b \leq$ "15" ft $\dfrac{7}{15}$ oe
16		$x = -\dfrac{2}{3}$ $y = -2$	M1 M1 A1	for a method to eliminate one variable (condone one arithmetic error) (dep) for substituting found value in one of the equations or appropriate method after starting again (condone one arithmetic error) $x = -\dfrac{2}{3}$ oe and $y = -2$
17 (a)		12	B1	cao
(b)		Explanation	C1	No with statement about not being mutually exclusive events eg a person could be in both categories

Question	Working	Answer	Mark	Notes
18		68	P1	for a process to find the number of vanilla cakes, eg $420 \times 2 \div 7$ oe (= 120)
			P1	for a process to find the number of banana cakes, eg 420×0.35 oe (= 147)
			P1	(dep P1) for a full process to find the number of lemon/chocolate cakes eg 420 – (vanilla cakes) – (banana cakes) (= 153)
			P1	(dep on previous P1) for a process to find the number of lemon cakes eg "153" $\div 9 \times 4$ oe (= 68)
			A1	cao
				OR
			P1	for writing two proportions in the same format
			P1	for combining the proportions of vanilla and banana cakes eg 2/7 + 7/20 (= 89/140)
			P1	(dep P1) for a full process to find the proportion or number of lemon/chocolate cakes eg 1 – "89/140" (= 51/140)
			P1	(dep on previous P1) for a process to find the number of lemon cakes eg "51/140" $\times 420 \div 9 \times 4$ (= 68)
			A1	cao
19		Shows polygon is a hexagon	M1	for a complete method to find the interior or exterior angle of the dodecagon eg $180 - \dfrac{360}{12}$, $\dfrac{180}{12}(12-2)$ oe (= 150), $360 \div 12$ (=30)
			M1	for a complete method to find the interior angle of polygon **P** eg at *B* or *C*: 360 – "150" – 90 (= 120) or "30" + 90 (= 120) **or** for a complete method to find the interior or exterior angle of the hexagon eg $180 - \dfrac{360}{6}$, $\dfrac{180}{6}(6-2)$ oe (= 120), $360 \div 6$ (= 60)
			A1	for 30 and 120 **or** 30 and 60 **or** 120 and 150 **or** 60 and 150
			C1	complete solution, fully supported by accurate figures

Question	Working	Answer	Mark	Notes
20		1.01	P1	fruit syrup 15 × 1.4 (= 21) or water 280 × 0.99 (= 277.2) or apple juice 25 × 1.05 (= 26.25)
			P1	(dep P1) for complete process to find the total mass e.g. "277.2" + "26.25" + "21" (= 324.45) or a weighted density eg 15 × 1.4 ÷ 320 (= 0.065625) or 280 × 0.99 ÷ 320 (= 0.86625) or 25 × 1.05 ÷ 320 (= 0.08203125)
			P1	(dep P2) for complete process to find the density eg "324.45" ÷ 320 (=1.01..) or "0.065625" + "0.86625" + "0.08203125" (= 1.0139..)
			A1	1.01 to 1.014
21		Shown (supported)	M1	method to divide a pair of corresponding sides, eg 7.5 ÷ 3 (= 2.5) or 3 ÷ 7.5 (= 0.4), or states scale factor is 2.5 or 0.4 or method to work out the size of an angle, eg $\tan^{-1}\left(\dfrac{7.5}{10}\right)$ (= 36.8 to 36.9)
			C1	shows or states that all sides are enlarged by the same factor or works out a pair of corresponding angles and states that the two triangles have the same angles
22 (a)		12, 4, 2, 1.2, 1	B2 (B1)	for fully correct table (allow fractions or decimals) for 3 or 4 of 12, 4, 2, 1.2, 1
(b)		Correct curve	M1 A1	ft (dep on B1 in (a)) for plotting at least 6 points from their table correctly for a fully correct curve

Question	Working	Answer	Mark	Notes
23 (a) (i)		155 000	B1	cao
(ii)		165 000 or 164 999 or 164 999.99	B1	165 000 or 164 999 or 164 999.99
(b)		200 000	M1	for recognising that 210 000 = 105% or a full method to find the original price eg 210 000 ÷ 1.05 oe (= 200 000)
			A1	cao

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
6		Wording 'seven' added to the first line	Standard mark scheme
10		Diagram enlarged.	Standard mark scheme
12	(a)	Models provided for all candidates. Diagram enlarged and also provided for MLP. Question wording changed to 'Look at the diagram for Question 12 or at the six cubes provided. Each cube has a side length of 2 cm.	Standard mark scheme
12	(b)	Question wording changed to 'Remember: Each cube has a side length of 2 cm. Use the six cubes provided to make a cuboid. Write down the dimensions of your cuboid.' One answer line provided.	Standard mark scheme, but accept an answer without a drawing, but showing the dimensions of 2×2×12 or 4×6×2 (oe)
15		Diagram enlarged. Braille only: will label the circles 'Set A' and 'Set B' and will label all the places which need to be answered (i) to (iv).	Standard mark scheme accept for Braille award C2 for a fully correct diagram.
19		Diagram enlarged.	Standard mark scheme
21		Diagrams enlarged. The smaller triangle on the right has been rotated so it is facing the opposite triangle. Braille only: will give information about the triangles in written form.	Standard mark scheme

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
22	(a)	The table has been turned to vertical format and left aligned. Wording added 'There are five spaces to fill.'	Standard mark scheme
22	(b)	Diagram has been enlarged.	Standard mark scheme with additional tolerance on plotting.