AQA

GCSE
MATHEMATICS
8300/1F

Foundation Tier

Paper 1 Non-Calculator

Shadow paper based on November 2022 paper

Mark scheme

November 2022

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

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.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

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.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded for a common misinterpretation which has some mathematical worth.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
oe	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
[a, b]	Accept values between a and b inclusive.
[a, b)	Accept values a $\leqslant$ value < b
3.14 …	Accept answers which begin 3.14 eg 3.14, 3.142, 3.1416
Use of brackets	It is not necessary to see the bracketed work to award the marks.

Examiners should consistently apply the following principles.

Diagrams

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

Responses which appear to come from incorrect methods

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

Questions which ask students to show working

Instructions on marking will be given but usually marks are not awarded to students who show no working.

Questions which do not ask students to show working

As a general principle, a correct response is awarded full marks.

Misread or miscopy

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

Further work

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

Choice

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

Work not replaced

Erased or crossed out work that is still legible should be marked.

Work replaced

Erased or crossed out work that has been replaced is not awarded marks.

Premature approximation

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

Continental notation

Accept a comma used instead of a decimal point (for example, in measurements or currency), provided that it is clear to the examiner that the student intended it to be a decimal point.

Q	Answer	Mark	Comments
1	65 min	B1	

Q	Answer	Mark	Comments
2	20 cm	B1	

Q	Answer	Mark	Comments
3	40%	B1	

Q	Answer	Mark	Comments
4	41	B1	

Q	Answer	Mark	Comments
5	$10a - 6b$ or $-6b + 10a$	B2	B1 for $10a$ or $(-)6b$
	Additional Guidance		
	$10a - 6b$ followed by further work eg $4ab$		B1
	B1 response followed by further work eg $10a - 2b = 8ab$		B1

Q	Answer	Mark	Comments
6(a)	$49 + 104 - 41 - 56$ or $49 + 104$ or 153 or $41 + 56$ or 97 or $49 - 41$ or 8 or $104 - 56$ or 48	M1	oe
	56	A1	
	Additional Guidance		
	Check table for working		
	Up to M1 may be awarded for correct work, with no or incorrect answer, even if seen amongst multiple attempts		

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Q	Answer	Mark	Comments
6(b)	**Alternative method 1**		
	$\dfrac{56+104}{250}$ or $\dfrac{160}{250}$ or $\dfrac{16}{25}$	M1	oe
	64	A1	SC1 36
	Alternative method 2		
	$\dfrac{56}{250} \times 100$ or 22.4 or $\dfrac{104}{250} \times 100$ or 41.6 or $\dfrac{64}{100}$	M1	oe
	64	A1	SC1 36
	Alternative method 3		
	(56 + 104) ÷ 2.5 or 56 ÷ 2.5 or 22.4 or 104 ÷ 2.5 or 41.6	M1	oe eg 160 × 0.4
	64	A1	SC1 36

	Additional Guidance	
	160 out of 250 or 160 ÷ 250	M1
	160% of 250	M0
	Build up method, eg 10% = 25, 1% = 25 ÷ 10 = 2.5, 0.1% = 2.5 ÷ 10 = 0.25, 40 + 1 + 0.6 = 41.6 (%) 10% = 25, 1% = 2.5, 0.1% = 0.5, 40 + 1 + 0.3 = 41.3 (%) (method not shown for 0.1%)	M1 M0

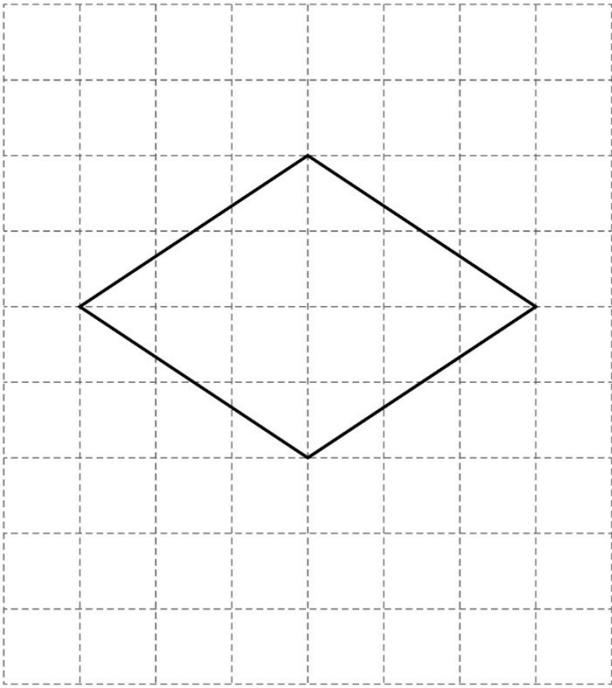| Q	Answer	Mark	Comments
7	$\dfrac{1}{5} \times 40$ or 8 or $\dfrac{3}{5} \times 40$ or $\dfrac{1}{6} \times 60$ or 10 or $\dfrac{5}{6} \times 60$	M1	oe
	24 or 50	A1	
	74	A1	SC2 26
	Additional Guidance		
	May be seen as a set of equivalent fraction numerators eg $\dfrac{3}{5} = \dfrac{24}{40}$ and $\dfrac{5}{6} = \dfrac{25}{30} = \dfrac{50}{60}$, $24 + 50 = 74$	M1A1A1	
	eg $\dfrac{3}{5} = \dfrac{24}{40}$ and $\dfrac{5}{6} = \dfrac{25}{30} = \dfrac{50}{60}$, answer $\dfrac{74}{100}$	M1A1A0	
	24 out of 40 or 50 in 60	M1A1	
	74 out of 100	M1A1A1	
	Up to M1 may be awarded for correct work, with no or incorrect answer, even if seen amongst multiple attempts		

Q	Answer	Mark	Comments
8	$100 - (54 + 22)$ or $100 - 76$	M1	oe
	24	A1	
	Additional Guidance		
	Embedded answer eg $76 + 24 = 100$	M1A0	

Q	Answer	Mark	Comments
9(a)	3 or 4 identified or 4 by 3 rectangle drawn on grid or triangle base 4, height 3 drawn on grid	M1	
	14	A1	

	Additional Guidance	
	3 + 4 = 7	M1A0
	$3 \times 4 = 12$ (area of rectangle, not perimeter)	M1A0
	$3 + 4 + 5 = 12$ (perimeter of triangle, not rectangle)	M1A0
	For drawings, mark intention	
	Ignore units	

Q	Answer	Mark	Comments
	All three of • trapezium with side as given • perpendicular distance between parallel sides is 6cm • area 42 cm^2	B2	B1 any two bullet points
	Additional Guidance		
9(b)	eg or		B2
	Vertices along the bottom edge do not need to be at intersections of gridlines		
	Mark intention for B2 and B1		
	Rectangle with sides 6 cm and 7 cm or parallelogram with sides 6 cm and perpendicular distance 7 cm		B1
	Trapezium drawn with parallel lines of length 6 cm and 8 cm, vertical height other than 6 cm		B1
	For those that start again, a horizontal line of 6 cm must be used		

Q	Answer	Mark	Comments
9(c)	Rhombus drawn using given two sides	B1	
	Additional Guidance		
			B1
	Mark intention of straight lines		
	Ignore diagonals on a correct rhombus		

Q	Answer	Mark	Comments
10(a)	25	B1	

Q	Answer	Mark	Comments
10(b)	6600	B1	

Q	Answer	Mark	Comments
11(a)	90 ÷ 15 or 6 or 15 ÷ 6 or 2.5	M1	oe for repeated addition, allow one error
	36	A1	

	Additional Guidance		
6 × 6 = 30			M1A0
90 ÷ (15 ÷ 6)			M1A0

Q	Answer	Mark	Comments
11(b)	4 × 6 or 24 or 12 × 6 or 72 or 2 × 45 or 90 or 45 ÷ 8 or 5.625	M1	oe
	45 + their 24 or their 72 − their 48 + 45	M1dep	oe eg 45 + 4 × 6
	69	A1	

	Additional Guidance		
Up to M2 may be awarded for correct work, with no or incorrect answer, even if seen amongst multiple attempts			

Q	Answer	Mark	Comments
11(c)	4 × 14 or 56 or 14 ÷ 2 or 7 or 5 × 14 or 70 or 4.5	M1	oe eg 4 × 1400 or 5600
	4 × 14 + 14 ÷ 2 or 5 × 14 − 14 ÷ 2 or 4.5 × 14	M1dep	oe
	63	A1	
	Additional Guidance		
	Condone £63.00p		M1M1A1
	Up to M2 may be awarded for correct work, with no or incorrect answer, even if seen amongst multiple attempts		

Q	Answer	Mark	Comments
12(a)	Any correct conversion using values given 2500 ÷ 1000 or 2.5 or 7.1 × 1000 or 7100 or 5.6 × 1000 or 5600 or 8.1 × 1000 or 8100 or 1.5 × 1000 or 1500	M1	oe eg 2.500 may be seen in 2nd M1 8.1 or 15.2 or 9.6 implies 2.5 15200 implies 7100 and 8100 9600 implies 7100
	5.6 + their 2.5 − 7.1 or their 5600 + 2500 − their 7100 or their 2.5 − (7.1 − 5.6) or 2500 − (their 7100 − their 5600) or 1000	M1	oe allow their conversions allow mixed units eg 5.6 + 2500 − 7.1
	1	A1	

Additional Guidance

Check diagram	
1000 (implies 7100 and 5600)	M1M1
Accept additional zeroes in the answer eg 1.000 or 1.0	M1M1A1
No correct unit changes or no changes attempted can score M0M1A0 but calculation must be seen eg 560 + 2500 − 710 = 2350	M0M1A0
Up to M2 may be awarded for correct work, with no or incorrect answer, even if seen amongst multiple attempts	

Q	Answer	Mark	Comments
12(b)	**Alternative method 1**		
	$\dfrac{300-80}{2}$ or $\dfrac{220}{2}$ or 110	M1	oe eg $\dfrac{300}{2} - \dfrac{80}{2}$ may be seen or implied in a ratio eg n : 110 or 110 : n
	190 : 110	A1	must be in correct order
	19 : 11	B1ft	ft a correct and full simplification of any unsimplified ratio condone $\dfrac{19}{11}$: 1 or 1 : $\dfrac{11}{19}$ SC2 11 : 19
	Alternative method 2		
	$\dfrac{300+80}{2}$ or $\dfrac{380}{2}$ or 190	M1	oe eg $\dfrac{300}{2} + \dfrac{80}{2}$ may be seen or implied in a ratio eg 190 : n or n : 190
	190 : 110	A1	must be in correct order
	19 : 11	B1ft	ft a correct and full simplification of any unsimplified ratio condone $\dfrac{19}{11}$: 1 or 1 : $\dfrac{11}{19}$ SC2 11 : 19

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12(b) cont	**Alternative method 3**		
	$300 + 80$ and $300 - 80$ or 380 and 220	M1	
	380 : 220	A1	must be in correct order
	19 : 11	B1ft	ft a correct and full simplification of any unsimplified ratio condone $\frac{19}{11}$: 1 or 1 : $\frac{11}{19}$ SC2 11 : 19
	Additional Guidance		
	110 : 190 with answer 11 : 19		M1A0B1ft
	Accept 0.57(894…) or 0.58 for $\frac{11}{19}$ or 1.72(727…) or 1.73 for $\frac{19}{11}$		
	For the M1 in Alt1, 110 must come from working towards a ratio of 190 : 110 or 110 : 190, not from a simplification of 220 : 80 $300 - 80 = 220$, 220 : 80, 110 : 40 $300 - 80 = 220$, 220 : 80, 110 : 40, 11 : 4		M0A0B0ft M0A0B1ft
	Ignore any units given in the answer		
	Algebraic approach may be seen but no marks scored until $x = \dfrac{300 - 80}{2}$ reached oe		
	For any ratio, condone correct simplification to 1 : n or n : 1		B1ft

Q	Answer	Mark	Comments
	Valid explanation referencing the multiplication by 3 twice	B1	eg he has multiplied by 3 twice
	Additional Guidance		
	He multiplied 3 by 3 but there was only one 3 to start with		B1
	3×3 should not be calculated		B1
	He trebled everything		B1
	There should only be one 3		B1
	There should be a 3		B0
	He's adding up the 3s, whereas it should be $ab \times 3 = 3ab$		B0
	He multiplied by 9 (instead of 3)		B1
	He has 9 instead of 3		B0
	The 9 is wrong		B0
13	He should not have both $3a$ and $3b$		B1
	He has multiplied (each of) a and b by 3 separately		B1
	He has multiplied (each of) a and b separately		B0
	He did $3a \times 3b$		B0
	Answer is $3a + 3b$		B0
	He shouldn't separate the a and b, it's just $3a$		B0
	You don't times each letter by 3		B1
	He has multiplied each letter by 3		B1
	He has multiplied each letter by 3, it should be $3ab^2$		B0
	It is $a \times b \times 3$ not $3a \times 3b$		B1
	He shouldn't do all that it is just $ab \times 3 = 3ab$		B0
	Answer is $3ab$		B0
	His answer is wrong		B0

Q	Answer	Mark	Comments
14	**Alternative method 1**		
	237 or 3950 with the 0 correct for the multiplication by 50 or 477 or 3710 with the 0 correct for the multiplication by 70	M1	values may be seen separately or in rows ignore any decimal points
	their 237 + their 3950 or their 477 + their 3710	M1dep	ignore any decimal points
	digits 4187	A1	
	0.4187	B1ft	ft their digits 4187 ÷ 10 000
	Alternative method 2		
	At least three of 3500, 450, 210 and 27	M1	may be seen in a grid ignore any decimal points
	their 3500 + their 450 + their 210 + their 27	M1dep	ignore any decimal points
	digits 4187	A1	
	0.4187	B1ft	ft their digits 4187 ÷ 10 000

Mark scheme and Additional Guidance continue on the next page

14 cont	**Alternative method 3**		
		M1	at least three of the calculated values correct ignore any decimal points
	Total calculated correctly for each diagonal for their table	M1dep	ignore any decimal points
	digits 4187	A1	
	0.4187	B1ft	ft their digits 4187 ÷ 10 000
	Additional Guidance		
	Ignore use of a decimal point anywhere until final mark		
	Use the Alt that gives the best mark		
	B1ft is not available for an answer involving digits 4187, other than correct answer 0.4187		
	$70 \times 50 + 9 \times 3 = 3527$, answer 0.3527		M0M0A0B1ft
	Using fractions, digits 4187 may be seen as part of a fraction for first A1 For unsimplified fractions, follow appropriate MS for M marks For simplified fractions, please follow the spirit of each MS for M marks		
	Alt 1 If the 0 is missing or misaligned allow if units digit 7 in their answer for the first M1 If the 0 is missing allow 0 to be replaced by x for the first M1		
	Alt 2 If numbers are broken down further there can be only one error for the first M1 eg 60 10 9 and 50 3 needs five of 3000, 180, 500, 30, 450, 27		
	Alt 3 Diagonals must slope consistently for M1 unless recovered Diagonals missing is M0 unless recovered		

Q	Answer	Mark	Comments
15(a)	$12x - 7x$ or $7x - 12x$ or $\pm 5x$ or $(+)1 + 2$ or $-1 - 2$ or ± 3	M1	oe terms in x or constant terms collected
	$5x = 3$ or $-5x = -3$	A1	may be implied eg $3 \div 5$ or $-3 \div -5$ or $\dfrac{-3}{-5}$
	$\dfrac{3}{5}$ or 0.6	A1ft	oe ft any equation of the form $5x = a$ or $-5x = a$ or $bx = 3$ or $bx = -3$

	Additional Guidance	
	Ignore attempt to convert or simplify after correct answer seen	
	Trial and improvement scores 3 or 0	
	$5x - 3 \,(= 0)$ with no further work	M1A0A0
	$\dfrac{3}{5}$ and $5x = 3$ on answer line	M1A1A1
	Embedded answer eg $12 \times 0.6 - 2 = 7 \times 0.6 + 1$	M1A1A0
	ft answers must be exact or rounded to 2 dp or better eg $19x = 3$, answer $\dfrac{3}{19}$	M1A0A1ft
	eg $19x = -3$, answer -0.16	M1A0A1ft
	$5x + 3$ or $5x + 3 = 0$ or $19x - 3$ or $19x - 3 = 0$ etc with no further work	M1
	$\pm 5x$ or ± 3 must not have come from incorrect working	

Q	Answer	Mark	Comments
15(b)	$3x = 21 \times 5$ or $3x = 105$ or $\dfrac{x}{5} = 21 \div 3$ or $\dfrac{x}{5} = 7$ or $21 \times 5 \div 3$ or $105 \div 3$	M1	oe eg $21 \div 0.6$
	35	A1	

Additional Guidance	
Trial and improvement scores 2 or 0	
Embedded answer eg $\dfrac{3 \times 35}{5}$	M1A0
$\dfrac{3x}{5} = \dfrac{21 \times 5}{3}$	M1

Q	Answer	Mark	Comments
16(a)	(green in A =) 30 ÷ 3 or 10 or (brown in B =) 20 ÷ 5 × 4 or 16 or (total in A =) $30 \times \frac{4}{3}$ or (total in B =) $20 \times \frac{9}{5}$	M1	oe
	10 and 16 or (total in A =) 40 or (total in B =) 36 or (total green =) 26 or (total brown =) 50	A1	may be implied by final answer
	76	A1	SC2 156 (using 90 green bottles in A) or 26 (green in A + brown in B)

Additional Guidance	
10 + 30 + 20 = 60 (implied correct interim total for Crate A)	M1A1A0
10 + 30 + 20 + 20 = 80 (implied correct interim total for Crate A)	M1A1A0
10 and 20, with 80 on answer line (implied correct interim total for Crate A)	M1A1A0
10 + 30 + 20 + 20, no answer (no implied correct interim total)	M1A0A0

Q	Answer	Mark	Comments
16(b)	0	B1	oe fraction decimal or percentage
	1	B1	oe fraction decimal or percentage
	$\dfrac{30}{50}$ or $\dfrac{15}{25}$ or $\dfrac{3}{5}$ or 0.6	B1	oe fraction decimal or percentage
	Additional Guidance		
	Ignore incorrect simplification after correct answer seen		
	Do not accept probabilities written as ratios		
	First B1 $\dfrac{0}{10}$ (denominator may be any value except 0)		B1
	First B1 $\dfrac{0}{0}$		B0
	Second B1 $\dfrac{12}{12}$		B1
	Do not allow if only words given eg First answer Impossible Second answer Certain		B0B0
	Penalise only the first occurrence of "out of" eg 0 out of 50, 50 out of 50, 30 out of 50 eg 0, 1, 30 out of 50		B0B1B1 B1B1B0
	Penalise only the first occurrence of an incorrect but consistent denominator eg $\dfrac{0}{76}$, $\dfrac{12}{76}$, $\dfrac{30}{76}$ eg 0, $\dfrac{12}{126}$, $\dfrac{30}{76}$		B1B0B1 B1B0B0

Q	Answer	Mark	Comments
17	0.005	B1	

Q	Answer	Mark	Comments
18	$3 + 5$ or 8	M1	implied by 8 symbols or 8.5
	$68 \div$ their 8×3 or 8.5×3 or 25.5 or $68 \div$ their 8×5 or 8.5×5 or 42.5	M1dep	oe full method to work out either number
	25.5 or $\dfrac{51}{2}$ or $25\dfrac{1}{2}$ and 42.5 or $\dfrac{85}{2}$ or $42\dfrac{1}{2}$	A1	oe decimals, fractions or mixed numbers either order
	Additional Guidance		
	25.5 and 42.5 in working, but truncated or rounded to 25 or 26 and 42 or 43 on the answer line		M1M1A1
	$68 = 8x$		M1
	$\dfrac{x}{68} = \dfrac{3}{8}$ or $\dfrac{y}{68} = \dfrac{5}{8}$		M1

Q	Answer	Mark	Comments
19	**Alternative method 1**		
	$n + 1$ is odd and even × odd is even and even + 1 is odd	B2	oe B1 $n + 1$ is odd or even × odd is even or even + 1 is odd
	Alternative method 2		
	$n^2 + n$ and even^2 is even and even + even is even and even + 1 is odd	B2	oe B1 $n^2 + n$ or even^2 is even and even + even is even or even + even is even and even + 1 is odd
	Alternative method 3		
	n and $n + 1$ are consecutive numbers and even × odd is even and even + 1 is odd	B2	oe B1 n and $n + 1$ are consecutive numbers or even × odd is even or even + 1 is odd

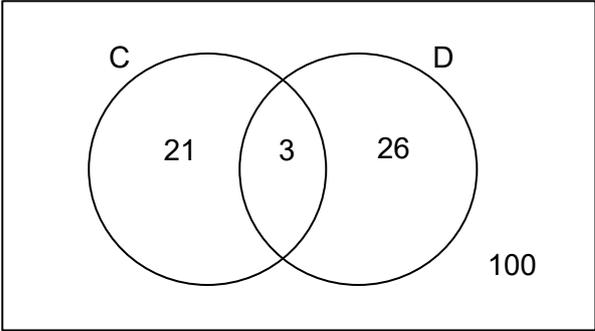| Q	Answer	Mark	Comments
20	Definitely true Cannot be true Might be true	B3	B1 for each any clear indication
	Additional Guidance		
	Only a cross in a row, mark the cross		
	A tick and cross(es) in a row – mark the tick		
	More than one tick in a row scores B0 for that row		

Q	Answer	Mark	Comments
21(a)	$\begin{pmatrix} 4 \\ 2 \end{pmatrix}$	B2	B1 $\begin{pmatrix} 4 \\ .... \end{pmatrix}$ or $\begin{pmatrix} .... \\ 2 \end{pmatrix}$ or (4, 2) SC1 $\begin{pmatrix} -4 \\ 2 \end{pmatrix}$ or $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$
	Additional Guidance		
	Ignore fraction lines		

Q	Answer	Mark	Comments
21(b)	$\begin{pmatrix} 9 \\ -6 \end{pmatrix}$	B1	
	Additional Guidance		
	$3\begin{pmatrix} 3 \\ -2 \end{pmatrix}$ or $\begin{pmatrix} 9 \\ -6 \end{pmatrix}$ in working with answer $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$		B0
	Ignore fraction lines		

Q	Answer	Mark	Comments
21(c)	$\begin{pmatrix} -1 \\ 2 \end{pmatrix}$	B1	

Q	Answer	Mark	Comments
22	Valid common denominator for subtraction with at least one numerator correct	M1	eg $\dfrac{22}{30} - \dfrac{9}{30}$ or $\dfrac{13}{30}$ or $\dfrac{110}{150} - \dfrac{45}{150}$ or $\dfrac{65}{150}$ condone decimals in numerator(s)
	their $\dfrac{13}{30} \times \dfrac{6}{5}$ or their $\dfrac{13 \div 5}{30 \div 6}$	M1	oe product their $\dfrac{13}{30}$ can be any single fraction, mixed number or decimal other than their $\dfrac{13}{30}$ inverted or $\dfrac{11}{15}$ or $\dfrac{3}{10}$ condone decimals in numerator(s) correct answer not in correct fraction form eg $\dfrac{5.2}{10}$ scores M1M1
	$\dfrac{13}{25}$ or $\dfrac{39}{75}$	A1	oe fraction SC2 $\dfrac{31}{25}$ oe fraction or mixed number

Additional Guidance	
If 10 or 15 is used as the common denominator, both numerators must be correct for the first mark	
Correct fraction in working with incorrectly simplified fraction on answer line	M2A1
Correct fraction in working with conversion to decimal on answer line	M2A0

Q	Answer	Mark	Comments
23	$\dfrac{10}{5} \leqslant x$ or $2 \leqslant x$ or $x < \dfrac{36}{5}$ or $x < 7.2$ or $x \leqslant 7$ or $x < 7$	M1	oe fully correct inequality is $\dfrac{10}{5} \leqslant x < \dfrac{36}{5}$ or $2 \leqslant x < 7.2$
	2 3 4 5 6 7 with no extras	A1	any order SC1 2 3 4 5 6 7 with one extra or any five of 2 3 4 5 6 7 with no extras or 10 15 20 25 30 35
	Additional Guidance		
	Ignore incorrect evaluations of 36 ÷ 5 if correct answer is given eg $2 \leqslant x < 7.5$ and answer 2 3 4 5 6 7		M1A1
	2 × 5 and 3 × 5 and 4 × 5 and 5 × 5 and 6 × 5 and 7 × 5 identified as only correct multiplications with no answer given implies M1		M1A0

Q	Answer	Mark	Comments
	$150 \div 3 \times 2$ or 100	M1	oe implied by 100 in the box and outside the circles
	$24 + 29 +$ their $100 - 150$ or $24 + 29 - (150 \div 3)$ or 3 or $24 -$ their 3 in C only and $29 -$ their 3 in D only	M1	oe their 100 must be > 97 0 < their 3 < 24
	21, 3, 26 and 100 in correct positions	A1	SC1 their 4 Venn diagram values total 150, allow a blank intersection to imply 0
24	**Additional Guidance**		
	Allow up to M1M1 for working outside Venn diagram but Venn diagram takes precedence over working		
	3 in the intersection with 100 in the box and outside the circles		M1M1
	3 in the intersection with a different number to 100 in the box and outside the circles		M0M1
			M1M1A1

Q	Answer	Mark	Comments
25	2^{11} (: 2^5) or $2^7 : 2^1$ or $2^4 : 2^{-2}$ or $\dfrac{a}{2^5}$ or 2048 : 32	M1	oe eg 16 : 0.25 or 128 : 2 2^n may be implied by a multiplication string of n 2s a can be any value other than 2^5
	$\dfrac{2^{11}}{2^5}$ (: 1) Or any division of 2 powers of 2 that would give 2^6 or 64	M1dep	oe left-hand side with one or two components eg $\dfrac{512}{8}$: 1 or $128 \times \dfrac{1}{2}$: 1 allow (: 1) to be (: 2^0) 2^n may be implied by a multiplication string of n 2s
	64 : 1	A1	
	Additional Guidance		
	$\dfrac{2^7 \times 2^4}{2^5}$ (: 1) with no further work		M1M0A0
	64 : 1 or 2^6 (: 1) could be seen from incorrect working eg $\dfrac{4^{11}}{2^5} = 2^6$ Answer 64 : 1		M1M0A0

Q	Answer	Mark	Comments
26	8 : 10	B1	

Q	Answer	Mark	Comments
27	cos identified or sin 30 identified	M1	oe
	$(\cos 60 =) \dfrac{1}{2}$ or $(\sin 30 =) \dfrac{1}{2}$	M1	oe may be seen in a table
	7	A1	
	Additional Guidance		
	Check diagram for working 7 written next to the x on the diagram is full marks unless contradicted		
	Cos can be identified by, for example, CAH circled in SOHCAHTOA		
	14 cos 60 $14 \times \dfrac{1}{2}$	M1M0 M1M1	
	Answer only 7	M1M1A1	
	Answer 7 from drawing a scale or full-sized diagram of the right-angled triangle	M0A0	