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Mark Scheme (Results)

March 2012

GCSE Mathematics (1380) Foundation
Paper 1F (Non-Calculator)

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NOTES ON MARKING PRINCIPLES

1 Types of mark

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

2 Abbreviations

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

3 No working

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

4 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

5 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

6 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

7 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

8 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

9 Parts of questions

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

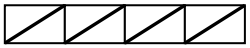
10 Money notation

Accepted with and without the “p” at the end.

11 Range of answers

Unless otherwise stated, when any answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1).

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		430	1	B1 cao
	(b)		1.8	1	B1 cao
	(c)	340	340 correctly marked	1	B1 cao
	(d)	4.9	4.9 correctly marked	1	B1 cao
2	(a)		480	1	B1 cao
	(b)	$\cancel{1}\cancel{2}\ ^{9}\cancel{0}\ ^{1}\cancel{5}$ $-\ 3\ 7$ $1\ 6\ 8$ **OR** $2\ 0\ ^{1}\cancel{5}$ $-\ 1\ \cancel{4}\ \cancel{3}\ 7$ $1\ 6\ 8$ **OR** 37 + 63 = 100 100 + 100 = 200 200 + 5 = 205	168	2	M1 for decomposition method A1 cao **OR** M1 for equal addition method A1 cao **OR** M1 for addition method to reach 100, 200 and 205 A1 cao **SC:** B1 for 2 digits correct in the answer with answer less than 205
	(c)		54	1	B1 cao

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
3	(a)		Correct diagram	1	B1 cao (may be amended pattern 3)
	(b)	<table><tr><td>**Pattern Number**</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>**Number of sticks**</td><td>5</td><td>9</td><td>13</td><td>**17**</td><td>**21**</td></tr></table>	17, 21	2	B1 for 17 or ft diagram B1 for 21 or '17'+ 4 evaluated
	(c)		33	1	B1 cao
	(d)		No + reason	1	B1 e.g. all number are sticks are odd
4	(a)		26 15	2	B1 cao B1 cao
	(b)		+ 6 or × 1.3	1	B1 for + 6 or × 1.3
5	(a)		Correct matching	3	B3 for all 4 correct (B2 for 2 or 3 correct) (B1 for 1 correct)
	(b)		6	1	B1 cao

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)	$\frac{8}{10}$	$\frac{4}{5}$	2	B2 cao (B1 for $\frac{8}{10}$ or 0.8 or 80%) **SC:** Award B1 for an answer of $\frac{1}{5}$
	(b)	$50 \div 10$ or $\frac{10}{100} \times 50$	5	2	M1 for $50 \div 10$ oe A1 cao (accept 5.00)
	(c)		0.75	1	B1 for 0.75 or .75
7		$24 \div 2 = 12$ $24 \div 3 = 8$ $24 - 12 - 8$ **OR** $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$ $\frac{5}{6} \times 24 = 20$ $24 - 20$ or $\frac{1}{6} \times 24 = 4$	4	3	M1 for $24 \div 2$ oe or $24 \div 3$ M1 (dep) for $24 - \frac{24}{2} - \frac{24}{3}$ A1 cao **OR** M2 for $24 - (\frac{1}{2} + \frac{1}{3}) \times 24$ oe **or** $\frac{1}{6} \times 24$ oe (M1 for $\frac{1}{2} + \frac{1}{3}$ or $\frac{5}{6}$ seen) A1 cao

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
8		4.8 × 4 = 19.2 3.6 × 3 = 10.8 19.2 + 10.8 **OR** 4.8 + 3.6 = 8.4 3 × 8.4 = 25.2 25.2 + 4.8	30.0	2	M1 for adding 4 lots of 4.8 and 3 lots of 3.6 oe A1 cao (accept 30) **OR** M1 for 4.8 × 4 + 3.6 × 3 A1 cao (accept 30) **OR** M1 for (4.8 + 3.6) × 3 + 4.8 A1 cao (accept 30)
9	(a) (b) (c)		$4x$ $3y$ $8p$	1 1 1	B1 cao B1 cao B1 cao
10		400 + 400 = 800 800 × 5 = 4000 4000 ÷ 1000 **OR** 400 m = 0.4 km 0.4 + 0.4 = 0.8 0.8 × 5	4	3	M2 for 5 × (400 + 400) oe (= 4000) or 5 × (400 ÷ 1000) oe (= 2) or 5 × 400 + 5 × 400 oe (= 4000) or adding 400 ten times (= 4000) (M1 for 400 + 400 oe (= 800) or 400 ÷ 1000 oe (= 0.4) or 5 × 400 oe (= 2000) A1 cao

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)	$10 \times 4 = 40$	40	2	M1 for 10×4 A1 cao
	(b)		Length 20 Width 8	2	M1 for 10×2 or 4×2 or sight of 20 or 8 A1 cao
12	(a)		12	1	B1 cao
	(b)		9	1	B1 cao
	(c)		Thursday: 4 circles	1	B1 for 4 circles oe
	(d)		Friday: 2 circles, 1 semicircle	1	B1 for 2 circles, 1 semicircle oe
13	(a)		Row A	1	B1 for Row A (accept A)
	(b)		19	1	B1 cao
	(c)		1 or 100 or both	1	B1 for 1 or 100 or both
	(d)		128	1	B1 cao

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		180	1	B1 180
	(b)(i)		40	2	B1 cao
	(ii)	Vertically opposite angles are equal or sight of 140 and sum of angles on a straight line is 180	Reason		B1 eg vertically <u>opposite</u> angles are equal eg sight of <u>140</u> **and** sum of angles on a straight <u>line</u> is <u>180</u>
	(c)		10	1	B1 cao
	(d)	180 – 80 – 40	60	2	M1 for 180 – 80 – '40' A1 ft from '40'
15	(a)	(S, C) (S, F) (S, O) (M, C) (M, F) (M, O)	list of 6 meals	2	B2 cao (B1 for at least 3 more correct pairs and no incorrect pairs or all correct pairs with repeats)
	(b)		$\frac{1}{6}$	1	B1 ft from (a)
	(c)		Reason	1	B1 e.g. lists more than one new combination e.g. there will be 9 different meals e.g. there will be 3 more meals

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			Correct quadrilateral	4	B1 for *AB* correct (tol ± 2mm) B1 for angle *A* or angle *B* correct (tol ± 2°) B1 for *AD* or *BC* correct (tol ± 2mm) B1 for fully correct within overlay
17	(a)	$\frac{2}{3}\times\frac{9}{10}=\frac{2\times9}{3\times10}=\frac{18}{30}=\frac{3}{5}$ **OR** $\frac{2}{3}\times\frac{9}{10}=\frac{\cancel{2}1}{\cancel{3}1}\times\frac{\cancel{9}3}{\cancel{10}5}=\frac{3}{5}$	$\frac{3}{5}$	2	M1 for $\frac{2\times9}{3\times10}$ oe (or $\frac{18}{30}$ or $\frac{9}{15}$ or $\frac{6}{10}$) A1 cao **OR** M1 for at least one correct cancel A1 cao
	(b)	$7\times\frac{2}{3}=\frac{14}{3}$ **OR** $\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}$	$4\frac{2}{3}$	2	M1 for $7\times\frac{2}{3}$ A1 for $4\frac{2}{3}$ oe or $\frac{14}{3}$ oe or 4.66 to 4.67 **OR** M1 for $\frac{2}{3}$ added 7 times A1 for $4\frac{2}{3}$ oe or $\frac{14}{3}$ oe or 4.66 to 4.67

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)(i)		$\frac{5}{12}$	3	B1 for $\frac{5}{12}$ oe
	(ii)		$\frac{7}{12}$		M1 for $1 - `\frac{5}{12}$, **or** $\frac{6+1}{5+6+1}$ **or** $\frac{7}{n}$ where $n > 7$ **or** $\frac{k}{12}$ where $k < 12$ A1 for $\frac{7}{12}$ oe eg. 0.58(33…) **or** ft (i) **SC** : Award B1 for 7 : 12 **or** 7 out of 12 **or** 7 in 12 oe
	(b)	$\frac{1}{3} = \frac{5}{15}$ or 1 : 3 = 5 : 15 15 – 5 – 6 = 4 **OR** $\frac{x+12}{5} = 3$ $x = 3$ 3 + 1	4	2	M1 for $\frac{1}{3} = \frac{5}{15}$ or 15 seen or 3 more green A1 cao **OR** M1 for $\frac{x+12}{5} = 3$ A1 cao **SC** : Award B1 for an answer of $\frac{4}{15}$

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19		$\frac{60.2 \times 0.799}{223} \approx$ $\frac{60 \times 0.8}{200} = \frac{48}{200} = 0.24$	0.24	3	B1 for any two of 60, 0.8, 200 seen **or** 48 seen M1 for at least one of 60, 0.8, 200 **and** a correct method to begin to evaluate eg. the numerator may be correctly evaluated **or** a correctly simplified fraction (NB. fraction may not be fully simplified) A1 for answer in the range 0.15 to 0.3 from correct working
20	(a)	$13x + 1 = 11x + 8$ $13x - 11x = 8 - 1$	3.5	2	M1 for showing the intention to isolate either the algebraic or the numerical terms in an equation e.g. $13x - 11x$ or $8 - 1$ A1 for 3.5 or $3\frac{1}{2}$ or $\frac{7}{2}$ oe
	(b)	$2y = 4 \times 5$	10	2	M1 for multiplying both sides by 5 or dividing both sides by 2 A1 cao **OR** M1 for $y = 4 \times \frac{5}{2}$ or $y = 4 \div \frac{2}{5}$ A1 cao

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		Correct frequency polygon	2	B2 for fully correct polygon. Points plotted at the midpoints ± ½ square (B1 for all points plotted accurately not joined or one error or one omission in plotting but joined) or all points plotted accurately and joined with first joined to last or all points at the correct heights and consistently within or at the ends of the intervals and joined (can include joining last to first to make a polygon).
	(b)	20 + 12 + 10 + 8 + 6	56	2	M1 for 20 + 12 + 10 + 8 + 6 A1 cao
	(c)		$0 \leq L < 10$	1	B1 for $0 \leq L < 10$ oe
22	(a)		$a + 2b$	2	M1 for $2a - a$ ($= a$) **or** $3b - b$ ($= 2b$) A1 for $a + 2b$ **or** $1a + 2b$
	(b)		$8m - 12n$	1	B1 cao

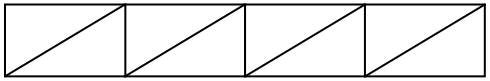
1380_1F

Question		Working	Answer	Mark	Notes
23	(a)		150	1	B1 for 150 or 150°
	(b)		95 + reasons	2	B1 for 95 or 95° B1 for full reasons eg alternate angles are equal **and** the sum of angles on a straight line is 180 eg the sum of angles on a straight line is 180 **and** corresponding angles are equal eg vertically opposite **and** co-interior (allied) angles add up to 180
24	(a)	<table><tr><td>x</td><td>−2</td><td>−1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>−8</td><td>**−3**</td><td>2</td><td>**7**</td><td>**12**</td><td>17</td></tr></table>	–3, 7, 12	2	B2 for all 3 correct (B1 for 1 or 2 correct)
	(b)		Correct graph	2	B2 for correct straight line between $x = –2$ and $x = 3$ (B1 for a line which passes through (0, 2) or for a line with gradient 5 or for at least 5 points from their table plotted correctly ± ½ square)
	(c)	Read off 10 from graph	1.6	1	B1 for 1.6 ± 0.1 or ft straight line segment with positive gradient ± 0.1

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25		Area of $ABCD = 12^2 = 144$ $AN = 3$ cm Area of $AND = \frac{1}{2} \times 3 \times 12 = 18$ cm^2 $MB = 6$ cm, $NB = 9$cm Area of $MBN = \frac{1}{2} \times 6 \times 9 = 27$ cm^2 Area of shaded region = 144 – 27 – 18 **OR** $AN = 3$ cm or $BN = 9$ cm Area of rect **X** on $CM = 6 \times 9 = 54$ Area of triangle **Y** $= \frac{1}{2} \times 6 \times 9 = 27$ Area of top triangle **Z** $= \frac{1}{2} \times 3 \times 12 = 18$ Area of shaded region = 54+27+18 **OR** $AN = 3$ cm or $BN = 9$ cm Area of $CNM = \frac{1}{2} \times 6 \times 9 = 27$ cm^2 Area of $CND = \frac{1}{2} \times 12 \times 12 = 72$ cm^2 Area of shaded region = 72 + 27	99	6	B1 for $AN = 3$ or $BN = 9$ or $CM = 6$ or $MB = 6$ M1 for area of $ABCD = 12 \times 12$ (= 144) M1 for area of $AND = \frac{1}{2} \times '3' \times 12$ (= 18) M1 for area of $MBN = \frac{1}{2} \times '6' \times '9'$ (= 27) M1 dep on one previous M1 for area of CMND = '144' – '18' – '27' A1 cao **OR** B1 for $AN = 3$ or $BN = 9$ or $CM = 6$ or $MB = 6$ M1 for area of rect on CM = '6' × '9' (= 54) M1 for area of adj $\Delta = \frac{1}{2} \times '6' \times '9'$ (= 27) M1 for area of top $\Delta = \frac{1}{2} \times '3' \times 12$ (= 18) M1 dep on one previous M1 for '54'+'27'+'18' A1 cao **OR** B1 for $AN = 3$ or $BN = 9$ or $CM = 6$ or $MB = 6$ M2 for area of $CNM = \frac{1}{2} \times '6' \times '9'$ (= 27) M1 for area of $CND = \frac{1}{2} \times 12 \times 12$ (= 72) M1 dep on one previous M1 for '72' + '27' A1 cao

1380_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25 (contd)		**OR** Area of $PDN = \frac{1}{2}\times'3'\times12 = 18$ cm^2 Area of $CMNP = \frac{1}{2}\times(12+'6')\times'9'$ $= 81$ cm^2 Area of shaded region $= 18 + 81$			**OR** B1 for $AN = 3$ or $BN = 9$ or $CM = 6$ or $MB = 6$ M1 for area of $PDN = \frac{1}{2}\times'3'\times12$ $(= 18)$ M2 for area of $CMNP = \frac{1}{2}\times(12+'6')\times'9'$ $(= 81)$ M1 dep on one previous M1 for '18' + '81' A1 cao

3.



Pattern number 4

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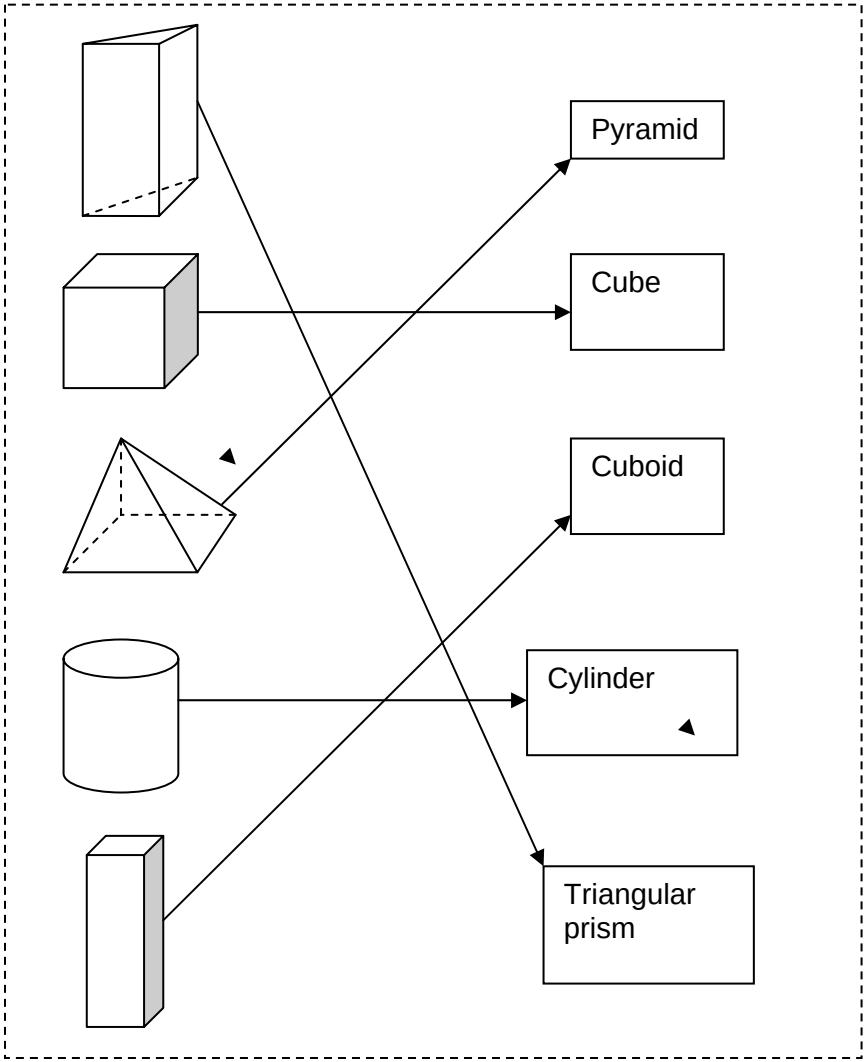

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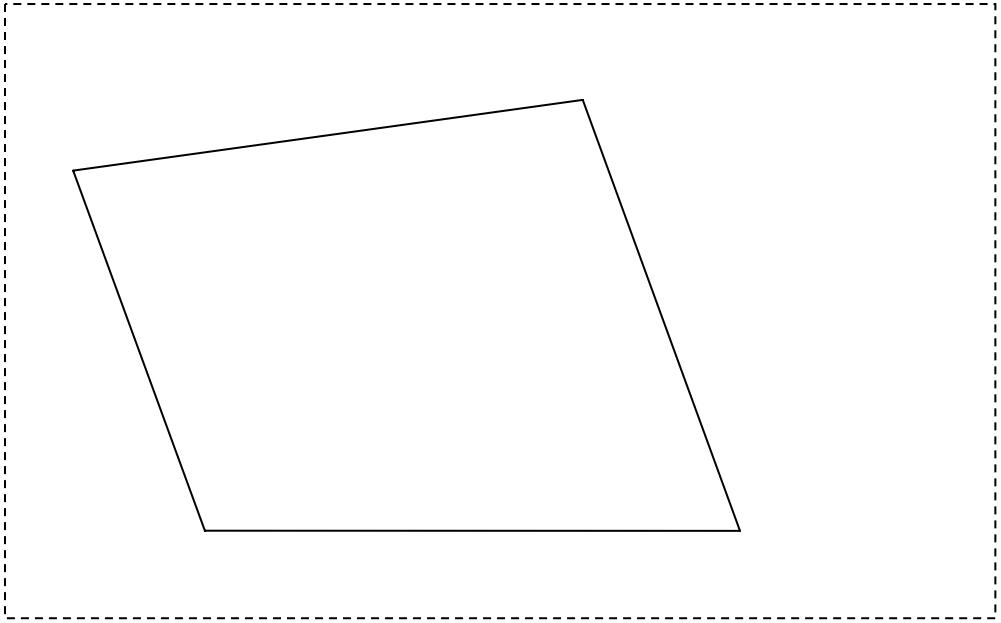

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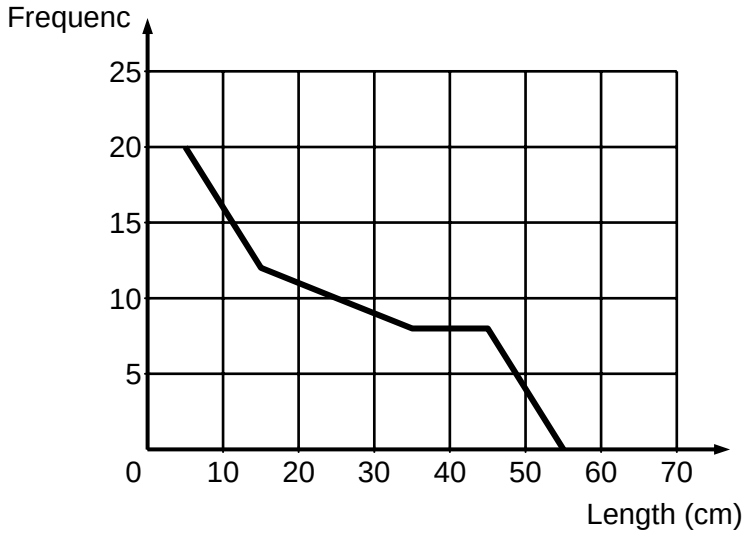

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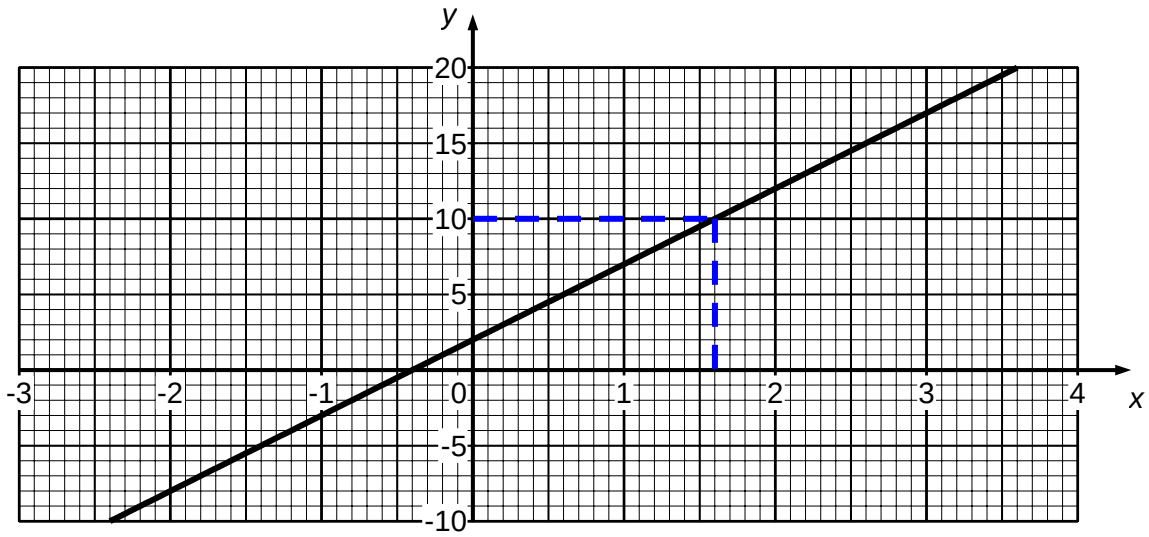

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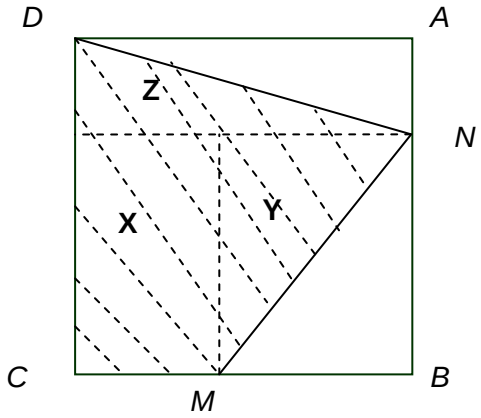

Diagram NOT accurately drawn

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