



Algebra Non Calculator

Revision Pack



40 minutes



40 marks

To use alongside mymaths.co.uk and livemaths.co.uk to revise for your GCSE exam

Q1. $v^2 = u^2 + 2as$

$u = 6$

$a = 2.5$

$s = 9$

(a) Work out a value of v .

$v = \dots\dots\dots$

(3)

(b) Make s the subject of the formula $v^2 = u^2 + 2as$

$s = \dots\dots\dots$

(2)

(Total 5 marks)

Q2. $-2 < n \leq 4$

n is an integer.

(a) Write down all the possible values of n .

$\dots\dots\dots$

(2)

(b) Solve the inequality $6x - 3 < 9$

$\dots\dots\dots$

(2)

(Total 4 marks)

Q3. $P = 4k - 10$

$P = 50$

(a) Work out the value of k .

.....

(2)

$y = 4n - 3d$

$n = 2$

$d = 5$

(b) Work out the value of y .

.....

(2)
(Total 4 marks)

Q4. This rule is used to work out the total cost, in pounds, of hiring a carpet cleaner.

Multiply the number of days' hire by 4

Add 6 to your answer

Peter hires a carpet cleaner.

The total cost is £18

(a) Work out for how many days he hires the carpet cleaner.

..... days

(2)

- (b) Write down an expression, in terms of n , for the total cost, in pounds, of hiring a carpet cleaner for n days.

.....

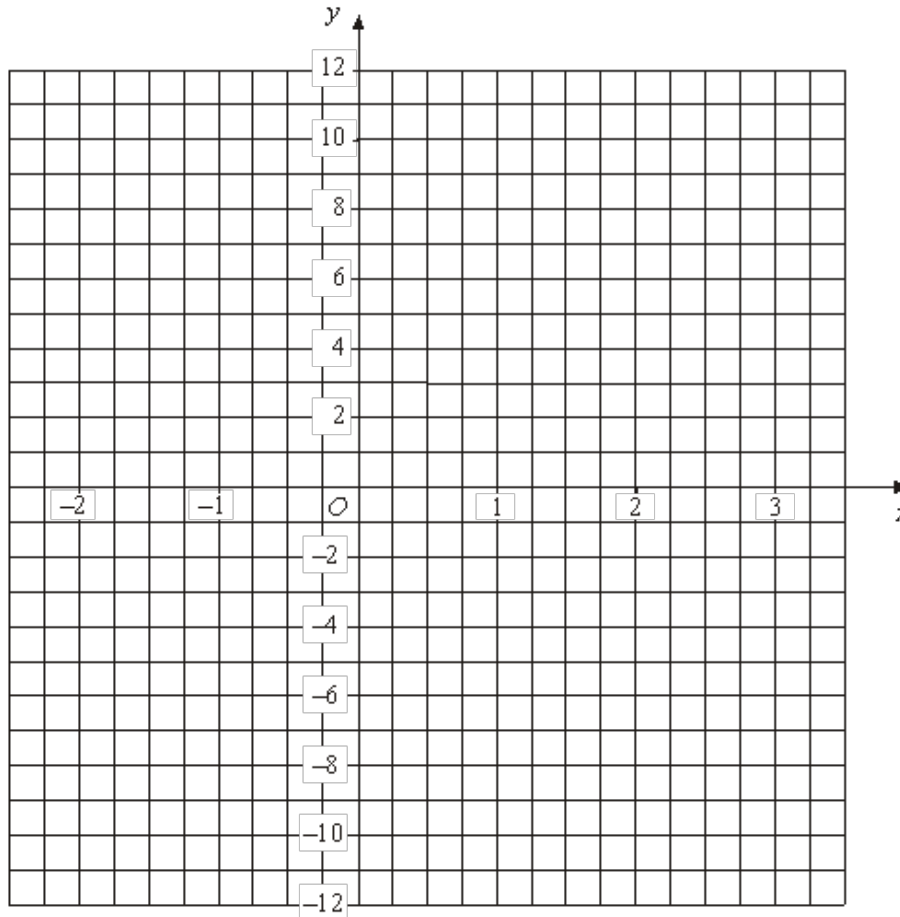
(2)
(Total 4 marks)

- Q5.** (a) Complete the table of values for $y = 4x - 3$

x	-2	-1	0	1	2	3
y	-11		-3			9

(2)

(b) On the grid, draw the graph of $y = 4x - 3$, for values of x from -2 to 3



(2)
(Total 4 marks)

Q6. (a) Simplify $4x + 3y - 2x + 5y$

.....

(2)

Compasses cost c pence each.
Rulers cost r pence each.

(b) Write down an expression for the total cost, in pence, of 2 compasses and 4 rulers.

..... pence

(2)
(Total 4 marks)

Q7. David buys some stamps.
Each stamp costs 25p.
The total cost of the stamps is £3

(a) Work out the number of stamps David buys.

.....

(2)

Adam, Barry and Charlie each buy some stamps.
Adam buys x stamps.
Barry buys three times as many stamps as Adam.

(b) Write down an expression, in terms of x , for the number of stamps Barry buys.

.....

(1)

Charlie buys 5 more stamps than Adam.

(c) Write down an expression, in terms of x , for the number of stamps Charlie buys.

.....

(1)

(Total 4 marks)

Q8. $2x^2 = 72$

(a) Find a value of x .

.....

(2)

(b) Express 72 as a product of its prime factors.

.....

(2)
(Total 4 marks)

Q9.

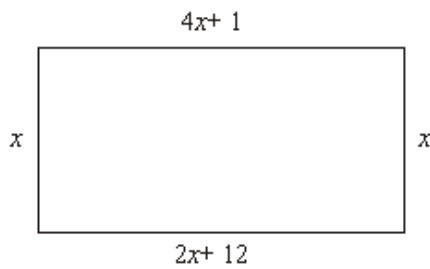


Diagram **NOT** accurately drawn

The diagram shows a rectangle.
All the measurements are in centimetres.

(a) Explain why $4x + 1 = 2x + 12$

.....

(1)

(b) Solve $4x + 1 = 2x + 12$

$x =$

(2)

(c) Use your answer to part (b) to work out the perimeter of the rectangle.

..... cm

(2)
(Total 5 marks)

Q10. Compasses cost c pence each.
Rulers cost r pence each.

Write down an expression for the total cost, in pence, of 2 compasses and 4 rulers.

..... pence

(Total 2 marks)

M1.

	Working	Answer	Mark	Additional Guidance
(a)	$v^2 = 6^2 + 2 \times 2.5 \times 9$	9	3	<p>M1 for correct substitution giving $6^2 + 2 \times 2.5 \times 9$ or better</p> <p>M1 (dep) for $\sqrt{81}$</p> <p>A1 cao accept ± 9</p> <p>[SC: B1 for answer of 81 if M0 scored]</p>
(b)	$v^2 - u^2 = 2as$ OR $\frac{v^2}{2a} = \frac{u^2}{2a} + s$	$\frac{v^2 - u^2}{2a}$ oe	2	<p>B2 for $\frac{v^2 - u^2}{2a}$ oe</p> <p>(B1 for $v^2 - u^2 = 2as$ oe or $\frac{v^2}{2a} = \frac{u^2}{2a} + s$ oe)</p> <p>Examples:</p> <p>$s = \frac{v^2 - u^2}{2} \div a$ gets B2</p> <p>$s = \frac{v^2 + u^2}{2a}$ gets B1</p> <p>$s = v^2 - u^2 - 2a$ without the intermediate</p> <p>$2as = v^2 - u^2$ gets B0</p>
Total for Question: 5 marks				

M2.

	Working	Answer	Mark	Additional Guidance
(a)		-1, 0, 1, 2, 3, 4	2	<p>B2 cao</p> <p>(B1 for at least 5 correct and not more than one incorrect integer)</p>
(b)	$6x < 9 + 3$	$x < 2$	2	<p>M1 for correctly separating x and non x terms or for dividing both sides by 6 [condone use of =, >, ≤, or ≥]</p> <p>A1 for $x < 2$, accept $x < \frac{12}{6}$</p> <p>[SC: B1 for $x = 2$ with no working. But 2 on the answer line with no working gets no marks]</p>
Total for Question: 4 marks				

M3.

	Working	Answer	Mark	Additional Guidance
(a)	$50 = 4k - 10$ $4k = 60$	15	2	M1 for $50 = 4k - 10$ oe A1 cao
(b)	$y = 4 \times 2 - 3 \times 5$	-7	2	M1 for $4 \times 2 - 3 \times 5$ oe A1 cao
Total for Question: 4 marks				

M4.

	Working	Answer	Mark	Additional Guidance
(a)	$(18 - 6) \div 4$	3	2	M1 for $18 - 6$ or 12 or $3 \times 4 + 6$ or $4n + 6 = 18$ or $10, 14, 18$ seen A1 for 3 cao
(b)		$4n + 6$	2	B2 for $4n + 6$ or (cost =) $4n + 6$ (B1 for $4n + a$ or $bn + 6$, where a and b are numbers ($b \neq 0$) or $n = 4n + 6$ or $4n + 6 = 18$ or £ $4n + 6$ or $4x + 6$)
Total for Question: 4 marks				

M5.

	Working							Answer	Mark	Additional Guidance
(a)	x	-2	-1	0	1	2	3	Table	2	B2 all 3 correct (B1 for 1 or 2 correct)
	y	-11	-7	-3	1	5	9			
(b)								Graph	2	B2 for correct line between $x = -2$ and $x = 3$ (B1 ft for plotting 5 of their points correctly or for a straight line with gradient 4 or for a straight line passing through $(0, -3)$)

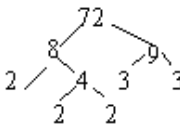
M6.

	Answer	Mark	Additional Guidance
(a)	$2x + 8y$	2	B2 for $2x + 8y$ oe [B1 for $2x$ or $8y$ seen] {Note: $-8y$ seen with no working gets B0 $4x + 2x = 6x$ gets B0 }
(b)	$2c + 4r$	2	B2 for $2c + 4r$ oe [B1 for $2c$ or $4r$ or seen] Ignore any Left Hand Side = $2c + 4r$ {Note: ignore units or use of 'p'}
Total for Question: 4 marks			

M7.

	Working	Answer	Mark	Additional Guidance
(a)	$300 \div 25$	12	2	M1 for $25 + 25 + 25 + \dots$ or “3” $\div 25$ or $\pounds 1 = 4$ oe A1 for 12 cao
(b)		$3x$	1	B1 for $3x$ or $3 \times x$
(c)		$x + 5$	1	B1 for $x + 5$ cao
Total for Question: 4 marks				

M8.

	Working	Answer	Mark	Additional Guidance
(a)	$x^2 = 72 \div 2$	6	2	M1 for $72 \div 2$ or 36 seen A1 6 or -6 or ± 6
(b)	$72 = 2 \times 36$ $= 2 \times 2 \times 18$ $= 2 \times 2 \times 2 \times 9$ 	$2 \times 2 \times 2 \times 3 \times 3$	2	M1 for a systematic method of at least 2 correct divisions by a prime number oe factor tree or a full process with one calculation error; can be implied by digits 2, 2, 2, 3, 3 on answer line A1 for $2 \times 2 \times 2 \times 3 \times 3$ or $2^3 \times 3^2$ oe [Note $1 \times 2 \times 2 \times 2 \times 3 \times 3$ gets M1 A0]
Total for Question: 4 marks				

M9.

	Working	Answer	Mark	Additional Guidance
(a)		opp sides are equal	1	B1 for a correct explanation
(b)	$4x - 2x = 12 - 1$	5.5	2	M1 for $4x + 1 - 1 - 2x = 2x + 12 - 1 - 2x$ oe A1 for 5.5 or 11/2 or 5½
(c)	'5.5' \times 2 + 4 \times '5.5' + 1 + 2'5.5' + 12	57	2	M1 for correct substitution of $x = '5.5'$ into the four expressions to find the sum of FOUR sides or $8x + 13$ seen A1 ft
Total for Question: 5 marks				

M10.

Answer	Mark	Additional Guidance
$2c + 4r$	2	B2 for $2c + 4r$ oe [B1 for $2c$ or $4r$ oe seen] Ignore any Left Hand Side = $2c + 4r$ {Note: ignore units or use of 'p'}
Total for Question: 2 marks		

