Q1. Solve

$4t + 1 = 19$

t = ...

(Total 2 marks)

Q2. (a) Solve $2(y - 3) = 8$.

y = ...

(2)

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

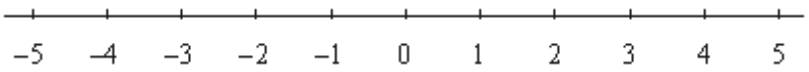
x = ...

(2)

(Total 4 marks)

Q3. (a) $x < -2$

Show this inequality on the number line.



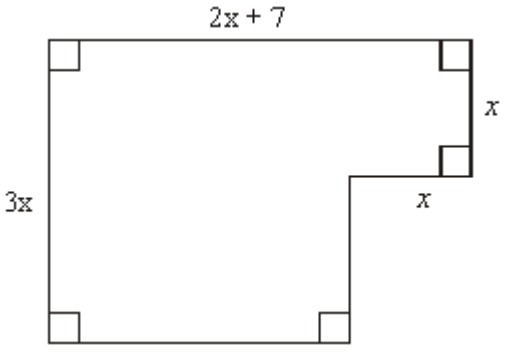
(2)

(b) Solve $5(y + 2) = 4 - 7y$

y = ...

(3)
(Total 5 marks)

Q4. The perimeter of this shape is 22 cm.



All measurements

are in centimeters

Find the area.

..... cm^2

(Total 5 marks)

Q5.

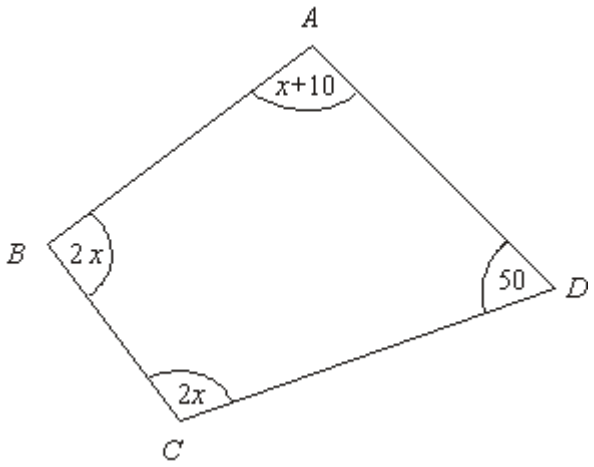


Diagram **NOT** accurately drawn

In this quadrilateral, the sizes of the angles, in degrees, are

$x + 10$
$2x$
$2x$
50

(a) Use this information to write down an equation in terms of x.

.....

(2)

(b) Work out the value of x.

x = ...

(3)
(Total 5 marks)

Q6. (a) Solve $2x = 10$

x = ...

(1)

(b) Solve $y - 3 = 8$

y = ...

(1)

(c) Solve $4t + 1 = 19$

t = ...

(2)

(d) Solve $4w + 8 = 2w + 7$

w = ...

(2)
(Total 6 marks)

Q7.

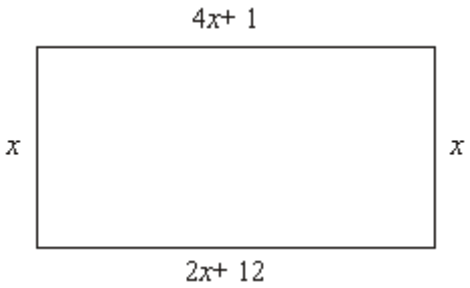


Diagram **NOT** accurately drawn

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)

Q8. (a) Solve $4x + 1 = 9$

x = ...

(2)

(b) Solve $2y - 1 = 12$

y = ...

(2)
(Total 4 marks)

Q9. (i) Simplify $13x - 24y + 17x + 14y$

.....

(ii) Solve $6(1 - 2x) - 3(x + 1) = 0$

.....

(Total 5 marks)

Q10. (a) Solve $5p - 16 = 4$

p = ...

(2)

(b) Solve $2q - 4 = 5q + 5$

q = ...

(2)

$y = 3(2x - 1) - 2(5 + 3x)$

(c) Find the value of y.

y = ...

(2)
(Total 6 marks)

M1.

Working	Answer	Mark	Additional Guidance
$4t = 18$	4.5	2	**M1** for subtracting 1 from both sides (or dividing by 4) **A1** for 4.5 oe
			Total for Question: 2 marks

M2.

	Working	Answer	Mark	Additional Guidance
(a)		7	2	**M1** for $2y - 6 = 8$ or $y - 3 = \frac{8}{2}$ **A1** cao
(b)	$4x - 2x = 12 - 1$	5.5	2	**M1** $4x - 2x = 12 - 1$ oe **A1** 5.5 oe
				Total for Question: 4 marks

M3.

	Working	Answer	Mark	Additional Guidance
(a)		See diagram	2	**B2** for correct directed line from –2, ±2 mm and

		below		an empty circle (**B1** for only one of these correct)
(b)	$5y + 10 = 4 - 7y$ $12y + 10 = 4$ $12y = -6$ $y = -½$	$-½$	3	**B1** for 5y + 10 **M1** for $5y + 7y = 4 -$ "10" oe **A1** for $-½$ oe **OR** **M1** for $y + 2 = \frac{4 - 7y}{5}$ oe **M1** for y + $"\frac{7y}{5}" = "\frac{4}{5}"$ – 2 oe **A1** for $-½$ oe
				Total for Question: 5 marks

M4.

Working	Answer	Mark	Additional Guidance
$2(3x + 2x + 7) = 22$ **OR** $3x + 2x + 7 + x + x + 2x + x + 7 = 22$ $10x + 14 = 22$ $10x = 8$ $x = 0.8$ Area = $2.4 \times 8.6 - 1.6 \times 0.8$ **OR** $0.8 \times 08 + 2.4 \times 7.8$	19.36 cm^2	5	**M1** for attempt to find an expression of the perimeter **A1** for $10x + 14 = 22$ **A1** for $x = 0.8$ **M1** for attempt to find area **A1** for 19.36
			Total for Question: 5 marks

M5.

	Working	Answer	Mark	Additional Guidance
(a)	$2x + 2x + x + 10 + 50 = 360$	$5x + 60 = 360$	2	**M1** 3 or 4 out of $2x$, $2x$, x, $+ 10$, 50 added together **A1** $2x + 2x + x + 10 + 50 = 360$ oe including $x = 60$
(b)	$5x + 60 = 360$ $5x = 300$	60	3	**M1** for isolating their terms in x **M1** for dividing their numerical term by the coefficient of their x term **A1** cao All the marks in (b) may be given for work done in answering (a) providing there is no contradiction Candidates can score full marks in (b) independent of their answer in (a) (e. g. by starting again)
				Total for Question: 5 marks

M6.

	Working	Answer	Mark	Additional Guidance
(a)		5	1	**B1** cao
(b)		11	1	**B1** cao
(c)	$4t = 18$	4.5	2	**M1** for subtracting 1 from both sides (or dividing by 4) **A1** for 4.5 oe

(d)	$2w + 8 = 7$	$-\frac{1}{2}$	2	**M1** for an intention to take $2w$ from both sides or take 8 from both sides **A1** for $-\frac{1}{2}$ oe
				Total for Question: 6 marks

M7.

	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' × 2 + 4 × '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

M8.

	Working	Answer	Mark	Additional Guidance
(a)	$4x = 9 - 1$ $\frac{4x}{4} + \frac{1}{4} = \frac{9}{4}$	2	2	**M1** for $4x = 9 - 1$ or $\frac{4x}{4} + \frac{1}{4} = \frac{9}{4}$ or a clear intention to either subtract 1 from both sides of the

				equation or to divide each term by 4 **A1** for 2 (accept $\frac{8}{4}$)
(b)	$2y = 12 + 1$ $\frac{2y}{2} - \frac{1}{2} = \frac{12}{2}$	6.5	2	**M1** $2y = 12 + 1$ or $\frac{2y}{2} - \frac{1}{2} = \frac{12}{2}$ or a clear intention to either add 1 to both sides of the equation or divide each term by 2 **A1** 6.5 oe (accept $\frac{13}{2}$)
				Total for Question: 4 marks

M9.

	Working	Answer	Mark	Additional Guidance
(i)		$30x - 10y$	5	**B2** cao (If no marks then B1 $30x$, B1 $10y$)
(ii)	$6 - 12x - 3x - 3 = 0$ $3 - 15x = 0$ $15x = 3$	$\frac{1}{5}$		**M1** for correct multiplication of brackets to get $6 - 12x - 3x - 3$ **A1** $3 - 15x = 0$

				Total for Question: 5 marks

M10.

	Working	Answer	Mark	Additional Guidance
(a)	$5p = 20$	4	2	**M1** add 16 to both sides **A1** cao
(b)	$– 4 – 5 = 5q – 2q$	–3	2	**M1** for correct method isolate ± 3q **A1** cao
(c)	$6x – 3 − 10 – 6x =$	–13	2	**M1** at least one expansion correct **A1** cao
				Total for Question: 6 marks

E1. Not surprisingly, the majority of the candidates were able to solve the equation correctly. Some used an algebraic approach whereas others started with 19 and used inverse operations.

E2. Part (a) was generally well done with the majority of candidates expanding the bracket correctly and then going on to solve the equation

Part (b) was also dealt with correctly by most candidates, although again a small number were let down by the arithmetic and could not go correctly from $2x = 11$ to a final answer.

E3. Showing the inequality on the number line was not done well with the majority unable to gain either of the two marks. An open circle was needed to be drawn on the line, or close to it, at the position indicated by –2. A line with an arrow was then required to show the direction in which the valid values lay. Lack of attention to detail in drawing both was a contributory factor in the loss of marks.

Solving the algebraic equation in part (b) did allow students with a flair for algebra to demonstrate their ability and there were some exceptionally good correct solutions. However many students still struggle with trying to solve equations. Many scored the first mark by correctly expanding $5(y + 2)$ but then failed to complete their solution correctly. The most common error was to write $5y – 7y$ or $7y – 5y$ which resulted in no more marks being scored. A few used flow diagrams which were not appropriate for this type of equation.

Overall, 67% failed to score any marks on this question with a further 18% scoring just 1 mark.

E5. This was a linked question in which in part (a) candidates had to derive an equation and then solve the equation in part (b). Many candidates did in fact produce the equation $5x + 60 = 360$ as their answer. These candidates usually went on to solve the equation correctly. A few candidates did simplify the expression $x + 2x + 2x + 10 + 50$ as $4x^2 + 60$

Of those candidates who could not do part (a), a sizable number were still able to find the value of x in part (b) by judicious use of the calculator. They earned the marks available for part (b). Many candidness put down an incomplete answer to part (a) by just writing the expression $5x + 60$. Many of them went on to find the value of x as 60 in part (b) but sadly a minority then made up and solved the equation $5x + 60 = 0$

E6. Part (a) was mostly correct. The most common incorrect response was writing '8'. Others left the answer embedded in the equation, writing '2 × 5' or '2 × 5 = 10'. No marks could be scored for these unless the 5 was clearly indicated as their answer.

Part (b) was also mostly correct although 5 was seen every so often where candidates had subtracted 3 rather than add it on to 8.

In part (c) over 60% of the candidates scored both marks for a correct answer, many of these coming from a numerical rather than an algebraic approach or on many occasions without any working shown at all. A common incorrect answer was 14 when candidates subtracted 1 and then subtracted 4 instead of dividing by 4.

In part (d) it was clear that the majority of candidates lacked an understanding of algebraic methods with over 80% of the candidates not scoring any marks at all. A considerable number of candidates made no attempt at all. The most common errors were to reach 6w or 15, often both. Many failed to set out their work as a series of equations. Some showed $4w - 2w = 2w$ and $7 - 8 = -1$ but then failed to equate these two value. Others attempted trial and improvement but seldom got the correct answer from this method.

E7. Foundation

In part (a), candidates often failed to gain the mark when their explanation was unclear. For example, comments like "because the are the same" are ambiguous. To gain the mark, explanations needed to refer to the sides of the rectangle and not the equation.

As in question 24, algebraic methods were few and far between, many attempts leading to an answer of 6.5 ($2x = 12 + 1$). Some candidates correctly found x to be 5.5 and then tried to use this result to answer part (a). Again, in this question, trial and improvement

methods were common.

Having found a value for x in part (b), many failed to use it in an attempt to find the perimeter in part (c). Often just the lengths of two sides were calculated leading to incorrect answers of 11 (5.5 + 5.5) or 46, the sum of the two longer sides.

Higher

In part (a) the majority of candidates were able to give a correct explanation although some gave parallel sides rather than equal sides as the reason. Another common error was for candidates to substitute x = 5.5 into both expressions instead of using the properties of a rectangle. Only the weakest candidates failed to gain any marks in part (b). The most common errors resulted from incorrect manipulation and often led to $2x$ = 13 (instead of $2x$ = 11). Some candidates failed to divide 11 by 2 correctly. Those who resorted to trial and improvement were rarely successful. Although there were many fully correct answers in part (c) some candidates struggled to substitute correctly into each of the four expressions. Many made calculation errors. Only a small number of candidates stated that the total perimeter was $8x$ + 13 and then made just the one substitution.

E8. Very many candidates employed trial and improvement methods in their attempt to solve these two linear equations. In part (a), this lead to many embedding the answer of 2 in their working and giving an answer of '9' on the answer line. This often gained one mark.

In part (b) such methods were less successful with the answer being a fraction. Incorrect answers of 6 or 7 or 6r1 were commonplace.

Many candidates are clearly unaware of the meaning of $2x$ and $2y$, using them as 2 + x and 2 + y respectively, giving answer of (a) 4 and (b) 11. (a) 8, (b) 13 were also common wrong answers.