

1. Solve.

(a) $4x - 3 = 17$

.....[2]

(b) $19 = 2x + 8$

.....[2]

2. (a) Simplify.

(i) $2b + 3b$

.....[1]

(ii) $4c + 5d + c - 3d$

.....[2]

(b) Use the formula $P = 3x + 4y$ to find P when $x = 5$ and $y = 2$.

.....[2]

3. (a) Multiply out.

$4(x + 2)$

.....[1]

(b) Factorise.

$6x + 15$

.....[1]

4. Solve.

(a) $11 = \frac{x}{2}$

..... [1]

(b) $4x - 1 = 19$

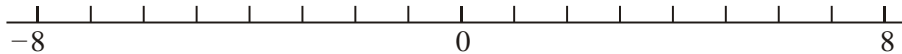
..... [2]

5. (a) Solve this inequality.

$$\frac{3x+2}{5} < 4$$

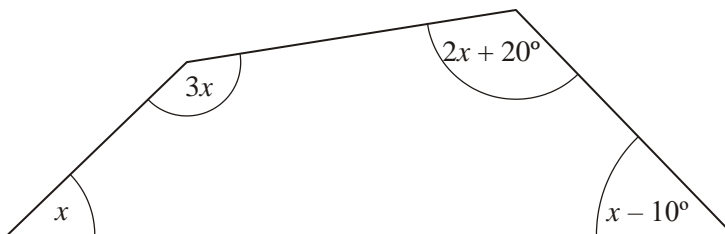
.....[3]

- (b) Represent the solution to the inequality $\frac{3x+2}{5} < 4$ on the number line below.



[1]

6. The angles of a quadrilateral are x , $3x$, $2x + 20^\circ$ and $x - 10^\circ$.



Not to scale

- (a) The sum of the angles of a quadrilateral is 360° .

Use this information to write down an equation in x .

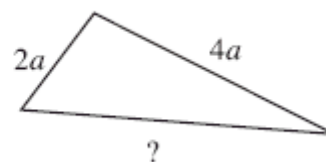
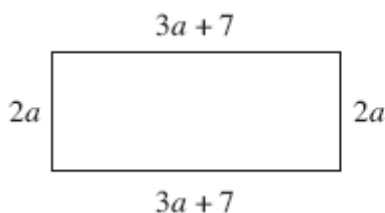
.....[1]

- (b) Solve your equation to find x .
Hence find the size of the largest angle in the quadrilateral.

$x = \dots\dots\dots^\circ$

largest angle $\dots\dots\dots^\circ$ [3]

7. **Not to scale**



The perimeter of this rectangle is equal to the perimeter of this triangle.

Find an expression for the missing length in the triangle.

.....[3]

8. (a) Simplify.

$$2a - 6c + 5a + c$$

.....[2]

(b) Multiply out.

$$5(x - 4)$$

.....[1]

(c) Factorise.

$$x^2 + 3x$$

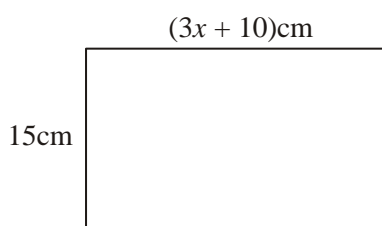
.....[1]

(d) Rearrange $y = 5x - 2$ to make x the subject.

.....

[2]

9. The perimeter of this rectangle is 86 cm.



Form an equation in x and solve it to find x .

.....

[3]

10. (a) Solve.

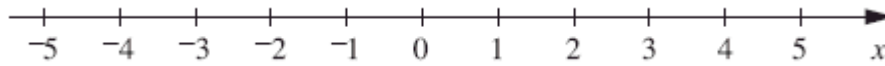
$$2(x + 7) = 6x$$

.....[3]

(b) Solve this inequality.

$$2x + 6 < 0$$

Represent your solution on the number line.



[3]

11. Rearrange this formula to make x the subject.

$$y = 3x^2 + 4$$

.....[3]

12. (a) Factorise.

$$5x - 3x^2$$

.....[2]

(b) Solve.

(i) $3(2x + 5) = 9$

.....[3]

(ii) $6x - 10 = 2x + 8$

.....[3]

13. (a) Solve.

$$6x > x + 10$$

.....[2]

(b) Factorise and solve this equation.

$$x^2 - 7x + 6 = 0$$

.....[3]

14. Rearrange $x = 4y + 1$ to make y the subject.

.....[2]

15. (a) Solve.

(i) $\frac{x}{5} = 15$

.....[1]

(ii) $3x + 13 = 2(x + 9)$

.....[3]

(b) Rearrange this formula to make b the subject.

$$P = 2b + 2h$$

.....[2]

16. Write down the integers, n , which satisfy this inequality.

$$4 \leq 2n < 11$$

.....[3]

17. (a) Solve.

$$3(2x + 7) = 15$$

.....[3]

(b) Expand.

$$(x + 5)(x - 3)$$

.....[2]

18. (a) Factorise and solve.

$$x^2 - 5x - 14 = 0$$

.....

(b) Solve algebraically.

$$5x - 2y = 19$$

$$6x + y = 16$$

$x =$

$y =$ [3]

19. Solve.

$$3x^2 - 8x + 2 = 0$$

Give your answers correct to 2 decimal places.

.....[3]

20. The expression $x^2 - 4x - 21$ can be written in the form $(x - a)^2 - b$.

(a) Find the values of a and b .

$$a = \dots\dots\dots$$

$$b = \dots\dots\dots[3]$$

(b) Hence find the minimum value of the expression and the value of x at which it occurs.

minimum value..... when $x = \dots\dots\dots[2]$

21. (a) Multiply out and simplify.

$$(2x - 1)(3x + 2)$$

.....[3]

(b) (i) Factorise.

$$x^2 - 7x + 12$$

.....[2]

(ii) Hence simplify.

$$\frac{2x^2 - 6x}{x^2 - 7x + 12}$$

.....[3]

22. (a) (i) Factorise.

$$x^2 + 9x + 20$$

.....[2]

(ii) Solve.

$$x^2 + 9x + 20 = 0$$

.....[1]

(b) Solve algebraically these simultaneous equations.

$$\begin{aligned} 14x + 3y &= 1 \\ 4x - y &= 4 \end{aligned}$$

$x =$

$y =$ [3]

23. (a) Write $x^2 - 6x + 7$ in the form $(x - a)^2 - b$.

.....[3]

(b) Hence state the minimum value of $x^2 - 6x + 7$.

.....[1]

(c) Using your answer to part (a), or otherwise, solve the equation $x^2 - 6x + 7 = 0$.
Leave your answers in the form $x = c \pm \sqrt{d}$.

.....[2]

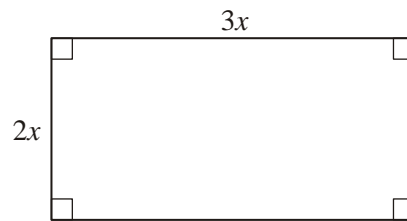
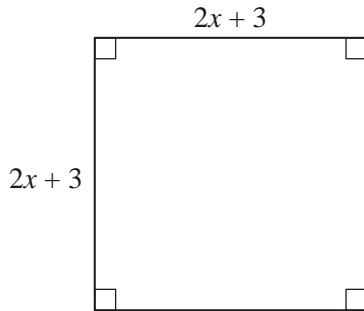
24. (a) Expand and simplify.

$$(2x + 3)^2$$

.....

[3]

(b) All lengths in these diagrams are in centimetres.



(i) The area of the square is 19 cm^2 more than the area of the rectangle.
Show that

$$x^2 - 6x + 5 = 0.$$

.....

[2]

(ii) Solve by factorising.

$$x^2 - 6x + 5 = 0$$

.....[3]

(iii) Write down the two possible lengths of the sides of the square.

.....cm

.....cm[1]