1. (a) Complete this factorisation.

$$x^2 - x - 6 = (x + 2)(\ldots\ldots\ldots\ldots)$$

[1]

(b) Hence solve.

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

.....

[1]

2. (a) Factorise.

$$3x^2 + 10x - 8$$

.....

[2]

(b) By completing the square, solve this equation.

$$x^2 - 12x + 4 = 0$$

Leave your answer in the form $c \pm \sqrt{d}$.

.....

[4]

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

.....

[3]

(b) Use your answer to part (**a**) to write down the minimum value of

$$x^2 + 6x - 6.$$

.....

[1]

4. Solve algebraically these simultaneous equations.

$$y = 5 - x^2$$
$$x + y = 3$$

$x =$ ..... $y =$ .....

$x =$ ..... $y =$ .....

[5]

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

(a) Find the values of a and b.

$a =$ .....

$b =$ .....

[3]

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

minimum value..... when x =.....

[2]

6. (a) Factorise.

$$x^2 - 3x - 10$$

.....

[2]

(b) Hence solve.

$$x^2 - 3x - 10 = 0$$

.....

[1]

7. (a) Factorise and solve.

$$x^2 - x - 30 = 0$$

.....

[3]

(b) Solve this equation, leaving your answers in surd form.

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

.....

[3]

8. (a) By completing the square, express $x^2 + 8x + 25$ in the form $(x + a)^2 + b$.

.....

[3]

(b) Hence state the minimum value of $x^2 + 8x + 25$.

.....

[1]

9. (a) Solve.

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

.....

[3]

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

$$m = \sqrt{\frac{p}{7}}$$

.....

[2]

10. (a) By completing the square, express $x^2 + 12x - 10$ in the form $(x + a)^2 + b$.

.....

[3]

(b) Hence state the minimum value of $x^2 + 12x - 10$.

.....

[1]

11. (a) Factorise.

$x^2 - 2x - 15$

.....

[2]

(b) Hence solve this equation.

$x^2 - 2x - 15 = 0$

.....

[1]

12. (a) Expand and simplify.

$(2x + 3)(x - 5)$

.....

[3]

(b) Solve by factorising.

$5x^2 - 12x + 7 = 0$

.....

[3]

13. Find algebraically the coordinates of the points of intersection of the curve $y = x^2 + 7x + 9$ and the line $y = x + 4$.

(..... , ...) and (..... , ...)

[5]

14. Solve.

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

Give your answers correct to two decimal places.

.....

[3]

15. (a) Solve algebraically.

$$\frac{2x+7}{2} - \frac{3(4x+1)}{5} = 5$$

.....

[4]

(b) Factorise and solve this equation.

$3x^2 - 7x + 2 = 0$

.....

[3]

16. Solve by factorisation.

$x^2 + x - 20 = 0$

.....

[3]

17. (a) Factorise and solve.

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

.....

[3]

(b) Solve algebraically.

$5x - 2y = 19$
$6x + y = 16$

x = ...

y = ...

[3]

18. Solve algebraically these simultaneous equations.

$y = 5x^2 + 4x - 5$

$2x + y = 3$

x = ... y = ...

x = ... y = ...

[5]

19. (a) Expand and simplify.

$(4x + 7)(x + 5)$ ..... **[2]**

(b) Hence solve this equation.

$$\frac{x-5}{x+5} = 4x + 7$$

..... **[4]**

20. (a) By completing the square, express $x^2 - 8x + 10$ in the form $(x - a)^2 - b$.

.....

[3]

(b) Hence state the minimum value of $x^2 - 8x + 10$.

.....

[1]