

## UNIT 10 *Equations*

## Mental Tests

### Mental Test 10.1

- Put the numbers  
-3, -7, 2, -1, -6  
in increasing order. (-7, -6, -3, -1, 2)
- What is -3 times -5? (15)
- Simplify  $2x + y + 3x - 2y$ . ( $5x - y$ )
- Expand  $2(x - 4)$ . ( $2x - 8$ )
- Solve for  $x$ :
  - $x - 3 = 7$  (10)
  - $3x = 12$  (4)
  - $2x + 1 = 9$  (4)
- Expand:
  - $2x(1 + x)$  ( $2x + 2x^2$ )
  - $(x + 1)(x + 2)$  ( $x^2 + 3x + 2$ )
  - $(x + 4)(x - 4)$  ( $x^2 - 16$ )

### Mental Test 10.3

- Solve for  $x$ ,
  - $5x = 15$  (3)
  - $3x - 2 = 16$  (6)
- Expand
  - $(x + 4)(x - 1)$  ( $x^2 + 3x - 4$ )
  - $(3 - x)(3 + x)$  ( $9 - x^2$ )
- Solve for  $x$  and  $y$ :
 
$$\begin{aligned} x + y &= 3 \\ x - y &= 1 \end{aligned} \quad (x = 2, y = 1)$$
- Factorise:
  - $x^2 - 5x$  ( $x(x - 5)$ )
  - $x^2 + 4x + 4$  ( $(x + 2)^2$ )
- Factorise and hence solve
 
$$x^2 - x - 12 = 0 \quad (x = 4, x = -3)$$

### Mental Test 10.2

- Put the numbers  
-10, 4, -2, -7, -1  
in increasing order. (-10, -7, -2, -1, 4)
- What is -4 times 5? (-20)
- Simplify  $y - x + 3y - 2x$ . ( $4y - 3x$ )
- Expand  $3(x + 3)$ . ( $3x + 9$ )
- Solve for  $x$ :
  - $x + 2 = 5$  (3)
  - $4x = 12$  (3)
  - $3x - 1 = 14$  (5)
- Expand:
  - $3x(x - 1)$  ( $3x^2 - 3x$ )
  - $(x - 1)(x + 2)$  ( $x^2 + x - 2$ )
  - $(x + 2)(x - 2)$  ( $x^2 - 4$ )

### Mental Test 10.4

- Solve for  $x$ ,
  - $4x = 20$  (5)
  - $5x + 3 = 18$  (3)
- Expand
  - $(x + 2)(x - 3)$  ( $x^2 - x - 6$ )
  - $(x + 5)(x - 5)$  ( $x^2 - 25$ )
- Solve for  $x$  and  $y$ :
 
$$\begin{aligned} x + 2y &= 5 \\ x + y &= 3 \end{aligned} \quad (x = 1, y = 2)$$
- Factorise:
  - $2x^2 - 4x$  ( $2x(x - 2)$ )
  - $x^2 - 6x + 9$  ( $(x - 3)^2$ )
- Factorise and hence solve
 
$$x^2 + 3x - 10 = 0 \quad (x = 2, x = -5)$$