

# UNIT 16 *Inequalities*

# Mental Tests

## Mental Practice 16.1

- Write down all the integer solutions to :
  - $3 \leq x \leq 6$  (3, 4, 5, 6)
  - $4 < x \leq 7$  (5, 6, 7)
  - $-2 \leq x < 2$  (-2, -1, 0, 1)
  - $-7 < x < -5$  (-6)
- Write down a fraction which satisfies:
  - $\frac{1}{2} < x < \frac{3}{4}$  (e.g.  $\frac{5}{8}$ )
  - $0 < x < \frac{1}{9}$  (e.g.  $\frac{1}{10}$ )
- Solve the inequalities:
  - $2x + 1 > 3$  ( $x > 1$ )
  - $5x - 7 \leq 8$  ( $x \leq 3$ )
  - $4 - x \geq 2$  ( $x \leq 2$ )
- List all integer solutions for  $x$  which satisfy  $x^2 \leq 4$ . (-2, -1, 0, 1, 2)

## Mental Practice 16.2

- Write down all the integer solutions to :
  - $5 \leq x \leq 8$  (5, 6, 7, 8)
  - $3 \leq x < 7$  (3, 4, 5, 6)
  - $-3 < x \leq 1$  (-2, -1, 0, 1)
  - $-4 < x < -1$  (-3, -2)
- Write down a fraction which satisfies:
  - $\frac{3}{4} < x < 1$  (e.g.  $\frac{7}{8}$ )
  - $0 < x < \frac{1}{5}$  (e.g.  $\frac{1}{6}$ )
- Solve the inequalities:
  - $x + 4 \geq 6$  ( $x \geq 2$ )
  - $3x - 2 < 7$  ( $x < 3$ )
  - $7 - 2x > 3$  ( $x < 2$ )
- List all integer solutions for  $x$  which satisfy  $4 \leq x^2 \leq 16$ . (-4, -3, -2, 2, 3, 4)

## Mental Test 16.3

- Solve the following inequalities:
  - $x + 3 \geq 10$  ( $x \geq 7$ )
  - $2x - 9 \leq 5$  ( $x \leq 7$ )
  - $15 - 3x \leq 6$  ( $x \geq 3$ )
- List all integer solutions for  $x$  when:
  - $x^2 < 9$  (2, -1, 0, 1, 2)
  - $16 \leq x^2 \leq 36$  (6, -5, -4, 4, 5, 6)
  - $30 \leq x^2 \leq 50$  (-6, -7, 7, 6)
- Does the point (2, 1) satisfy the inequality  $y < x + 1$ ? (No)
- Solve the following inequalities:
  - $x^2 < 4$  ( $-2 < x < 2$ )
  - $x(x - 2) > 0$  ( $x < 0$  or  $x > 2$ )
  - $(x - 1)(x - 3) \leq 0$  ( $1 \leq x \leq 3$ )

## Mental Test 16.4

- Solve the following inequalities:
  - $2x + 5 \leq 7$  ( $x \leq 1$ )
  - $3x - 7 > 11$  ( $x > 6$ )
  - $9 - 2x \geq 3$  ( $x \leq 3$ )
- List all integer solutions for  $x$  when:
  - $x^2 \leq 4$  (-2, -1, 0, 1, 2)
  - $1 \leq x^2 \leq 16$  (-4, -3, -2, -1, 1, 2, 3, 4)
  - $20 \leq x^2 \leq 40$  (-6, -5, 5, 6)
- Does the point (-1, 2) satisfy the inequality  $y \leq 1 - 2x$ ? (Yes)
- Solve the following inequalities:
  - $x^2 \leq 9$  ( $-3 \leq x \leq 3$ )
  - $(x + 1)x < 0$  ( $-1 < x < 0$ )
  - $(x + 2)(x - 1) \geq 0$  ( $x > 1$  or  $x < -2$ )