UNIT 16 *Inequalities* Mental Tests

Mental Practice 16.1

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

Mental Practice 16.2

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

Mental Test 16.3

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

Mental Test 16.4

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