

Linear Inequalities in One Unknown

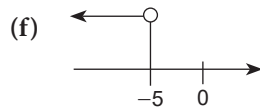
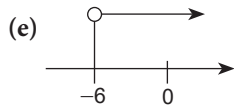
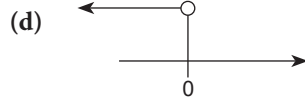
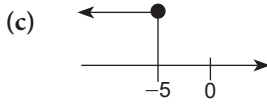
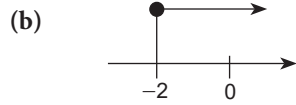
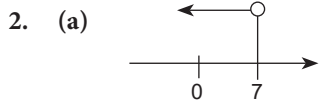
Solution

1. (a) $x \leq 8$

(b) $x > -2$

(c) $x \geq 2$

(d) $x < -4$



3. (a) $a < -5$

(b) $x + 100 \leq 5$

(c) $4w \geq -11$

(d) $p \leq -2$

4. (a) $x \leq -7$

(b) $2y + 5 < 2$

(c) $p \geq -3$

(d) $q \geq -1$

5. (a) $x > 2.5$

(b) No. It is because $\frac{7}{3} < 2.5$. Therefore $\frac{7}{3}$ is not a solution.

(c) No. It is because $\frac{5}{2} = 2.5$. Therefore $\frac{5}{2}$ is not a solution.

(d) Yes. It is because $\frac{11}{4} > 2.5$. Therefore $\frac{11}{4}$ is a solution.

6. (a) $<$

(b) $<$

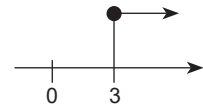
(c) $>$

(d) $<$

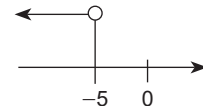
(e) $>$

(f) $>$

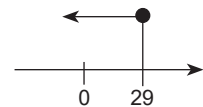
7. $2a + 8 \geq 23 - 3a$
 $2a + 3a \geq 23 - 8$
 $5a \geq 15$
 $a \geq 3$



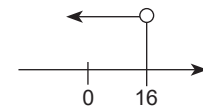
8. $\frac{2y - 11}{-3} > 7$
 $2y - 11 < -21$
 $2y < -10$
 $y < -5$



9. $3(2k - 3) \leq 5(k + 4)$
 $6k - 9 \leq 5k + 20$
 $6k - 5k \leq 20 + 9$
 $k \leq 29$



10. $\frac{7x + 5}{3} \leq 2x + 7$
 $7x + 5 \leq 6x + 21$
 $x \leq 16$



11. Let y be the smaller odd number.

$$y + y + 2 < 74$$

$$2y + 2 < 74$$

$$2y < 72$$

$$y < 36$$

\therefore The maximum value of the smaller odd number is 35.

12. Let y be the width. $2(3y + 5 + y) \leq 52$

$$4y \leq 21$$

$$y \leq \frac{21}{4}$$

\therefore The range of the width is $0 < y \leq \frac{21}{4}$.