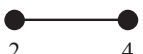
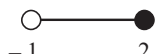
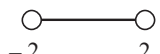
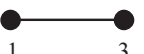
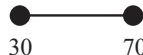
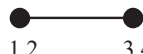


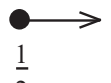
Unit 4 *Solving Inequalities*

Text Answers

4.1 Inequalities on a Number Line

1. (a)  (b)  (c)  (d) 
- (e)  (f)  (g)  (h) 
- (i)  (j)  (k)  (l) 
2. (a) $x < 1$ (b) $x \geq -2$ (c) $x \geq -1$ (d) $-2 \leq x \leq 2$
 (e) $x > -3$ (f) $-2 < x \leq 2$ (g) $-1 < x < 3$ (h) $-1 < x \leq 3$
 (i) $-4 \leq x < 1$ (j) $-5 \leq x < 10$
3. (a)  (b) $30 \leq V \leq 70$
4. (a)  (b) $1.2 \leq x \leq 3.4$
5. (a) 1, 2, 3, 4, 5, 6, 7, 8 (b) 4, 5, 6 (c) 2, 3, 4 (d) 4, 5
6. (a) -1, 0, 1 (b) -5, -4, -3, -2 (c) -1, 0 (d) -4, -3
7. (a) $\frac{3}{4}$, etc (b) $\frac{1}{3}$, etc (c) $\frac{5}{12}$, etc (d) $\frac{1}{4}$, etc
8. -3, -2, -1, 0, 1

4.2 Solution of Linear Inequalities

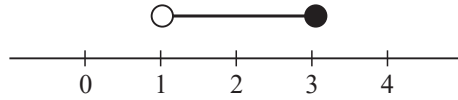
1. (a) $x \leq 3$  (b) $x > 7$  (c) $x < 5$  (d) $x \geq -2$ 
- (e) $x < 5$  (f) $x \geq \frac{1}{2}$ 
2. (a) $x < 7$ (b) $x \geq -3$ (c) $x \leq 4$ (d) $x \geq \frac{2}{3}$
 (e) $x < \frac{4}{5}$ (f) $x > \frac{6}{7}$ (g) $x \leq 6$ (h) $x > 2$
 (i) $x \leq 4$ (j) $x \geq 3$ (k) $x < 3\frac{1}{5}$ (l) $x \geq 3\frac{1}{3}$

Unit 4 *Solving Inequalities*

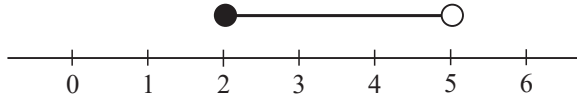
Text Answers

4.2

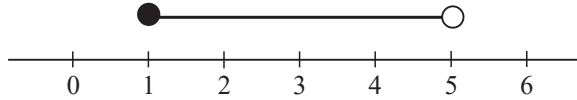
3. (a) $1 < x \leq 3$



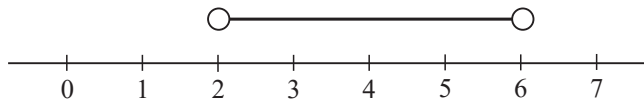
(b) $2 \leq x < 5$



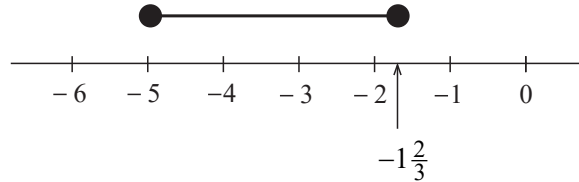
(c) $1 \leq x < 5$



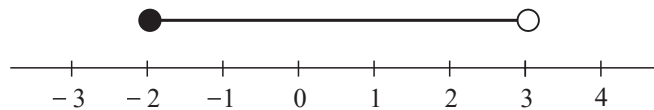
(d) $2 < x < 6$



(e) $-5 \leq x \leq -1\frac{2}{3}$



(f) $-2 \leq x < 3$



4. (a) $-1 < x \leq \frac{4}{5}$

(b) $2 \leq x < \frac{9}{2}$

(c) $\frac{1}{3} < x < \frac{2}{3}$

(d) $\frac{1}{2} \leq x \leq \frac{15}{8}$

(e) $-1 \leq x \leq -\frac{3}{4}$

(f) $1 < x < 6$

5. (b) $50 \leq 4x - 20 \leq 120$ (c) $18 \leq x \leq 35$ (rounded to 18 as you cannot have 17.5 haircuts)

6. (a) $200 \leq m \leq 320$

(b) $200 \leq \frac{5k}{8} \leq 320$

(c) $320 \leq k \leq 512$

7. (a) $50 \leq C \leq 90$

(b) $C = 0.1n + 10$

(c) $400 \leq n \leq 800$

8. $15\frac{5}{9} \leq C \leq 21\frac{1}{9}$

9. (a) $-1, 0, 1, 2$ and 3

(b) 17, 18, 19, 20 or 21

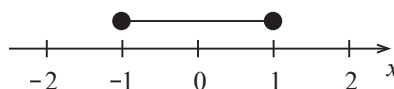
10. (a) (i) $-4, -3, -2, -1, 0$ and 1

(ii) 16

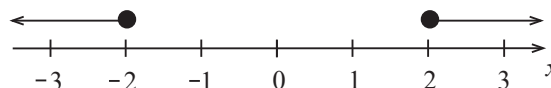
(b) $10 \leq x < 20$

4.3 Inequalities Involving Quadratic Terms

1. (a) $-1 \leq x \leq 1$



(b) $x \geq 2$ or $x \leq -2$

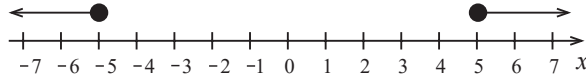


Unit 4 *Solving Inequalities*

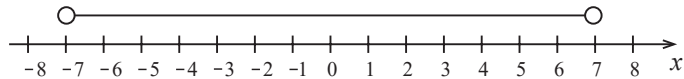
Text Answers

4.3

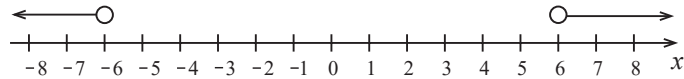
(c) $x \geq 5$ or $x \leq -5$



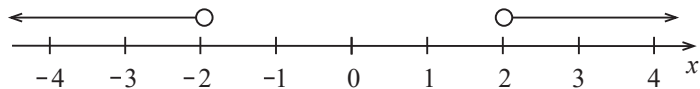
(d) $-7 < x < 7$



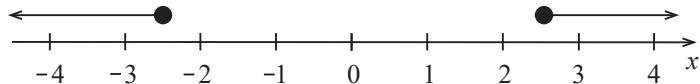
(e) $x > 6$ or $x < -6$



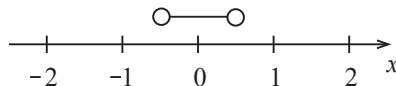
(f) $x > 2$ or $x < -2$



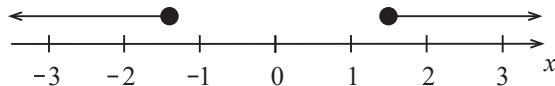
(g) $x \geq 2.5$ or $x \leq -2.5$



(h) $-0.5 < x < 0.5$



(i) $x \geq 1.5$ or $x \leq -1.5$



2. (a) $x \geq 4$ or $x \leq -4$

(b) $x \geq 2$ or $x \leq -2$

(c) $-5 < x < 5$

(d) $-\frac{1}{2} < x < \frac{1}{2}$

(e) $x \geq \frac{2}{3}$ or $x \leq -\frac{2}{3}$

(f) $x \geq \frac{2}{5}$ or $x \leq -\frac{2}{5}$

(g) $-\frac{1}{3} \leq x \leq \frac{1}{3}$

(h) $-3 < x < 3$

(i) $x \geq 10$ or $x \leq -10$

(j) $-2 < x < 2$

(k) $x \geq 3$ or $x \leq -3$

(l) $-\frac{1}{2} \leq x \leq \frac{1}{2}$

3. (a) $x \geq 2$ or $x \leq -3$

(b) $2 \leq x \leq 5$

(c) $x > 5$ or $x < 0$

(d) $0 \leq x \leq 6$

(e) $2 < x < 5$

(f) $x > 3$ or $x < -4$

(g) $x \geq 1$ or $x \leq -\frac{1}{2}$

(h) $-2 \leq x \leq \frac{3}{2}$

4. $9 \leq x^2 \leq 16$; $3 \leq x \leq 4$

5. (a) $A = 8x^2$

(b) $2 \leq x \leq 5$

(c) 20

(d) 4

6. (a) $x < 2$

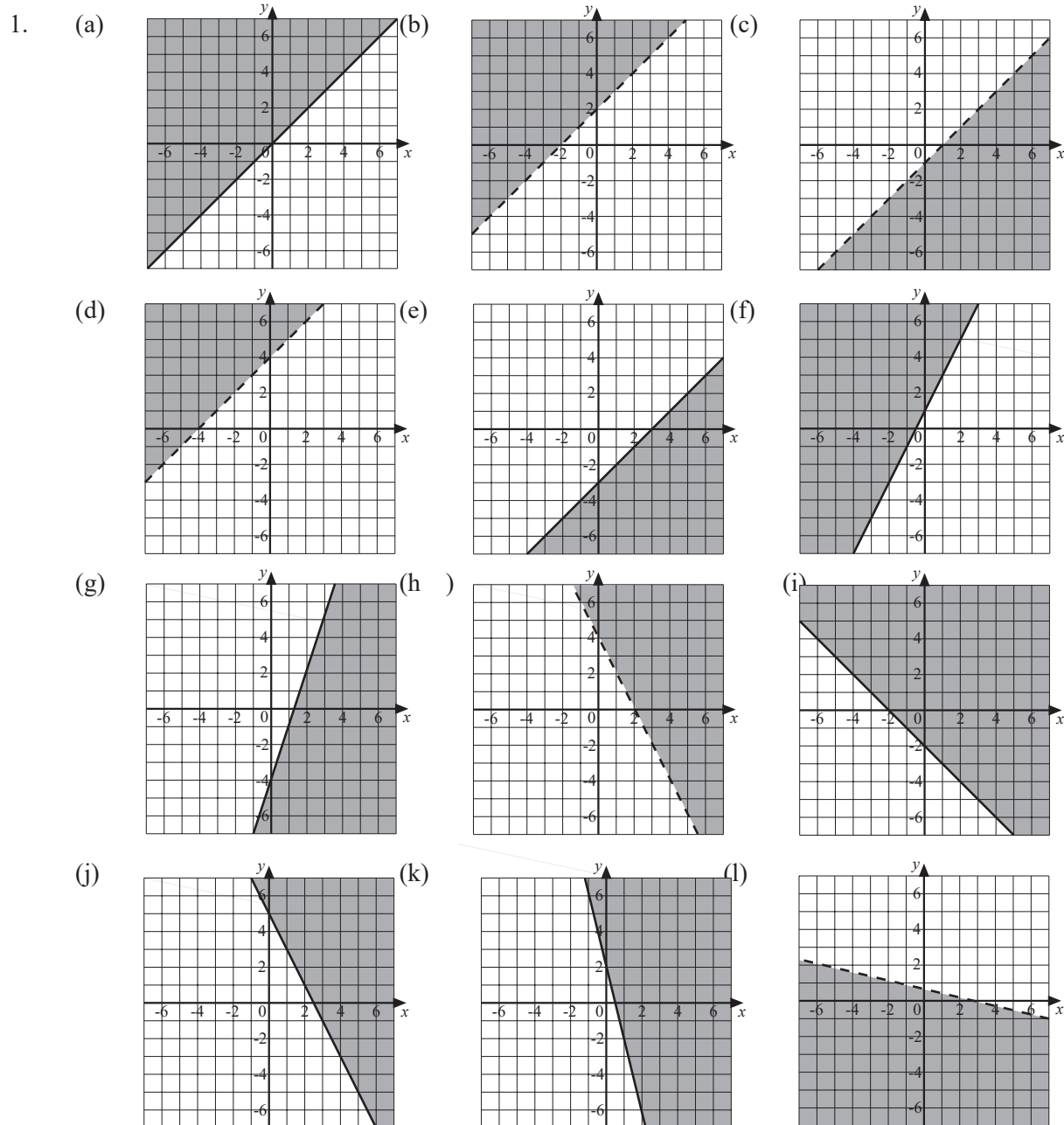
(b) $-1 < x < 1$

7. (b) $x > \frac{3}{2} + \frac{1}{2}\sqrt{5}$ or $x < \frac{3}{2} - \frac{1}{2}\sqrt{5}$

Unit 4 *Solving Inequalities*

Text Answers

4.4 Graphical Approach to Inequalities



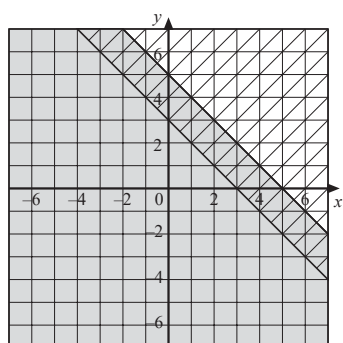
2. (a) (i) $y = x + 1$ (ii) $y \leq x + 1$ (b) (i) $y = 2x$ (ii) $y > 2x$
 (c) (i) $x + y = 5$ (ii) $x + y \leq 5$ (d) (i) $x + y = 4$ (ii) $x + y > 4$
 (e) (i) $y = x + 2$ (ii) $y \geq x + 2$ (f) (i) $y = x - 1$ (ii) $y < x - 1$

Unit 4 *Solving Inequalities*

Text Answers

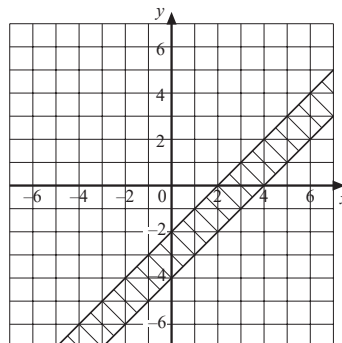
4.4 3.

(a)



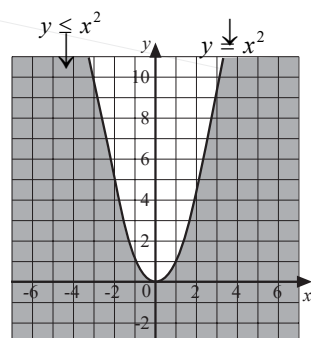
$$3 \leq x + y \leq 5$$

(b)

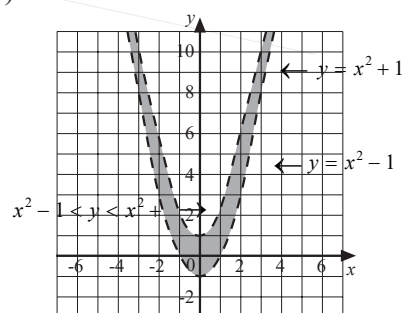


4.

(a)



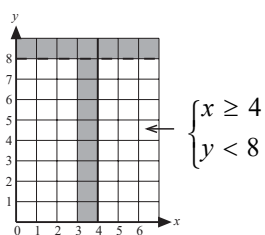
(b)



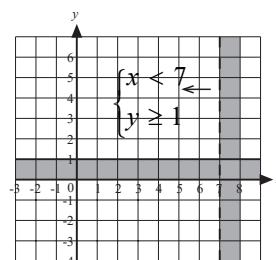
4.5 Dealing With More Than One Inequality

1.

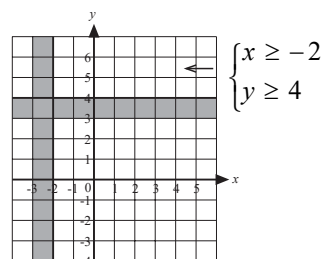
(a)



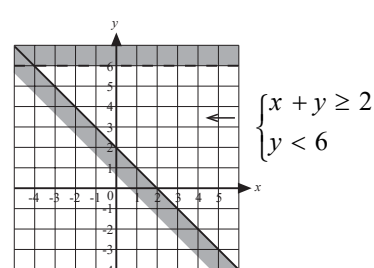
(b)



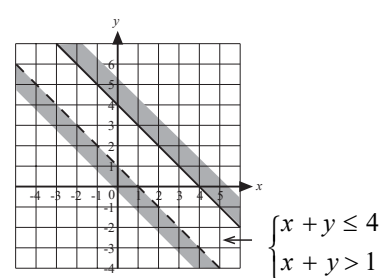
(c)



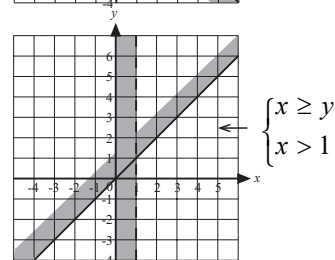
(d)



(e)



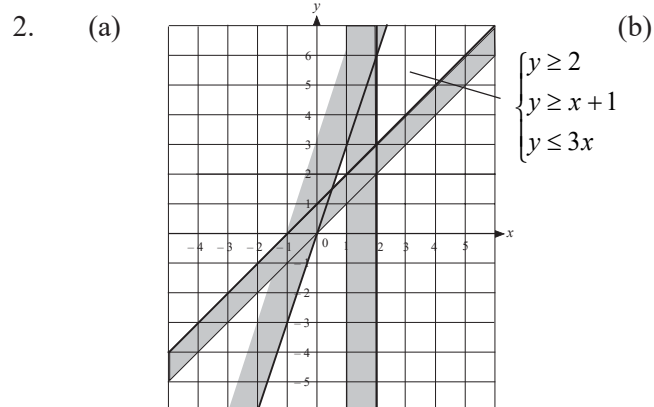
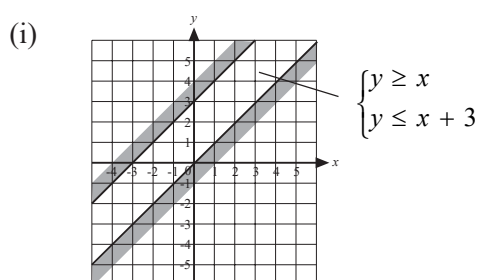
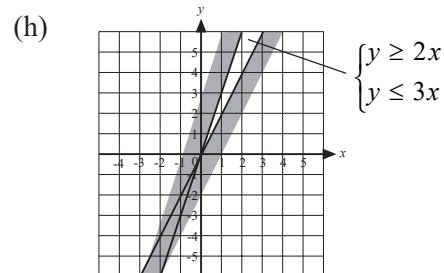
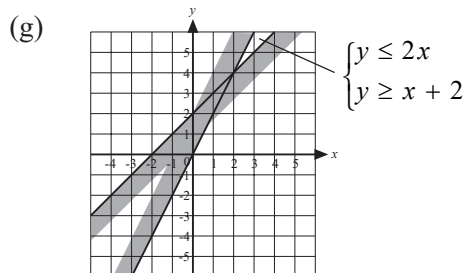
(f)



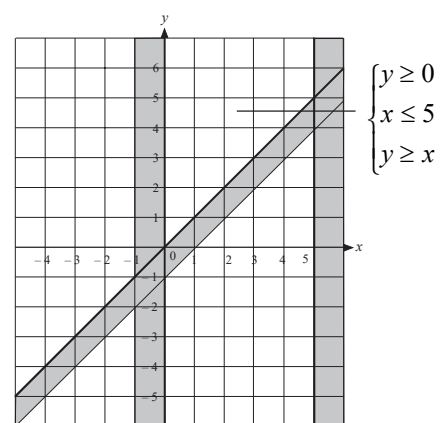
Unit 4 *Solving Inequalities*

Text Answers

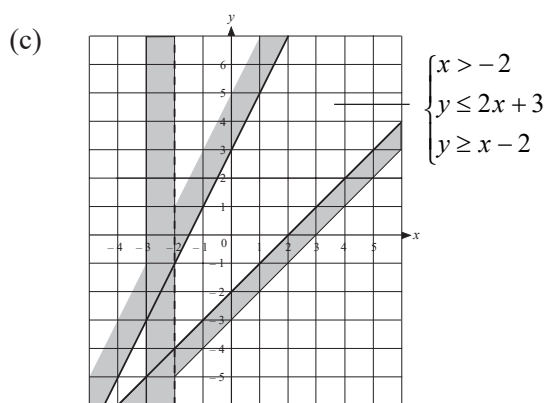
4.5



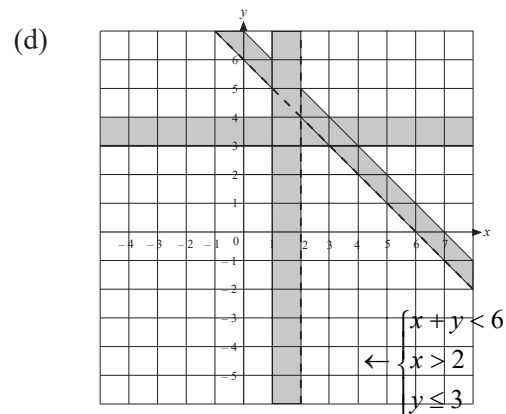
Vertices: (2, 3), (2, 6)



Vertices: (0, 0), (5, 5)



Vertices: (-2, -4), (-2, -1)

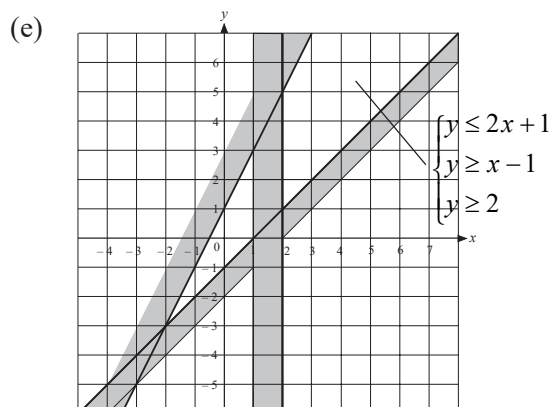


Vertices: (2, 3), (3, 3)

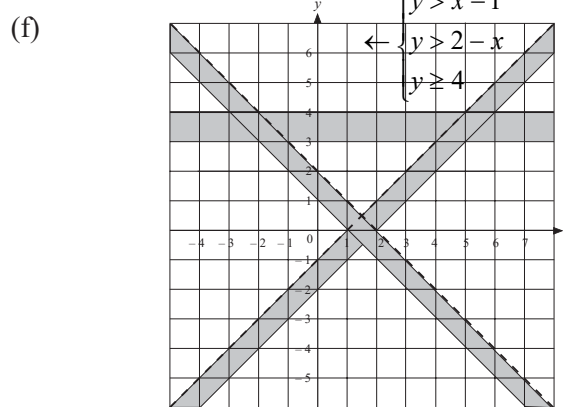
Unit 4 *Solving Inequalities*

Text Answers

4.5

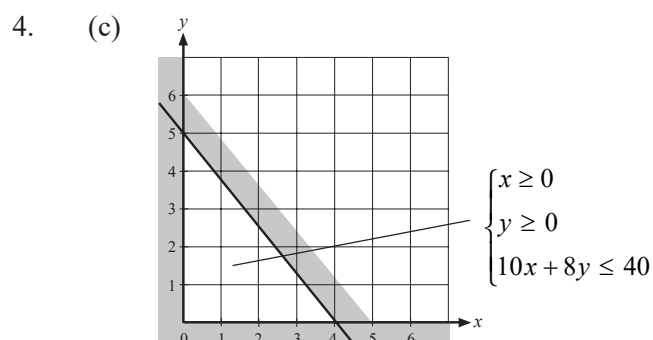


Vertices: (2, 1), (2, 5)

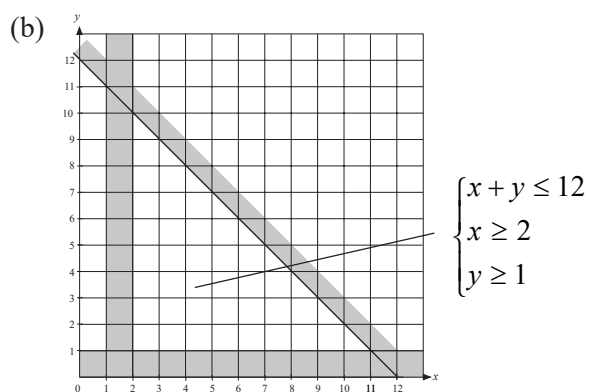


Vertices: (-2, 4), (5, 4)

3. (a) $x \geq 1$, $y \geq 2$, $x + y \leq 7$ (b) $x \leq 5$, $y \geq 2$, $y \leq x + 2$
- (c) $x \geq 2$, $y \leq 6$, $y \geq x - 1$ (d) $x \leq 3$, $y \geq -3$, $y \leq x + 1$
- (e) $x \geq -2$, $y \geq x - 2$, $y \leq 2 - x$
- (f) $x + y \geq -3$, $y \geq 2x - 3$, $2y \leq x + 3$



5. (a) (i) $x + y \leq 12$ (ii) $x \geq 2$ (iii) $y \geq 1$



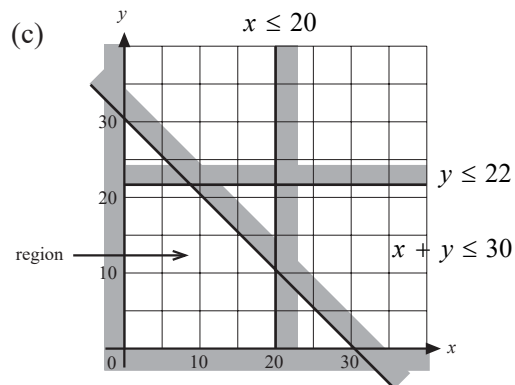
Unit 4 *Solving Inequalities*

Text Answers

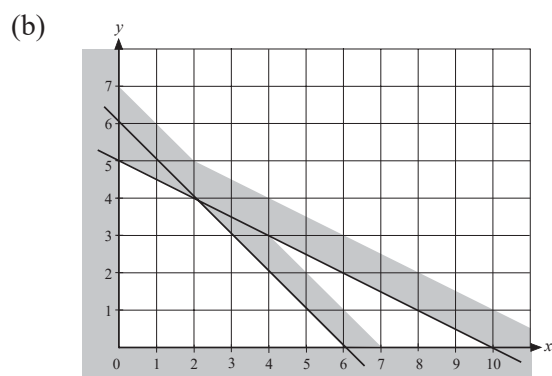
4.5

6. (a) (i) $x + y \leq 30$ (ii) $x \leq 20$ (iii) $y \leq 22$

(b) $x \geq 0, y \geq 0$



7. (a) $x + 2y \leq 10, x + y \leq 6, x \geq 0, y \geq 0$



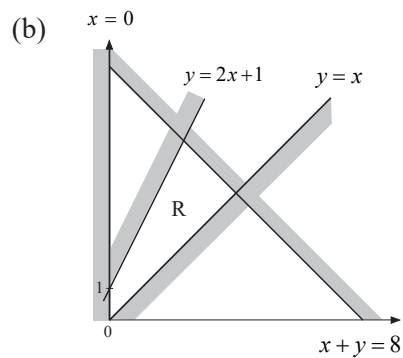
8. (a) $x = 6$

(b) $x \leq 6; y \leq \frac{1}{6}x + 5; y \geq -\frac{5}{8}x + 5$

9. (b) inner triangle

(c) 67 £2 tickets and 133 £3 tickets; £533

10. (a) 3, 4, 5, 6 and 7



Unit 4 *Solving Inequalities*

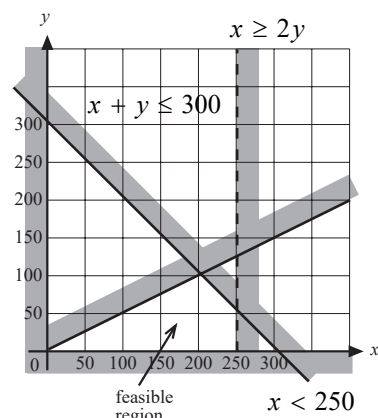
Text Answers

4.5

11. (a) $x < 250$, $x + y \leq 300$, $x \geq 2y$

(c) £1000

(d) 120

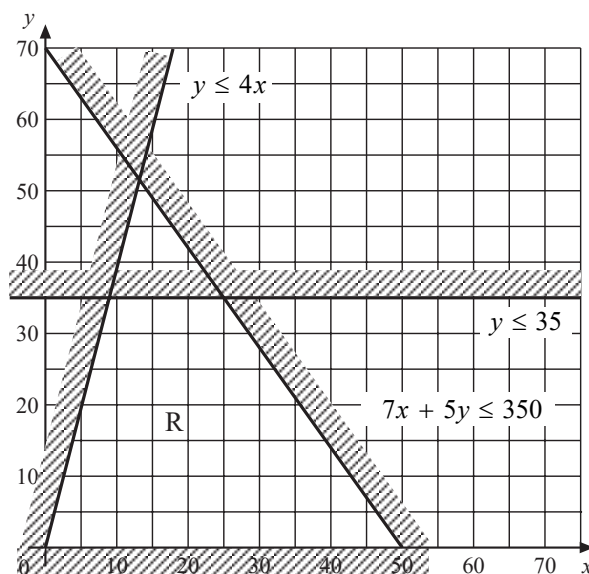


12. (a) $7x + 5y \leq 350$

(b) Number of small baskets must be less than or equal to 4 times the number of large baskets.

Number of small baskets must be less than or equal to 35.

(c) See grid below.



(d) $P = 2x + 3y$

(e) $x = 25$, $y = 35$ and $P = £155$

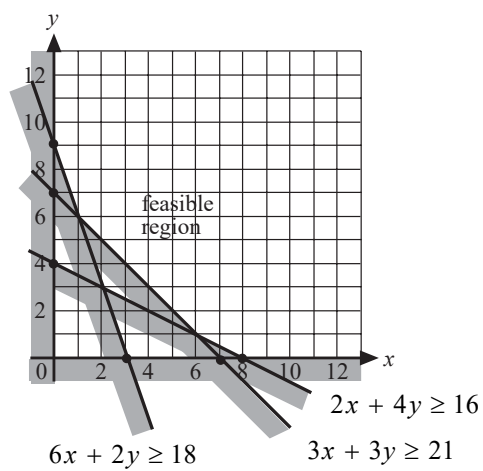
Unit 4 *Solving Inequalities*

Text Answers

4.5

13. (a) $6x + 2y \geq 18$, $3x + 3y \geq 21$, $2x + 4y \geq 16$

(b)



(c) 1 Xtravit and 6 Yeastalife