

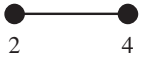
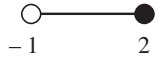
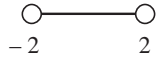
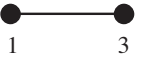
Student Text UNIT 26 Solving Inequalities

Answers

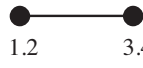
26.1 Inequalities on a Number Line

1. (a)  (b)  (c)  (d) 

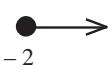
 (e)  (f)  (g)  (h) 

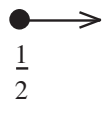
 (i)  (j)  (k)  (l) 
2. (a) $x < 1$ (b) $x \geq -2$ (c) $x \geq -1$ (d) $-2 \leq x \leq 2$

 (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

26.2 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) $x > 2$

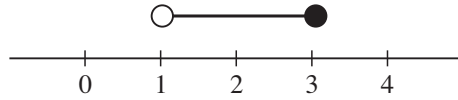
 (i) $x \leq 4$ (j) $x \geq 3$ (k) $x < 3\frac{1}{5}$ (l) $x \geq 3\frac{1}{3}$

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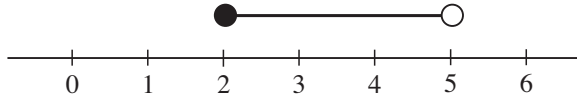
Answers

26.2

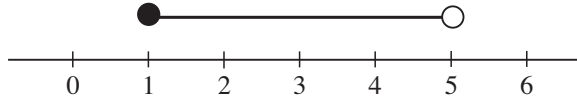
3. (a) $1 < x \leq 3$



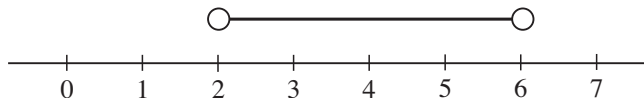
(b) $2 \leq x < 5$



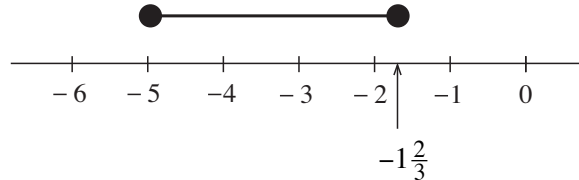
(c) $1 \leq x < 5$



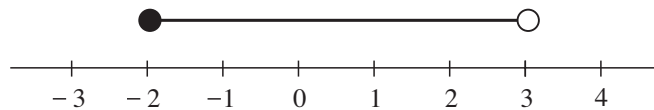
(d) $2 < x < 6$



(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) $10 \leq x < 20$

26.3 Inequalities Involving Quadratic Terms

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

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

(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 $x \leq -1.5$

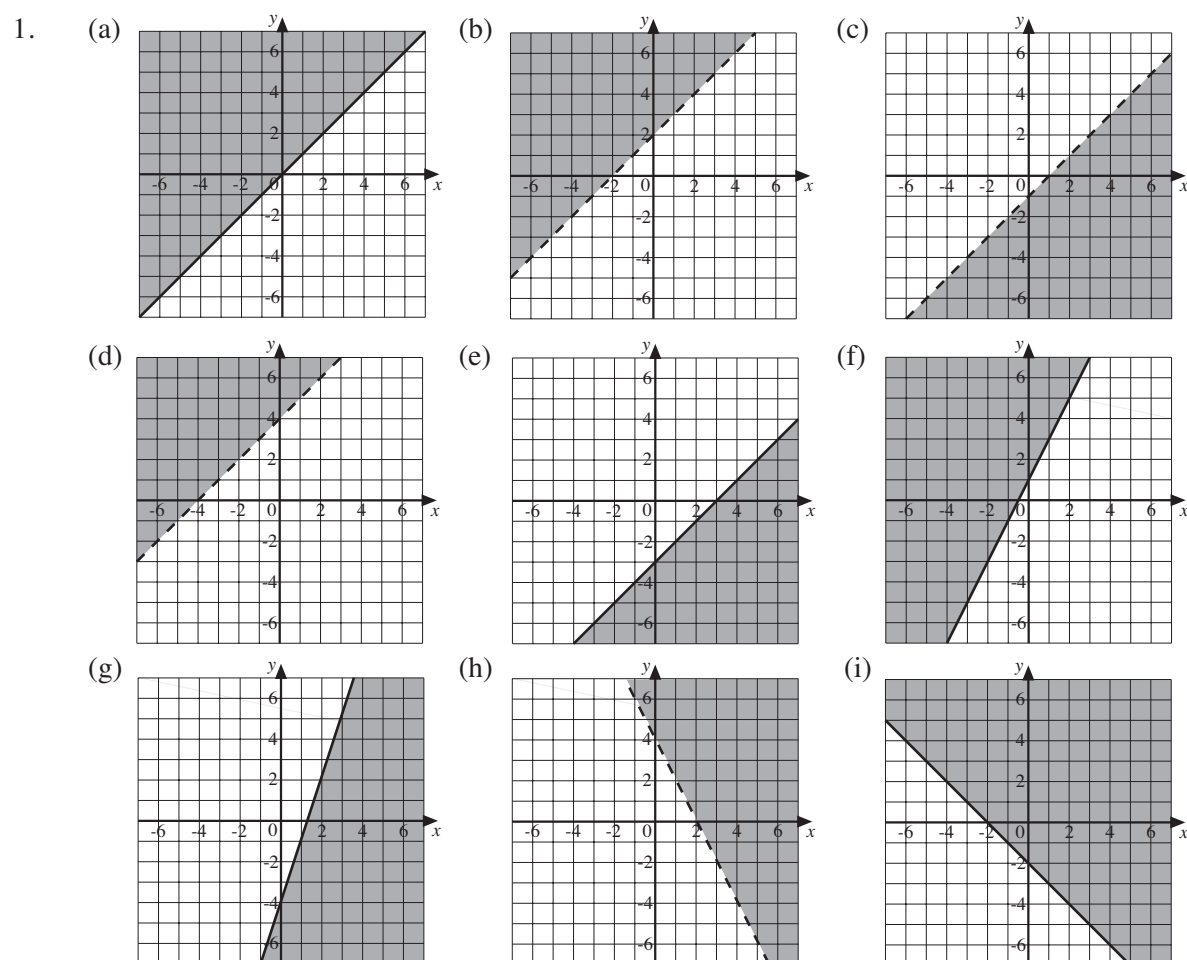
Student Text *UNIT 26 Solving Inequalities*

Answers

26.3

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 $x < \frac{3}{2} - \frac{1}{2}\sqrt{5}$

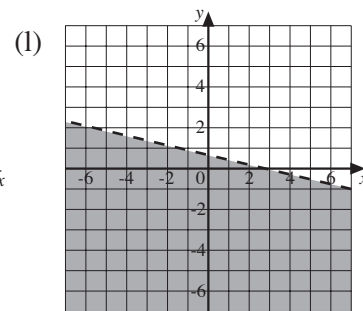
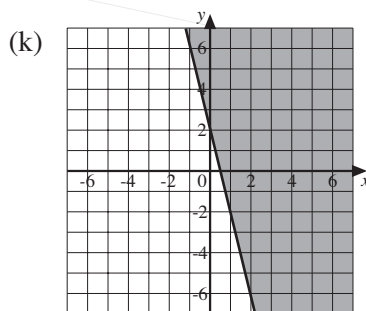
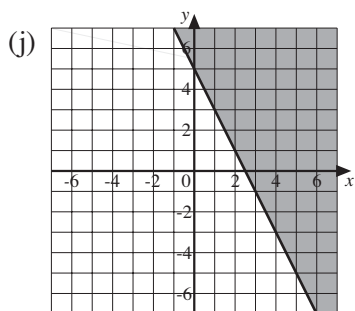
26.4 Graphical Approach to Inequalities



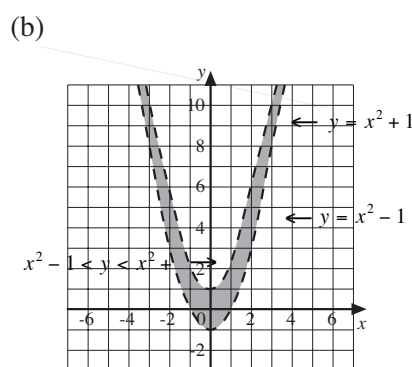
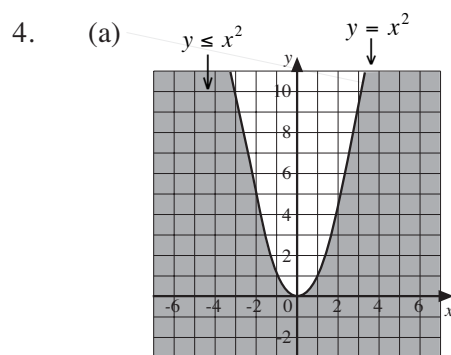
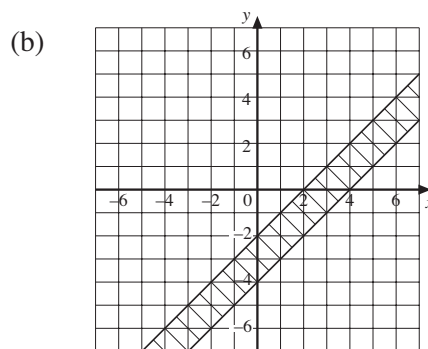
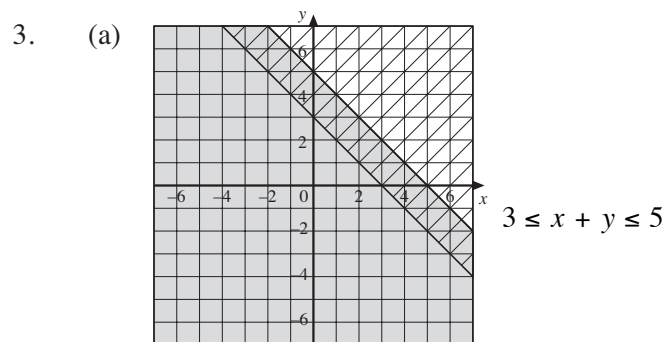
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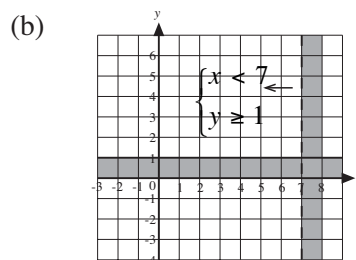
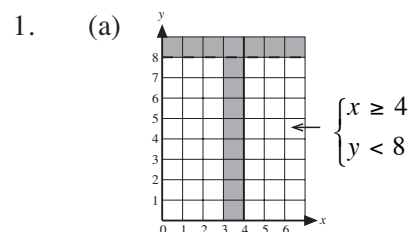
26.4



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) $y < x - 1$



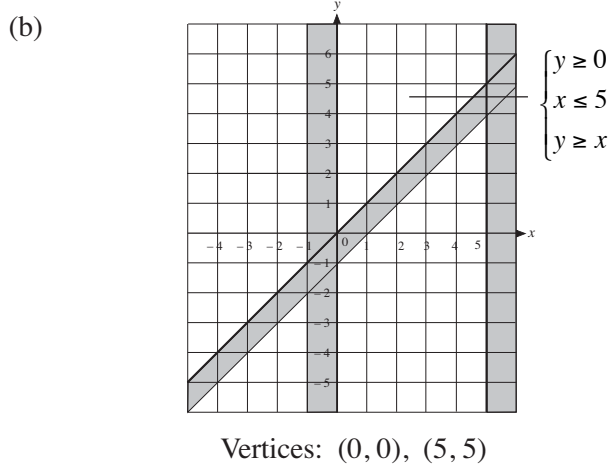
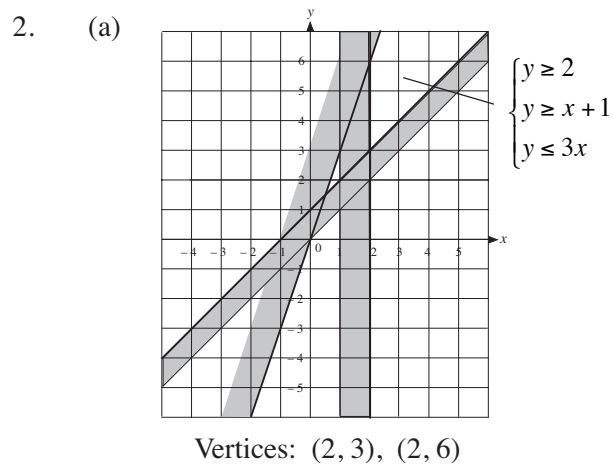
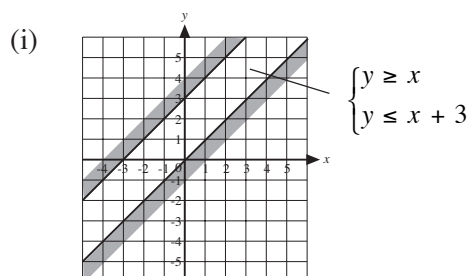
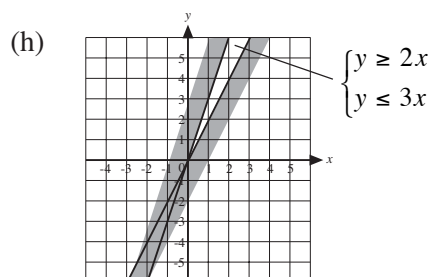
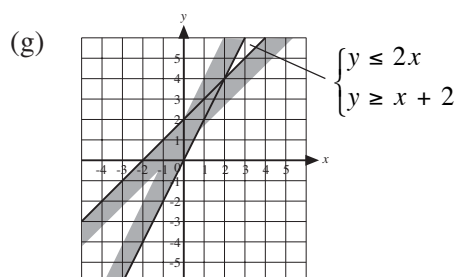
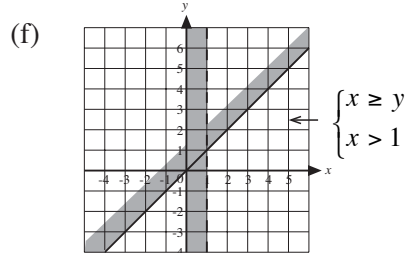
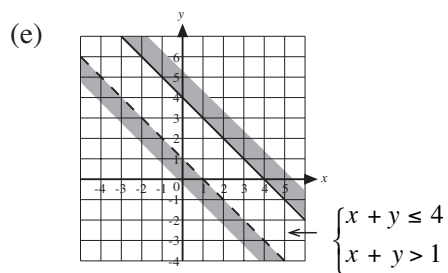
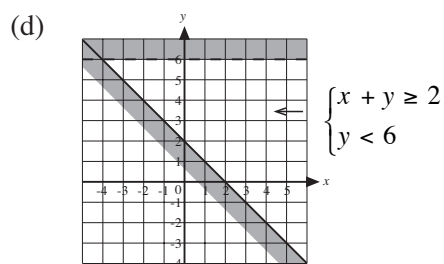
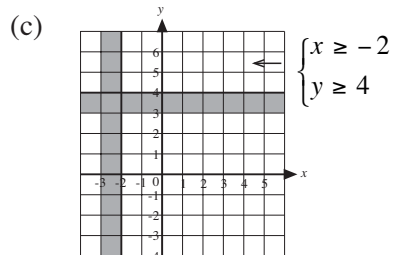
26.5 Dealing With More Than One Inequality



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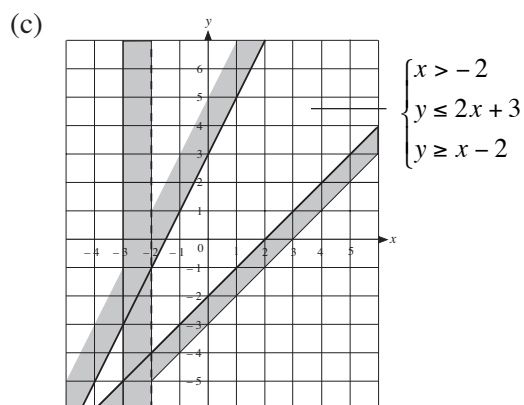
26.5



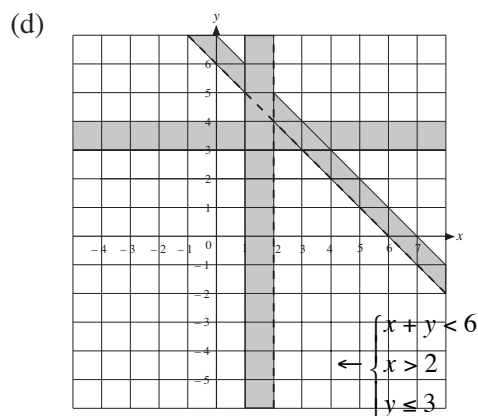
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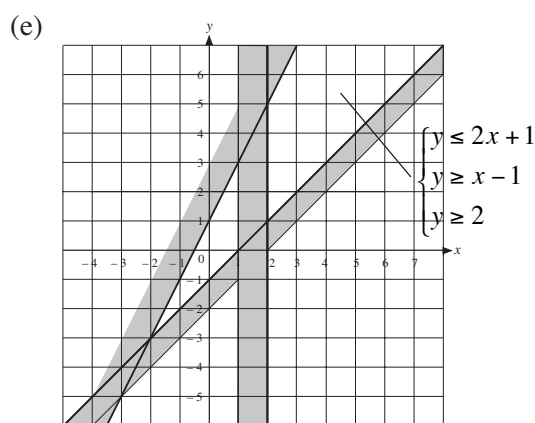
26.5



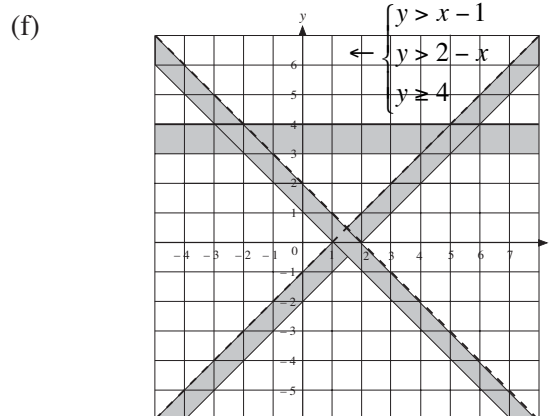
Vertices: $(-2, -4), (-2, -1)$



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



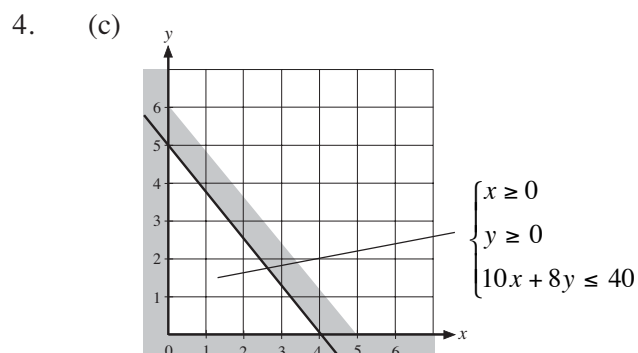
Vertices: $(2, 1), (2, 5)$



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

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

- (b) $x \leq 5, y \geq 2, y \leq x + 2$
 (d) $x \leq 3, y \geq -3, y \leq x + 1$

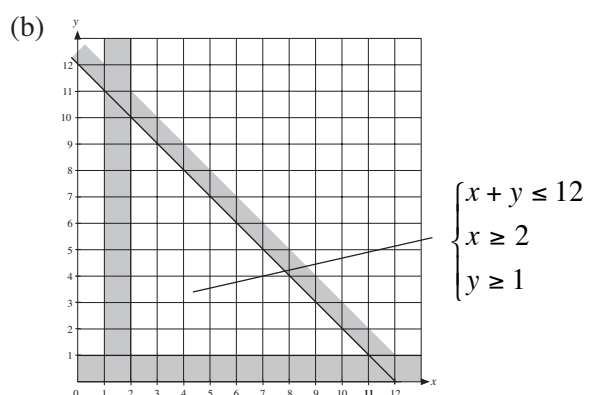


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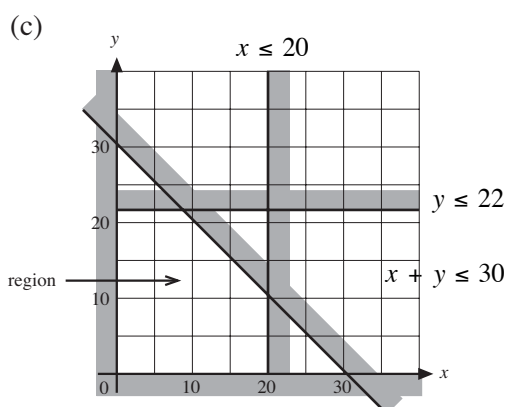
Answers

26.5

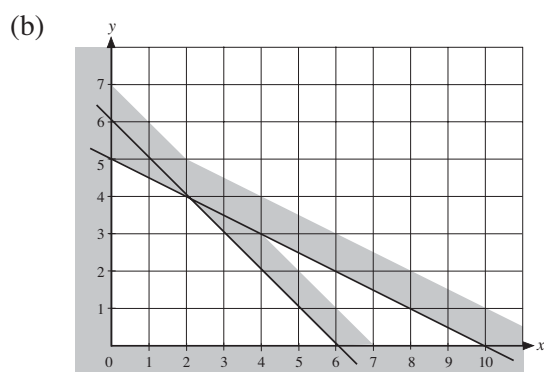
5. (a) (i) $x + y \leq 12$ (ii) $x \geq 2$ (iii) $y \geq 1$



6. (a) (i) $x + y \leq 30$ (ii) $x \leq 20$ (iii) $y \leq 22$ (b) $x \geq 0, y \geq 0$



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



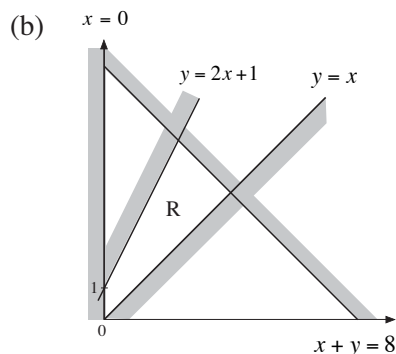
8. (a) $x = 6$
(b) $x \leq 6; y \leq \frac{1}{6}x + 5; y \geq -\frac{5}{8}x + 5$
9. (b) inner triangle
(c) 67 \$2 tickets and 133 \$3 tickets; \$533

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26.5

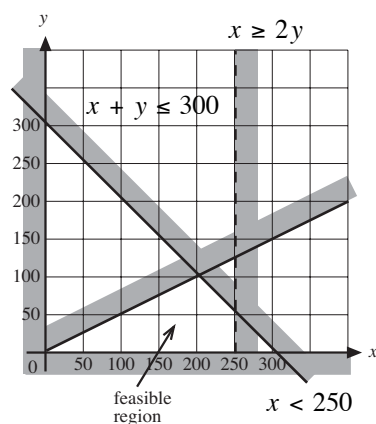
10. (a) 3, 4, 5, 6 and 7



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

- (c) \$1000

- (d) 120

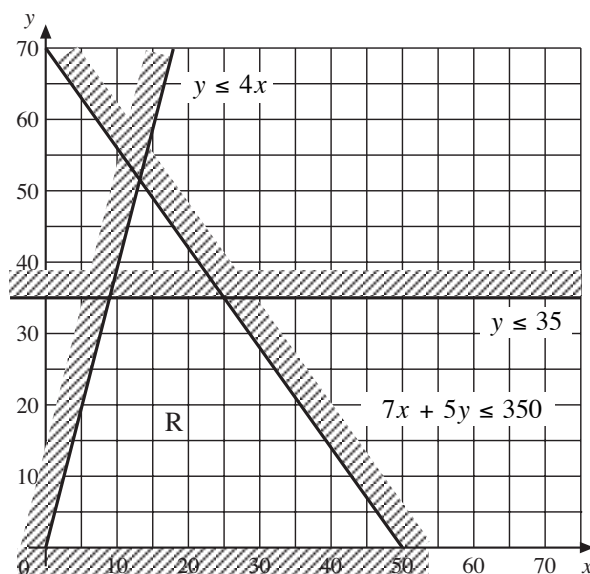


12. (a)
- $7x + 5y \leq 350$

- (b) Number of small baskets must be less than or equal to 20.

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
- $P = \$155$

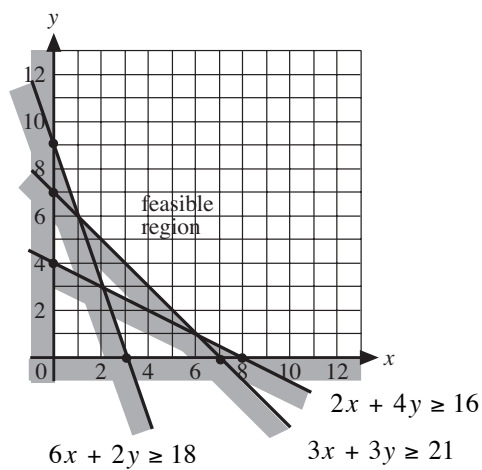
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13. (a) $6x + 2y \geq 18$, $3x + 3y \geq 21$, $2x + 4y \geq 16$

(b)



(c) 1 Xtravit and 6 Yeastalife