

## Chapter 4

### More Linear Equations and Inequalities

#### Chapter Review (pp. 245–249)

$$1. 14 + 8A - 4A = 4A - 10 - 4A$$

$$14 + 4A - 14 = -10 - 14$$

$$4A = -24$$

$$A = -6$$

$$\text{Check: } 14 + 8(-6) = 4(-6) - 10$$

$$14 - 48 = -24 - 10$$

$$-34 = -34$$

$$2. -5a + 9 + 5a = 5a + 5a$$

$$9 = 10a$$

$$\frac{9}{10} = a$$

$$\text{Check: } -5\left(\frac{9}{10}\right) + 9 = 5\left(\frac{9}{10}\right)$$

$$\frac{-45}{10} + \frac{90}{10} = \frac{45}{10}$$

$$\frac{45}{10} = \frac{45}{10}$$

$$3. 3n - 3n - 7 = 10n + 7 - 3n - 7$$

$$-7 = 7n$$

$$-1 = n$$

$$\text{Check: } 3(-1) = -1 + 7 + 9(-1)$$

$$-3 = 6 - 9$$

$$-3 = -3$$

$$4. 8x + 0.5x - 21.25 + 21.25 = -0.5x + 21.25 + 0.5x$$

$$8.5x = 21.25$$

$$x = 2.5$$

$$\text{Check: } 8(2.5) - 21.25 = -0.5(2.5)$$

$$20 - 21.25 = -1.25$$

$$-1.25 = -1.25$$

$$5. 4f = 2f - 35 + 42f$$

$$4f - 4f + 35 = -4f - 35 + 35 + 44f$$

$$35 = 40f$$

$$\frac{7}{8} = f$$

$$\text{Check: } 4\left(\frac{7}{8}\right) = 2\left(\frac{7}{8}\right) - 7\left(5 - 6\left(\frac{7}{8}\right)\right)$$

$$\frac{28}{8} = \frac{14}{8} - 7\left(-\frac{2}{8}\right) = \frac{28}{8}$$

$$6. 14 - 7x - 6 + 7y = 3y + 6 - 6 + 7y$$

$$8 = 10y$$

$$0.8 = y$$

$$\text{Check: } 7(2 - 0.8) = 3(0.8 + 2)$$

$$7(1.2) = 3(2.8)$$

$$8.4 = 8.4$$

$$7. 3\left(\frac{1}{3}a - 1\right) = 3(3a)$$

$$a - 3 = 9a$$

$$-3 = 8a$$

$$-\frac{3}{8} = a$$

$$\text{Check: } \frac{1}{3}\left(-\frac{3}{8}\right) - 1 = 3\left(-\frac{3}{8}\right)$$

$$-\frac{9}{8} = -\frac{9}{8}$$

$$8. 10\left(\frac{x}{2}\right) + 10\left(\frac{x}{5}\right) + 10(20) = 10x$$

$$5x + 2x + 200 - 7x = 10x - 7x$$

$$\frac{200}{3} = \frac{3x}{3}$$

$$\frac{200}{3} = x$$

$$\text{Check: } \frac{200}{2} + \frac{200}{5} + 20 = \frac{200}{3}$$

$$\frac{100}{3} + \frac{40}{3} + \frac{60}{3} = \frac{200}{3}$$

$$\frac{200}{3} = \frac{200}{3}$$

$$9. 14w + 64 - 17w - 64 \geq 17w - 323 - 17w - 64$$

$$-3w \geq -387$$

$$w \leq 129$$

$$10. 20 + 8t < 18 + 9t$$

$$20 + 8t - 18 - 8t < 18 + 9t - 18 - 8t$$

$$2 < t$$

Check:

$$\text{Step 1 } 14(129) + 64 = 17(129) - 323$$

$$1,870 = 1,870$$

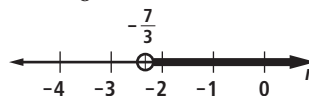
$$\text{Step 2 } 14(0) + 64 \geq 17(0) - 323$$

$$64 \geq -323$$

$$11. 0.7n + 0.4 > -0.5n - 2.4$$

$$1.2n > -2.8$$

$$n > -\frac{7}{3}$$



$$12. 3 + 0.78 \leq 0.18h$$

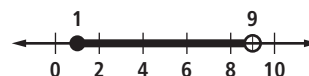
$$3.78 \leq 0.18h$$

$$21 \leq h$$



$$13. 3p < 27 \text{ and } p \geq 1$$

$$p < 9 \text{ and } p \geq 1, \text{ so } 1 \leq p < 9$$



14.  $5s > 9.5$  or  $-2 \leq s$   
 $s > 1.9$  so  $s \geq -2$



15.  $-1 < 4x + 7 < 23$   
 $-8 < 4x < 16$   
 $-2 < x < 4$



16.  $62 \geq 2d > -15$   
 $31 \geq d > -7.5$



17.  $p = \frac{2A}{a}$

18.  $h = \frac{V}{lw}$

19.  $h = \frac{S - 2\pi r^2}{2\pi r}$   
 $= \frac{S}{2\pi r} - r$

20.  $w = \frac{s}{k}$

21.  $3y = 21 - 6x$   
 $y = 7 - 2x$

22.  $5y = 7x + 25$   
 $y = \frac{7x}{5} + 5$

23.  $0.075 \cdot 32 = \$2.40$

24.  $0.02 \cdot 35,000 = 700$  people

25.  $\frac{10}{23} = 43\%$

26.  $\frac{47}{30} \approx 156.7\%$

27.  $\frac{170}{0.85} = 200$

28.  $\frac{7}{0.063} = 111$

29.  $x - 14 = 2$  or  $x - 14 = -2$   
 $x = 16$  or  $x = 12$

30.  $x - 14 = 0$  or  $x - 14 = 0$   
 $x = 14$

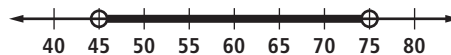
31. no solutions

32.  $|x - 4| < 20$   
 $-20 < x - 4 < 20$   
 $-16 < x < 24$



33. Let  $t$  be the temperatures at which Lisel's dog will go outside.

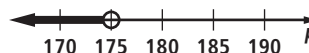
$|t - 60| < 15$   
 $-15 < t - 60 < 15$   
 $45 < t < 75$



34. Let  $p$  be the number of points.

$|p - 180| > 5$   
 $p - 180 > 5$  or  $p - 180 < -5$   
 $p > 185$  or  $p < 175$

Howard did not win therefore his score cannot be  $> 175$ .



35. a.  $3x + 2 - 5x = 5x + 12 - 5x$   
 $2 - 2 - 2x = 12 - 2$   
 $-2x = 10$   
 $x = -5$

b.  $3x + 2 - 3x = 5x + 12 - 3x$   
 $2 - 12 = 2x + 12 - 12$   
 $-10 = 2x$   
 $x = -5$

c. They are the same.

36. a.  $2a + 3 - 5a < 5a - 6 - 5a$   
 $-3a < -9$   
 $a > 3$

b.  $2a + 3 - 2a < 5a - 6 - 2a$   
 $9 < 3a$   
 $a > 3$

c. They are the same.

37. a. Multiplication Property of Equality

b. Distributive Property

c. Addition Property of Equality

d. Addition Property of Equality

e. Multiplication Property of Equality or Division Property of Equality

38. a. Addition Property of Inequality

b. Addition Property of Inequality

c. Multiplication Property of Inequality or Division Property of Inequality

39. a. She subtracted  $90n$  from the left side of the equation, but added  $90n$  to the right side.

b.  $190n + 10 = 4$   
 $\frac{190n}{190} = -\frac{6}{190}$   
 $n = -\frac{3}{95}$

40. The two sides are equivalent because of the Distributive Property.

41. no solutions because  $0 = 1$  is not true

42. all real numbers because  $0 = 0$  is always true

43. If you subtract  $x$  from both sides, you get  $5 > 6$ , which is never true.

44. a. After  $n$  months, Sam will have  $1,850 + 25n$  dollars and Diego will have  $2,000 + 20n$  dollars.

b.  $1,850 + 25n = 2,000 + 20n$   
 $5n = 150$   
 $n = 30$  months

45. a. Calling Cabs

b. It does not matter; they cost the same.

c.  $1.5 = 0.1x$   
 $\frac{1.5}{0.1} = x$   
 15 miles =  $x$

46. a. Kim will have more money than Alberto when  $15 + 9x > 100 - 8x$ .

b.  $17x > 85$   
 $x > 5$

47.  $50 + 1.5x > 3.5x$

$50 > 2x$   
 $x < 25$   
 $x < 25$  so the maximum order would be 24 signs from Sign Me Up..

48. a.

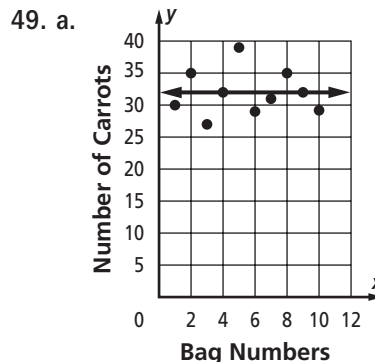
Number of Downloads	Charges Site 1	Charges Site 2
2	\$21.93	\$17.01
4	\$23.91	\$19.07
6	\$25.89	\$21.13
8	\$27.87	\$23.19
10	\$29.85	\$25.25

b.  $19.95 + 0.99x = 14.95 + 1.03x$   
 $5 = 0.04x$

$125 = x$   
 125 downloads

c. for more than 125 downloads

d. for less than 125 downloads



b. mean =  $31.9 = \frac{30 + 35 + 27 + 32 + 39 + 29 + 31 + 35 + 37 + 29}{10}$

c. bags 4 and 9

d. bag 5

50. a.

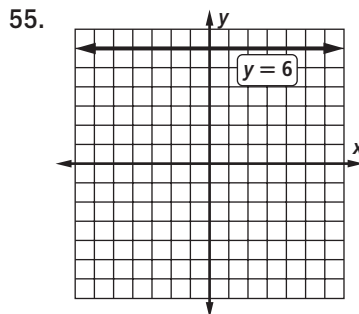
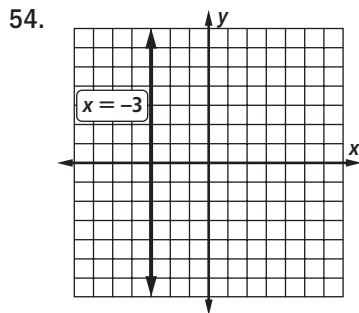
Sales	Rent-A-Vehicle	Borrow-Our-Car
\$0	\$1,100	\$900
\$5,000	\$1,400	\$1,300
\$10,000	\$1,700	\$1,700
\$15,000	\$2,000	\$2,100
\$20,000	\$2,300	\$2,500
\$25,000	\$2,600	\$2,900
\$30,000	\$2,900	\$3,300

b. all sales over \$10,000

51.  $\frac{217000}{0.15} = 1,446,666$  or about 1,447,000 people

52.  $0.35 \cdot 98,000,000 = 34,300,000$   
 $-0.17 \cdot 98,000,000 = 16,660,000$   
 $= 17,640,000$  households

53.  $\frac{896}{0.7} = \$1,280$

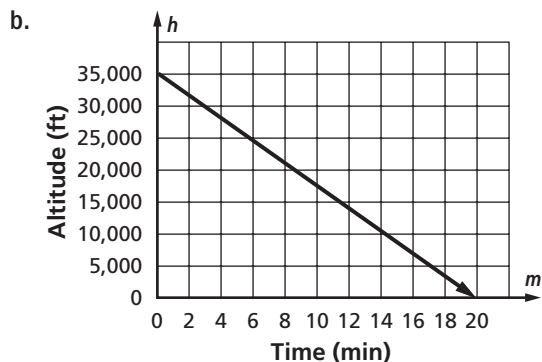


56. true

57.  $x = 5$

58.  $x = 3$

59. a.  $h = 35,000 - 1,750m$



c.

$$35,000 - 1,750m = 0$$

$$35,000 = 1,750m$$

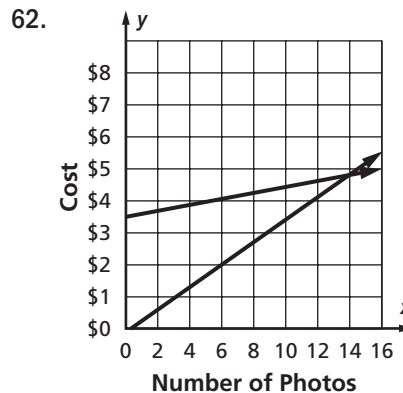
$$\frac{35,000}{1,750} = m$$

$$20 \text{ minutes} = m$$

60. a.  $x; B$

b.  $x \approx 4$

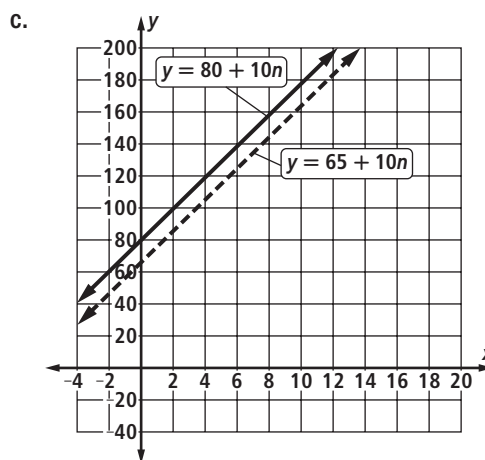
61.  $2x - 5 + 5 - x \leq -5 - x + 5 + x$   
 $x \leq 0$



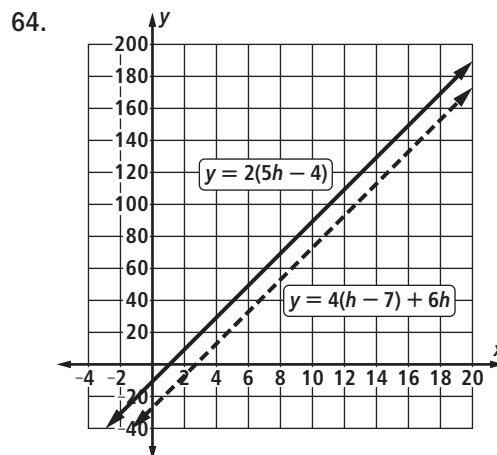
For 14 photos, the cost is the same.

63. a.  $80 + 10n$  dollars

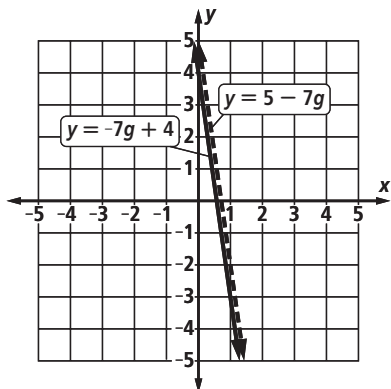
b.  $65 + 10n$  dollars



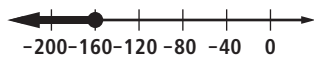
d. never



65.



66.

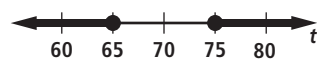


$$11.25p - 10 > 11.5p + 30$$

$$-40 > 0.25p$$

$$-160 > p$$

67. a.



b.  $t \leq 65$  or  $t \geq 75$

68. a.  $x = 1.5$  or  $x = 5.5$

b.  $x < 1.5$  or  $x > 5.5$

c.  $1.5 \leq x \leq 5.5$