Ch 7 Review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

Solve the equation.

_____ 1. $2x - 26 = 10$
   a. $-8$  b. $5$  c. $2$  d. $18$

_____ 2. $-6 + 3x = -9$
   a. $-1$  b. $-6$  c. $-5$  d. $-3$

_____ 3. $\frac{x}{5} + 9 = 4$
   a. $65$  b. $-25$  c. $5$  d. $20$

_____ 4. $-3x + 6 = -9$
   a. $-3$  b. $5$  c. $3$  d. $1$

_____ 5. $5m + 4m = 72$
   a. $-72$  b. $9$  c. $8$  d. $72$

_____ 6. $2s - 3s = 20$
   a. $4$  b. $-20$  c. $-1$  d. $-4$

_____ 7. $6d - 10d = 40$
   a. $-10$  b. $36$  c. $10$  d. $44$

_____ 8. $2(x + 4) = 30$
   a. $7$  b. $11$  c. $15$  d. $19$

_____ 9. $78 = -2(m + 3) + m$
   a. $-28$  b. $-42$  c. $-72$  d. $-84$

_____ 10. $6 = 2(x + 8) - 5x$
   a. $\frac{2}{3}$  b. $\frac{3}{3}$  c. $\frac{2}{3}$  d. $-3\frac{1}{3}$

_____ 11. $\frac{1}{4}y - 3 = 9$
   a. $48$  b. $3$  c. $36$  d. $24$

_____ 12. $\frac{1}{3}m - 7 = 5$
   a. $-4$  b. $-15$  c. $-36$  d. $6$
13. \( \frac{3}{4}(x - 12) = 3 \)
   a. 20  b. 9  c. 16  d. -12

14. \( \frac{1}{4}y + 9 = \frac{1}{2} \)
   a. -34  b. 2  c. 9  d. 38

15. \( \frac{4}{9}n + 6 = \frac{4}{3} \)
   a. 10\( \frac{1}{2} \)  b. 16\( \frac{1}{2} \)  c. -4\( \frac{2}{3} \)  d. -10\( \frac{1}{2} \)

16. \( -\frac{3}{10} + a = \frac{2}{5} \)
   a. -10\( \frac{7}{7} \)  b. 7\( \frac{7}{10} \)  c. 9  d. 3\( \frac{2}{5} \)

17. \( \frac{5}{4}(a - 8) = \frac{2}{3} \)
   a. 6\( \frac{14}{15} \)  b. 7\( \frac{1}{15} \)  c. 8\( \frac{8}{15} \)  d. 8\( \frac{2}{3} \)

18. \( 0.2x + 5 = 8 \)
   a. 40  b. 15  c. 65  d. -15

19. \( 12 + 0.35x = 20.05 \)
   a. 91.5  b. 57.3  c. 2.8175  d. 23

20. \( 0.6(y + 3) = 4.8 \)
   a. 5  b. 3  c. 13  d. 1.8

21. \( x + 7 = 6x - 3 \)
   a. -5  b. -15  c. 2  d. -10

22. \( x - 9 = -6x + 5 \)
   a. 14  b. 7  c. 2  d. 21

23. \( x + 9 = 5(4x - 2) \)
   a. 11\( \frac{1}{19} \)  b. -1  c. 1  d. -1\( \frac{1}{19} \)

24. \( -6p - 21 = 3p - 12 \)
   a. 1  b. 3  c. -3  d. -1
25. Uma wants to buy a video game system for $270. She has $60 and is saving $30 each week. Solve the equation $30w + 60 = 270$ to find how many weeks $w$ it will take Uma to save enough to buy the system.
   a. 6 weeks  b. 7 weeks  c. 9 weeks  d. 8 weeks

26. Brandon needs $480 to buy a TV and stereo system for his room. He received $60 in cash for birthday presents. He plans to save $30 per week from his part-time job. To find how many weeks $w$ it will take to have $480, solve $60 + 30w = 480$.
   a. 16 weeks  b. 13 weeks  c. 15 weeks  d. 14 weeks

27. Mandy and 3 friends bought some mechanical pencils at a special sale. They divided the pencils equally among themselves and then gave the 4 pencils left to Mandy’s little brother. At that time each had 24 pencils. Solve the equation $\frac{p - 4}{4} = 24$ to find the number of pencils $p$ that they bought at the sale.
   a. 112 pencils  b. 96 pencils  c. 80 pencils  d. 100 pencils

28. Miranda opened a checking account with $560 from her summer job. She withdrew the same amount each week for 13 weeks. Her balance was then $365. Solve the equation $560 - 13m = 365$ to find how much money $m$ she withdrew each week.
   a. $15  b. $71  c. $39  d. $28

29. Work-Out Corner has 5 more than 3 times as many exercise bicycles as The Gym. Together they have 21 bicycles. Solve the equation $x + 3x + 5 = 21$ to find the number of bicycles at Work-Out Corner.
   a. 4 bicycles  b. 17 bicycles  c. 7 bicycles  d. 25 bicycles

30. The sum of three consecutive integers is 72. Find the integers.
   a. 22, 23, 24  b. 25, 26, 27  c. 23, 24, 25  d. 24, 25, 26

31. The 9 officers of the Student Council are going on a trip to an amusement park. Each student must pay an entrance fee plus $5 for meals. The total cost of the trip is $225. Solve the equation $9(e + 5) = 225$ to find the cost $e$ of the entrance fee for each student.
   a. $20  b. $45  c. $25  d. $14

32. Twenty-five members of the eighth grade class at Park Center Middle School are going to a museum and then to lunch. Each student must pay an entrance fee to the museum and $7.25 for lunch. The total cost for the trip is $443.75. What is the entrance fee for one student?
   a. $10.50  b. $17.46  c. $17.75  d. $61.21

33. Paul rented a car for $129 plus $0.25 per mile. The total bill at the end of his trip was $216.50. Use the equation $129 + 0.25x = 216.50$ to find the number of miles he drove.
   a. 1,382 miles  b. 350 miles  c. 864 miles  d. 607 miles

34. The Party Room at Penny’s Pizza rents for an initial fee of $30 and then $5 per hour. Aislyn’s bill for her birthday party was $50. For how many hours did she rent the room?
   a. 6 hours  b. 16 hours  c. 4 hours  d. 10 hours

35. The fare for riding in a taxi is a $3 fixed charge and $0.80 per mile. The fare for a ride of $d$ miles is $6.75. Which equation could be used to find $d$?
   a. $3(6.75 + d) = 3$  b. $0.80 + 3d = 6.75$  c. $3 + 0.80d = 6.75$  d. $(0.80 + 6.75)d = 3$
36. Ms. Baker purchased a number of juice packs at a cost of $0.30 each and a loaf of bread that cost $1.19. The total cost of her purchases was $2.99. Which equation can you use to determine how many juice packs Ms. Baker purchased?
   a. \(2.99 - 1.19j = 0.30\)  
      c. \(1.19j + 0.30j = 2.99\)
   b. \(0.30j + 2.99 = 1.19\)  
      d. \(0.30j + 1.19 = 2.99\)

37. Sheila leaves on a long trip driving at a steady rate of 30 miles per hour. Her sister Allison leaves from the same location traveling to the same destination 2 hours later. She drives at a steady rate of 60 miles per hour. How long after Allison leaves home will she catch up to Sheila?
   a. 4 hours  
      b. 5 hours  
      c. 3 hours  
      d. 2 hours

38. If a number \(n\) is subtracted from 25, the result is three less than \(n\). What is the value of \(n\)?
   a. 14  
   b. 22  
   c. 28  
   d. 11

39. Write the given sentence as an equation.
   Tim’s age in 7 years will be three times what it was 19 years ago.
   a. \(3(t + 7) = t - 19\)  
      c. \(t + 7 = 3(t - 19)\)
   b. \(t + 19 = 3(t - 7)\)  
      d. \(3(t + 19) = t - 7\)

40. Solve and graph the inequality.
   \(3m + 9 \leq 18\)
   a. \(m \leq 6\)  
   b. \(m \geq 6\)  
   c. \(m \geq -3\)  
   d. \(m \leq 3\)

41. \(2x - 10 > -14\)
   a. \(x > -7\)  
   b. \(x > -2\)  
   c. \(x > -2\)  
   d. \(x < 2\)

42. \(-x - 4x \leq 0\)
   a. \(x \geq 0\)  
   b. \(x \leq 0\)  
   c. \(x \geq -4\)  
   d. \(x \leq -4\)
43. \(14 - 2x > 18\)
   a. \(x > -9\)
   b. \(x < -2\)
   c. \(x > -2\)
   d. \(x < -9\)

44. \(-\frac{x}{4} - 6 \geq -8\)
   a. \(x < -4\)
   b. \(x \leq 8\)
   c. \(x > 8\)
   d. \(x \geq -8\)

45. \(\frac{4}{5} - 5 < -3\)
   a. \(x < -10\)
   b. \(x \leq 0\)
   c. \(x > 5\)
   d. \(x \leq -10\)

46. \(6.7 \geq -0.2x + 4.5\)
   a. \(x < -11\)
   b. \(x < -56\)
   c. \(x \geq -56\)
   d. \(x \geq -11\)

47. Melissa wants to spend no more than $300 on school clothes. She spends $75 on a coat and then wants to buy some sweaters that are on special for $10 each. Solve the inequality \(75 + 10s \leq 300\) to find the greatest number of sweaters \(s\) she can buy.
   a. 23 sweaters
   b. 22 sweaters
   c. 30 sweaters
   d. 21 sweaters

48. A small airplane can carry less than 1,050 pounds of luggage and mail. The mail for the day weighs 490 pounds. If each passenger brings 70 pounds of luggage, what is the greatest possible number of passengers that can be taken?
   a. 15 passengers
   b. 7 passengers
   c. 8 passengers
   d. 9 passengers
49. Four times the sum of a number and 15 is at least 120. Let $x$ represent the number. Find all possible values for $x$.
   a. $x \geq 26$  
   b. $x \geq -15$  
   c. $x \geq 15$  
   d. $x \geq -26$

50. The width of a rectangle is 13 centimeters. Let $x$ represent the length. Find all possible values for $x$ if the perimeter is at least 228 centimeters.
   a. $x \geq 44$ cm  
   b. $x \geq 101$ cm  
   c. $x \geq 18$ cm  
   d. $x \geq 215$ cm

51. Solve the volume formula $V = lwh$ for $h$.
   a. $h = V/lw$  
   b. $h = V/l + w$  
   c. $h = lw$  
   d. $h = V/lw$

52. Solve the area formula for a circle, $A = \pi r^2$, for $r^2$.
   a. $r^2 = \frac{A}{\pi}$  
   b. $r^2 = A\pi$  
   c. $r^2 = \frac{\pi}{A}$  
   d. $r^2 = A - \pi$

53. Solve the perimeter formula for an isosceles triangle, $P = 2a + b$, for $b$.
   a. $b = \frac{P}{2a}$  
   b. $b = \frac{2a}{P}$  
   c. $b = P + 2a$  
   d. $b = P - 2a$

54. Solve the area formula for a triangle, $A = \frac{1}{2}bh$, for $h$.
   a. $h = \frac{2b}{A}$  
   b. $h = \frac{b}{2A}$  
   c. $h = \frac{2A}{b}$  
   d. $h = \frac{A}{2b}$

55. Solve the area formula for a trapezoid, $A = \frac{1}{2}h(b_1 + b_2)$, for $b_1$.
   a. $b_1 = 2Ah - b_2$  
   c. $b_1 = \frac{1}{2}Ahb_2$  
   b. $b_1 = \frac{2A}{h} - b_2$  
   d. $b_1 = 2Ahb_2$

56. Kendra is planning to ride her bicycle on a popular biking path that is 84 miles long. She plans to average 7 miles per hour. To find about how long the trip will take, solve the distance formula $d = rt$ for $t$. Then substitute to find the time it will take her for the trip.
   a. 13 hours  
   b. 12 hours  
   c. 11 hours  
   d. 7 hours

57. The formula for converting degrees Fahrenheit ($F$) to degrees Celsius ($C$) is $C = \frac{5}{9}(F - 32)$. Find $C$ for $F = 5^\circ$.
   a. $-49^\circ$  
   b. $-27^\circ$  
   c. $3^\circ$  
   d. $-15^\circ$

58. You drop a rock off a bridge. The rock’s height, $h$ (in feet above the water), after $t$ seconds is modeled by $h = -16t^2 + 541$. What is the height of the rock after 2 seconds?
   a. $-64$ feet  
   b. 605 feet  
   c. 509 feet  
   d. 477 feet
59. The cost of renting a car is given by the formula $C = 50n + 0.15d$, where $C$ is the cost in dollars, $n$ is the number of days’ rental, and $d$ is the distance driven in miles. How much would it cost to rent a car for a 15-day trip, and drive 475 miles each day?
   a. $1,225.00    b. $1,818.75    c. $821.25    d. $121.25

Short Answer

60. Elise and Miguel both collect baseball cards. Miguel has 2 more than 2 times as many cards as Elise. Together they have 971 cards.
   a. Write an equation to represent this situation.
   b. How many cards does each person have?

61. Caitlin had $402 in her bank account. She withdrew $15 each week to pay for a swimming lesson. She now has $237.
   a. Write an equation that can be used to find the number of swimming lessons that she paid for.
   b. How many swimming lessons did she pay for?
   c. At the time she had $237, the cost of a lesson rose to $19. How many lessons can she pay for with her remaining $237?

62. Cars For You will rent a car for $11 per day plus $.27 per mile driven. Rent-A-Rama will rent the same car for $26 per day plus $.07 per mile driven.
   a. Write an equation that represents the situation when the total rental cost for one day is the same at both rental agencies.
   b. For how many miles is the total rental cost for one day the same for each car?
   c. If you plan to rent a car for one day and drive 100 miles, which rental agency should you choose?

63. Jeremy is building a large deck for a community center. The deck is shaped as a rectangle. The width of the deck is 29 feet. The perimeter of the deck is to be at least 134 feet.
   a. Write an inequality that represents all possible values for the length of the deck.
   b. Find all possible values for the length of the deck.

Essay

64. Michael is saving money to attend a ski camp in Canada. The total cost of the camp is $1,500. He has $785 in a savings account and plans to save $55 per week.
   a. Explain how to write an equation to represent this situation.
   b. Explain how to solve the equation to find the number of weeks that he will need to save to earn the total amount for the camp. Then find the number of weeks.
   c. Michael has to pay the entire cost for the camp on June 1. Can he start saving on April 1 and still pay the entire cost? Explain your reasoning.
65. Wes owns a shop where he sells souvenirs. He ordered a shipment of boxes of huckleberry chocolates. Only $\frac{3}{4}$ of his order arrived. At that time he had 5 boxes left. Added to the new boxes, he had a total of 128 boxes of the chocolates.
   a. Solve the equation $\frac{3}{4}b + 5 = 128$ to find the number of boxes $b$ that were supposed to be in the shipment. Explain how you solved the equation.
   b. Check the solution to the equation from part a. Explain your method.

66. At the school cafeteria, the cost of one milk is $.50. The total cost of 5 turkey sandwiches and 4 milks is the same as the total cost of 4 turkey sandwiches and 8 milks.
   a. Write an equation that can be used to find the cost of a turkey sandwich. Explain what each expression or value represents in the equation.
   b. Use the equation you wrote in part a. to find the cost of a turkey sandwich. Explain how you solved the equation.

67. At Water World the admission fee is $17.00, and you can rent an inner tube for $0.75 per hour. You can use the formula $P = 17.00 + 0.75h$ to find the total cost for admission plus renting an inner tube.
   a. Solve the formula $P = 17.00 + 0.75h$ for $h$. Explain your steps for solving the formula for $h$.
   b. For how many hours can you rent an inner tube if you only have $20.75 to spend? Explain your method for finding the answer.

Other

68. Explain how to solve the equation $3t + 11 = -10$. Show that your solution works.

69. Eric buys a skateboard, and his total bill is $105.04. The rate of sales tax was 4%. You can solve the equation $s + 0.04s = 105.04$ to find the cost of the skateboard before tax.
   a. Explain what each value or variable in the equation $s + 0.04s = 105.04$ represents in this situation.
   b. Solve the equation to find the cost of the skateboard before tax. Explain your method.

70. The Hi-Line School is having an all-school play. The cost of 2 adult and 2 children’s tickets is $24. A child’s ticket costs half as much as an adult ticket.
   a. Write an equation that can be solved to find the cost of an adult ticket. Explain the variables and values you use in the equation.
   b. Find the cost of a child’s ticket. Explain your method.

71. Devin is driving to visit his aunt. He wants to travel at least 540 miles in 9 hours of driving.
   a. Write an inequality for this situation. Explain what each term in the inequality represents.
   b. Explain how to solve the inequality. Find all possible solutions for this problem.
72. A storage company charges new customers an initial fee of $20.00 for a small unit. Each month of storage costs $15.50. The company wrote a formula for finding the total charge for \( m \) months of storage. The formula is \( T = 20.00 + 15.50m \), where \( T \) is the total cost.

a. Suppose a customer is planning to use the unit for 18 months. What will be the total cost? Show how you find the total cost.

b. Suppose a customer has paid $593.5 for storage. For how many months did the customer use the storage unit? Explain how you found your answer.
Ch 7 Review
Answer Section

MULTIPLE CHOICE

1. ANS: D OBJ: 7-1.1 Using Properties to Solve Two-Step Equations
2. ANS: A OBJ: 7-1.1 Using Properties to Solve Two-Step Equations
3. ANS: B OBJ: 7-1.1 Using Properties to Solve Two-Step Equations
4. ANS: B OBJ: 7-1.1 Using Properties to Solve Two-Step Equations
5. ANS: C OBJ: 7-1.2 Combining Like Terms
6. ANS: B OBJ: 7-2.1 Combining Like Terms
7. ANS: A OBJ: 7-2.1 Combining Like Terms
8. ANS: B OBJ: 7-2.2 Using the Distributive Property
9. ANS: D OBJ: 7-2.2 Using the Distributive Property
10. ANS: B OBJ: 7-2.2 Using the Distributive Property
11. ANS: A OBJ: 7-3.1 Solving Multi-Step Equations With Fractions
12. ANS: C OBJ: 7-3.1 Solving Multi-Step Equations With Fractions
13. ANS: C OBJ: 7-3.1 Solving Multi-Step Equations With Fractions
14. ANS: A OBJ: 7-3.1 Solving Multi-Step Equations With Fractions
15. ANS: D OBJ: 7-3.1 Solving Multi-Step Equations With Fractions
16. ANS: B OBJ: 7-3.1 Solving Multi-Step Equations With Fractions
17. ANS: C OBJ: 7-3.1 Solving Multi-Step Equations With Fractions
18. ANS: B OBJ: 7-3.2 Solving Multi-Step Equations With Decimals
19. ANS: D OBJ: 7-3.2 Solving Multi-Step Equations With Decimals
20. ANS: A OBJ: 7-3.2 Solving Multi-Step Equations With Decimals
21. ANS: C OBJ: 7-5.1 Solving Equations With Variables on Both Sides
22. ANS: C OBJ: 7-5.1 Solving Equations With Variables on Both Sides
23. ANS: C OBJ: 7-5.1 Solving Equations With Variables on Both Sides
24. ANS: D OBJ: 7-5.1 Solving Equations With Variables on Both Sides
25. ANS: B OBJ: 7-1.1 Using Properties to Solve Two-Step Equations
26. ANS: D OBJ: 7-1.1 Using Properties to Solve Two-Step Equations
27. ANS: D OBJ: 7-1.2 Solving Problems With Two-Step Equations
28. ANS: A OBJ: 7-1.2 Solving Problems With Two-Step Equations
29. ANS: B OBJ: 7-2.1 Combining Like Terms
30. ANS: C OBJ: 7-2.1 Combining Like Terms
31. ANS: A OBJ: 7-2.2 Using the Distributive Property
32. ANS: A OBJ: 7-2.2 Using the Distributive Property
33. ANS: B OBJ: 7-3.2 Solving Multi-Step Equations With Decimals
34. ANS: C OBJ: 7-4.1 Write an Equation
35. ANS: C OBJ: 7-4.1 Write an Equation
36. ANS: D OBJ: 7-4.1 Write an Equation
37. ANS: A OBJ: 7-5.2 Using Equations With Variables on Both Sides
38. ANS: A OBJ: 7-5.2 Using Equations With Variables on Both Sides
39. ANS: C OBJ: 7-5.2 Using Equations With Variables on Both Sides
40. ANS: D OBJ: 7-6.1 Solving Two-Step Inequalities
41. ANS: B OBJ: 7-6.1 Solving Two-Step Inequalities
42. ANS: A OBJ: 7-6.1 Solving Two-Step Inequalities
43. ANS: B OBJ: 7-6.1 Solving Two-Step Inequalities
44. ANS: B OBJ: 7-6.1 Solving Two-Step Inequalities
45. ANS: A OBJ: 7-6.1 Solving Two-Step Inequalities
46. ANS: D OBJ: 7-6.1 Solving Two-Step Inequalities
47. ANS: B OBJ: 7-6.1 Solving Two-Step Inequalities
48. ANS: B OBJ: 7-6.2 Using Two-Step Inequalities
49. ANS: C OBJ: 7-6.2 Using Two-Step Inequalities
50. ANS: B OBJ: 7-6.2 Using Two-Step Inequalities
51. ANS: D OBJ: 7-7.1 Solving Formulas for a Given Variable
52. ANS: A OBJ: 7-7.1 Solving Formulas for a Given Variable
53. ANS: D OBJ: 7-7.1 Solving Formulas for a Given Variable
54. ANS: C OBJ: 7-7.1 Solving Formulas for a Given Variable
55. ANS: B OBJ: 7-7.1 Solving Formulas for a Given Variable
56. ANS: B OBJ: 7-7.2 Using Formulas to Solve Problems
57. ANS: D OBJ: 7-7.2 Using Formulas to Solve Problems
58. ANS: D OBJ: 7-7.2 Using Formulas to Solve Problems
59. ANS: B OBJ: 7-7.2 Using Formulas to Solve Problems

SHORT ANSWER

60. ANS:
   a. \( x + 2x + 2 = 971 \)
   b. Elise, 323 cards; Miguel, 648 cards

   OBJ: 7-2.1 Combining Like Terms

61. ANS:
   a. \( 237 + 15p = 402 \), where \( p \) = number of lessons paid for
   b. 11 lessons
   c. 12 lessons

   OBJ: 7-4.1 Write an Equation

62. ANS:
   a. \( 11 + 0.27m = 26 + 0.07m \), where \( m \) is the number of miles driven
   b. 75 miles
   c. Rent-A-Rama

   OBJ: 7-5.2 Using Equations With Variables on Both Sides

63. ANS:
   a. If \( L \) = length of the deck, an inequality is \( 2L + 58 \geq 134 \).
   b. \( L \geq 38 \) ft

   OBJ: 7-6.2 Using Two-Step Inequalities
ESSAY

64. ANS:

[4] a. Let \( w \) be the number of weeks that Michael will save $55. An equation for this situation is \( 1,500 = 785 + 55w \), since he must earn $1,500, he has $785, and he will save $55 per week.

b. To solve the equation, subtract 785 from each side. Then divide each side by 55.

\[
\begin{align*}
1,500 &= 785 + 55w \\
1,500 - 785 &= 785 + 55w - 785 \\
715 &= 55w \\
\frac{715}{55} &= \frac{55w}{55} \\
13 &= w
\end{align*}
\]

He needs to save for 13 weeks.

c. No, he can’t pay the entire amount on June 1. He needs to save for 13 weeks and there are fewer than 13 weeks between April 1 and June 1.

OBJ: 7-1.2 Solving Problems With Two-Step Equations
65. **ANS:**

[4] **a.** To solve the equation \[ \frac{3}{4} b + 5 = 128 \], you must subtract 5 from each side and then multiply each side by \( \frac{4}{3} \).

\[
\frac{3}{4} b + 5 = 128
\]

\[
\frac{3}{4} b + 5 - 5 = 128 - 5 \quad \text{Subtract 5 from each side.}
\]

\[
\frac{3}{4} b = 123 \quad \text{Simplify.}
\]

\[
\frac{4}{3} \cdot \frac{3}{4} b = \frac{4}{3} \cdot 123 \quad \text{Multiply each side by} \frac{4}{3}, \text{the reciprocal of} \frac{3}{4}.
\]

\[
b = 164 \quad \text{Simplify.}
\]

There were supposed to be 164 boxes in the shipment.

**b.** To check the solution, substitute 164 for \( b \) in the original equation.

\[
\frac{3}{4} b + 5 = 128
\]

\[
\frac{3}{4} (164) + 5 = 128 \quad \text{Substitute 200 for} b.
\]

\[
123 + 5 = 128 \quad \text{Simplify.}
\]

\[
128 = 128 \quad \text{The solution checks.}
\]

[3] one incorrect computation or an error in reasoning
[2] two computational errors or poor explanation
[1] one or both answers missing and/or no explanation

**OBJ:** 7-3.1 Solving Multi-Step Equations With Fractions
66. ANS:

[4] a. Let \( t \) be the cost of a turkey sandwich. The cost of 5 turkey sandwiches and 4 milks is \( 5t + 4(0.5) \). The cost of 4 turkey sandwiches and 8 milks is \( 4t + 8(0.5) \). Since the costs are the same, an equation for this situation is \( 5t + 4(0.5) = 4t + 8(0.5) \).

\[
\begin{align*}
5t + 4(0.5) &= 4t + 8(0.5) \\
5t + 2 &= 4t + 4 \\
5t + 2 - 4t - 2 &= 4t + 4 - 4t - 2 \\
t &= 2.00
\end{align*}
\]

The cost of a turkey sandwich is $2.00.

[3] one incorrect computation or an error in reasoning
[2] two computational errors or poor explanation
[1] one or more answers missing and/or no explanation

OBJ: 7-5.1 Solving Equations With Variables on Both Sides

67. ANS:

[4] a. To solve the formula for \( h \), first subtract 17.00 from each side. Then divide each side by 0.75.

\[
\begin{align*}
P &= 17.00 + 0.75h \\
P - 17.00 &= 17.00 + 0.75h - 17.00 \\
\frac{P - 17.00}{0.75} &= \frac{0.75h}{0.75} \\
P - 17.00 &= h \\
0.75 &= h
\end{align*}
\]

b. To find the number of hours, substitute 20.75 for \( P \) in the equation.

\[
\begin{align*}
\frac{P - 17.00}{0.75} &= h \\
\frac{20.75 - 17.00}{0.75} &= h \\
5 &= h
\end{align*}
\]

You can rent the inner tube for 5 hours.

[3] one incorrect computation or an error in reasoning
[2] two computational errors or poor explanation
[1] one or more answers missing and/or no explanation

OBJ: 7-7.1 Solving Formulas for a Given Variable
68. **ANS:**

To solve the equation $3t + 11 = -10$, first subtract 11 from each side and then divide each side by 3.

\[
3t + 11 - 11 = -10 - 11 \\
3t = -21 \\
\frac{3t}{3} = \frac{-21}{3} \\
t = -7
\]

Subtract 11 from each side.

Simplify.

Divide each side by 3.

Simplify.

The solution works if it makes the equation true. Substitute $-7$ into the original equation to show that the equation is true.

\[
3t + 11 = -10 \\
3(-7) + 11 = -10 \\
-21 + 11 = -10 \\
-10 = -10
\]

Replace $t$ with $-7$.

Multiply.

Simplify.

**OBJ:** 7-1.1 Using Properties to Solve Two-Step Equations

69. **ANS:**

**a.** In the equation $s + 0.04s = 105.04$, $s$ is the cost of the skateboard, $0.04s$ is the cost of the skateboard times the sales tax of 4% written as the decimal 0.04, and 105.04 is the cost of the skateboard plus the tax.

**b.** To solve the equation, combine the like terms $s + 0.04s$ to get $1.04s$. Then divide each side by 1.04 to get the cost of the skateboard without tax.

\[
s + 0.04s = 105.04 \\
1.04s = 105.04 \\
\frac{1.04s}{1.04} = \frac{105.04}{1.04} \\
s = 101
\]

The cost of the skateboard before tax is $101.

**OBJ:** 7-3.2 Solving Multi-Step Equations With Decimals
70. ANS:
a. Let the cost of an adult ticket be represented by $a$. If a child’s ticket is $\frac{1}{2}a$ the cost of an adult ticket, then the cost of that ticket is $\frac{1}{2}a$. Two adult and 2 children’s tickets are purchased, so that is $2a + 2(\frac{1}{2}a)$. The total cost is 24, so the equation is $2a + 2(\frac{1}{2}a) = 24$.
b. To find the cost of a child’s ticket, first find the cost $a$ of an adult ticket by solving the equation $2a + 2(\frac{1}{2}a) = 24$. First, simplify expressions. Then combine like terms. Finally, divide to find the value of $a$.

\[
2a + 2\left(\frac{1}{2}a\right) = 24
\]
\[
2a + a = 24 \quad \text{Simplify.}
\]
\[
3a = 24 \quad \text{Combine like terms.}
\]
\[
\frac{3a}{3} = \frac{24}{3} \quad \text{Divide each side by 3.}
\]
\[
a = 8
\]

The cost of an adult ticket is $8$, so the cost of a child’s ticket is $4$.

OBJ: 7-4.1 Write an Equation

71. ANS:
a. Let $s$ represent Devin’s speed. An inequality for this situation is $9s \geq 540$. In the inequality, 9 is the number of hours, $s$ is the speed, and 540 is the number of miles. Since he wants to drive 540 miles or more, the symbol is $\geq$.
b. To solve the inequality, divide each side by 9.

\[
\frac{9s}{9} \geq \frac{540}{9}
\]
\[
s \geq 60 \quad \text{Simplify.}
\]

Devin must drive 60 miles per hour or faster.

OBJ: 7-6.2 Using Two-Step Inequalities
a. To find the total cost, substitute 18 for $m$ into the formula.

\[
T = 20.00 + 15.50m
\]

\[
T = 20.00 + 15.50(18)
\] Substitute 18 for $m$.

\[
T = 20.00 + 279
\] Multiply.

\[
T = 299.00
\] Add.

The total cost of the unit will be $299.00.

b. To find the number of months, solve the equation $T = 20.00 + 15.50m$ for $m$. Then substitute 593.5 for $T$.

\[
T = 20.00 + 15.50m
\]

\[
T – 20.00 = 20.00 + 15.50m – 20.00
\] Subtract 20.00 from each side.

\[
T – 20.00 = 15.50m
\] Simplify.

\[
T – 20.00 = m
\] Divide each side by 15.50.

\[
\frac{593.5 – 20.00}{15.50} = m
\] Substitute 593.5 for $T$.

\[
\frac{573.5}{15.50} = m
\] Simplify.

\[
37 = m
\] Divide.

The customer rented the unit for 37 months.

OBJ: 7-7.2 Using Formulas to Solve Problems