Facts to Know

Many basic word problems can be expressed in an equation format, which makes it easy to understand and solve.

Using Algebraic Symbols

- You can use a letter of the alphabet to represent the unknown number in a problem.
- The equation is written so that the values on the left side of the equal sign equal the values on the right side of the equal sign.
- Solve the equation so that the unknown value represented by a letter is alone on one side of the equal sign and the value of the unknown is on the other side of the equal sign.

Sample A

Jennifer has $25.00. She needs $49.00 to buy a new school outfit. How much more money does she need?

Write an equation this way: n (money needed) + 25 (money she has) = 49 (cost of outfit)

Solve the equation by subtracting 25
from each side.

$$n + 25 = 49$$
$$n + 25 - 25 = 49 - 25$$
$$n = 24$$

Jennifer needs
$24.00 more.

Axiom of Equality

- The axioms of equality were used to help solve the basic equation above.
- Any value added, subtracted, multiplied, or divided to one side of the equal sign must be added, subtracted, multiplied, or divided respectively to the other side.

Sample B

A group of 5 girls decided to split evenly the $18.75 cost of a CD album by their favorite group. How much money did each girl spend?

Write an equation.

Solve for n (the amount each girl spent)
by dividing each side of the equation by 5.

$$5n = \$18.75$$
$$5n \div 5 = \$18.75 \div 5$$
$$n = \$3.75$$

Each girl spent
$3.75.

Working with Two Unknown Quantities

You can use the same letter with an added or subtracted amount to represent two unknown quantities. Simplify and combine terms whenever possible.

Sample C

Sammy's mother is 2 years more than 3 times as old as Sammy. Their combined age is 42. How old are Sammy's mother and Sammy?

Equation: Let n equal Sammy's age. Let $3n + 2$ = Sammy's mother's age.

Since the total of their ages equals 42, then $n + 3n + 2 = 42$

Combine terms: $4n + 2 = 42$

Use the axioms of equality by years

subtracting 2 and then dividing by 4.

$$4n + 2 = 42$$
$$4n + 2 - 2 = 42 - 2$$
$$4n = 40$$
$$4n \div 4 = 40 \div 4$$
$$n = 10$$

Sammy is 10

old. His mother
is 32 years old.

33

Alex has $13.00 to buy a stereo that costs $24.00. How much more money does he need?
Write the equation. Let *n* = the amount of money.

$$n + 13 = 24$$

Use the axioms of equality:

$$n + 13 = 24$$
$$n + 13 - 13 = 24 - 13$$
$$n = 11$$

Alex needs $11.00 more.

Directions: Use the information on page 33 to help you solve these problems. Write an equation for each word problem using *n* and solve it.

1. Jimmy is 23 years younger than his mom who is 36 years old. How old is Jimmy?

   Write the equation: _____

   Solve for *n*: _____

   Answer: _____

2. Albert has 15 CDs. Dianne has 2 more than 4 times as many CDs. How many CDs does Dianne have?

   Write the equation: _____

   Solve for *n*: _____

   Answer: _____

3. Joe's dad weighs 216 pounds. Joe weighs 122 pounds less than his dad. How much does Joe weigh?

   Write the equation: _____

   Solve for *n*: _____

   Answer: _____

4. Valerie took 25 shots in a basketball game. She had a 60% shooting percentage. How many shots did she make?

   Write the equation: _____

   Solve for *n*: _____

   Answer: _____

5. Sherrie's CD played for 22 minutes, which was 7 minutes longer than Matthew's CD. How long did Matthew's CD play?

   Write the equation: _____

   Solve for *n*: _____

   Answer: _____

6. Jerry read 1,145 words in five minutes. Jonathan read 316 words less in the same time period. How many words did Jonathan read?

   Write the equation: _____

   Solve for *n*: _____

   Answer: _____

7. Jeremiah rode 88 minutes on his skateboard without falling or getting off. Nick rode only $\frac{3}{4}$ as long. How long did Nick ride?

   Write the equation: _____

   Solve for *n*: _____

   Answer: _____

Extension

Write a word problem comparing your age to another person's age.

Word Problem: _____

_____

_____

Solve for *n*: _____

Answer: _____

Ronny's father is 24 years older than Ronny. Their combined age is 46. How old is Ronny? How old is Ronny's father?

Write the equation: Let x stand for Ronny's age. Let $x + 24$ stand for his dad's age.

Equation:

$$x + x + 24 = 46$$
$$2x + 24 = 46$$
$$2x + 24 - 24 = 46 - 24$$
$$2x = 22$$
$$2x \div 2 = 22 \div 2$$
$$x = 11$$

Ronny is 11.

His father is 35.

Directions: Use the information on page 33 to help you solve these word problems. Write an equation for each problem using n and then solve the problem.

1. Sarah's mother is 28 years older than Sarah is. Their combined age is 50. How old is Sarah? How old is her mother?

   Write the equation: _____

   Solve for n: _____

   Answer: _____

2. Joe's dad weighs 140 pounds more than Joe. Their combined weight is 336 pounds. How much does Joe weigh? How much does his dad weigh?

   Write the equation: _____

   Solve for n: _____

   Answer: _____

3. Christina has $22.00 more than 3 times as much money as Melissa has. Together they have $122.00. How much money does each girl have?

   Write the equation: _____

   Solve for n: _____

   Answer: _____

4. In a one-minute time period, Joseph read 2 times as many words as John. Together they read 669 words. How many words did each boy read?

   Write the equation: _____

   Solve for n: _____

   Answer: _____

5. Norman is 4 times as old as his brother Nicholas. Their combined age is 15. How old is each boy?

   Write the equation: _____

   Solve for n: _____

   Answer: _____

6. George has 9 times as many stamps in his collection as Daniel has. Bryan has 2 times as many stamps as Daniel. The combined stamp collection of the three boys is 144. How many stamps does each boy have?

   Write the equation: _____

   Solve for n: _____

   Answer: _____

8 ▶ Practice · · · · · · · · · · · · · · · Using Equations to Solve More Word Problems

Directions: Use the information on page 33 to help you solve these word problems. Write an equation for each problem using *n* and then solve the problem.

1. Fred's dad is 25 years older than Fred. His mother is 23 years older than Fred. The combined age of the three people is 93. How old is Fred? How old is each parent?

   Write the equation: _____ Solve for *n*: _____

   Answer: _____

2. A bike costs $100.00 more than a scooter. A scooter costs $60.00 more than a skateboard. The total cost of the 3 items is $310.00. How much is the skateboard? How much is the scooter? How much is the bike?

   Write the equation: _____ Solve for *n*: _____

   Answer: _____

3. Jimmy's brother is 9 times as old as Jimmy. In 6 years, his brother will be only 3 times as old as Jimmy. How old is each boy?

   Write the equation: _____ Solve for *n*: _____

   Answer: _____

4. Maybelle is 5 years younger than Jesse. Ellen is 2 years older than Jesse. Jeanne is 8 years older than Jesse. The combined age of the four children is 53.

   How old is Jesse? _____ How old is Maybelle?_____

   How old is Ellen? _____ How old is Jeanne?_____

   Write the equation: _____ Solve for *n*: _____

   Answer: _____

5. Elsa had $15.00 more than Joseph. Julian had $10.00 less than Joseph. Martha had $23.00 more than Joseph. Together they had $108.00. How much money did each student have?

   Write the equation: _____ Solve for *n*: _____

   Answer: _____

6. Christina had 2 times as much money as Melissa. Charmain had 4 times as much money as Melissa. Together they had $105.00. How much money did each girl have?

   Write the equation: _____ Solve for *n*: _____

   Answer:_____

7. Matthew had 3 times as much money as Kristin. Joshua had $10.00 less than Matthew did. Altogether they had $74.00. How much money did each person have?

   Write the equation: _____ Solve for *n*: _____

   Answer: _____

8. Kenneth is 8 years older than Andrew. Billy is 3 times as old as Andrew. Cameron is 5 years younger than Andrew. The combined age of the four is 63. How old is each boy?

   Write the equation: _____ Solve for *n*: _____

   Answer: _____

Facts to Know

Ratios

- A ratio is used to compare two numbers or the size of two amounts.
- A ratio can be used to compare part of something to the entire amount as you do in a fraction.
- A ratio can compare one part of a whole to another part of a whole.
- A ratio can compare all of one thing to all of something else.

Sample A

Kathy has 7 orange tennis balls and 5 yellow tennis balls.

The ratio of orange tennis balls to all tennis balls is $\frac{7}{12}$

The ratio of yellow tennis balls to all tennis balls is $\frac{5}{12}$

The ratio of orange tennis balls to yellow tennis balls is $\frac{7}{5}$

The ratio of yellow tennis balls to orange tennis balls is $\frac{5}{7}$

Writing Ratios

- A ratio can be written as a fraction: $\frac{2}{3}$
- A ratio can be expressed with a colon: 2:3.
- A ratio can be written with "to": 2 to 3.

Proportions

- A proportion is used to compare two ratios.
- A proportion is an equation which shows that two ratios are equal.
- A proportion can be written in fraction form. $\frac{1}{2} = \frac{5}{10}$
- A proportion can be written in colon form. 1:2 :: 5:10 (1 is to 2 as 5 is to 10)
- The outer terms (1 and 10) are called the *extremes*.
- The inner terms (2 and 5) are called the *means*.

Using Proportions

- The product of the means equals the product of the extremes.
- If you know any three of the terms, you can find the fourth.
- You can also solve a proportion by using cross products.

1:2 :: 5:10

2 x 5 = 10 and 1 x 10 = 10

1:7 :: 4:c 1 x c = c

7 x 4 = 28 c = 28

$\frac{4}{6} = \frac{8}{a}$ or 4 x a = 6 x 8

$4a = 48$

$a = 12$

Some special formulas with rates are the following:

Rate of Speed = Distance divided by Time ($R = D/T$)

Distance = Rate of Speed multiplied by Time ($D = R \times T$)

Time = Distance divided by Rate of Speed ($T = D/R$)

Rates

A rate is a special ratio whose denominator is always 1.
Examples include miles per gallon (mpg) and miles per hour (mph).

Sample B

If you travel 40 miles in one hour, how far do you travel in 3 hours?

(miles) $\frac{40}{1} = \frac{d}{3}$ $d = 120$

(hours)   You travel 120 miles in 3 hours.

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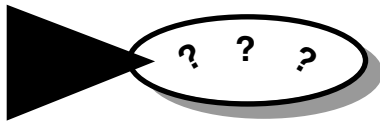
C. $698.00 or
$700.00
2. A. 185 sq. ft.
B. 5 rolls
C. $125
3. A. 244 3/8 sq. ft.
230 sq. ft.;
244 3/8 sq. ft.;
230 sq. ft.;
425 sq. ft.
B. 1,373 3/4 sq. ft.
or 1,374 sq. ft.
C. 4 gallons
D. $71.96

Page 23
1. A. 2,356 sq. ft.
B. $23.56
2. A. 200 ft.
B. $6.00
3. A. 1,116 sq. ft.
B. $11.16
4. A. 34.54 ft.
B. $1.04
C. 94.99 sq. ft.
D. $0.95
5. A. 643.75 sq. ft.
B. $96.56
6. A. 221 sq. ft.
B. $39.78
7. A. 37.68 ft.
B. 113.04 sq. ft.
Extension: Answers will
vary.

Page 24
1. 240 cartons
2. 4,070 cu. ft.
3. 25,688.34 cu. in.
4. 1,417.95 cu. cm
5. 370 cu. ft.
6. 14,820 cu. ft.
7. 162,887.5 cu. ft.
8. 10,160,922 lb.
9. 1,218,398.5 gallons
10. 471 cu. in.
11. 84,780 cu.ft.

Page 26
1. $45.60
2. $34.13
3. $104.65

4. $43.51
5. $32.95
6. $29.25
7. $36.86
8. $30,555.64
9. Monday and
Tuesday = Saturday
10. $17,111.16
11. $12,473.53

Page 27
1. $101.47
2. $12.27
3. You could buy the
DVD player;
$179.67
$5.96 change
4. $786.15
5. The traditional
machine/phone is
$11.24 cheaper.
6. $19.20
7. $49.76
8. Boom Box City
$25.46 less
9. $16.30
10. 25%

Page 28
1. 22.86 miles per day
2. 4 hr. 24 min.
3. 3 hr. 20 min.
4. 40 m.p.h.
5. 1 mile per minute
6. $21.00
7. $3.20
8. $0.82
9. $46.74

Page 30
1. 6 tops/4 skorts
2. 3 pennies, 3
nickels, 0 dimes, 3
quarters,
3. A. 1 penny, 0
nickels,
4 dimes,
4 quarters,
0 half dollars
B. 1 penny, 4
nickels,
2 dimes,

0 quarters,
2 half dollars
4. 6, 9, 12, 15, 18
5. 300, 350, 400, 450,
500
6. 3 footballs, 6 tennis
balls, 3 baseballs, 2
basketballs
7. Jack is 26 years
old; Dad is 52 years
old
8. Marie is 22 years
old; Mother is 44
years old

Page 31
1. $360.00
2. 2,700 beads
3. 240 total
16 skirts
32 jeans
64 shorts
128 blouses
4. $372.00 total
Elaine $12.00
Christina $24.00
Alyse $48.00
Doreen $96.00
Melissa $192.00
5. James 2 years old
Raymond 3 years
old
Brett 4 1/2 years
old
John 6 years old
Robert 11 years old

Page 32
1. 3 hr. 2 min.
2. 31 games
3. 81 times
4. 30 names
5. 20 points on 8th
game; 35 points on
14th game
6. 35 players are 13
years old

Page 34
1. $n = 36–23$
$n = 13$
13 years old
2. $n = (4 \times 15) + 2$

$n = 62$
62 CDs
3. $n = 216–122$
$n = 94$
94 lb.
4. $n = 25 \times .60$
$n = 15$
15 shots
5. $n = 22 – 7$
$n = 15$
15 minutes
6. $n = 1,145 – 316$
$n = 829$
829 words
7. $n = 88 \times 3/4$
$n = 66$
66 minutes
Extension: Answers will
vary.

Page 35
1. $n + (n + 28) = 50$
$2n + 28 = 50$
$n = 11$
Mother is 39 years
old.
Sarah is 11 years
old.
2. $n + (n + 140) = 336$
$2n + 140 = 336$
$n = 98$
Joe weighs 98 lbs.
Dad weighs 238
lbs.
3. $n + 4n + 22 = 122$
$n = 25$
Melissa has $25.00.
Christina has $97.00.
4. $n + 2n = 669$
$3n = 669$
$n = 223$
John read 223
words.
Joseph read 446
words.
5. $n + 4n = 15$
$5n = 15$
$n = 3$
Nicholas is 3 years
old.
Norman is 12 years
old.

6. $n + 9n + 2n = 144$
$12n = 144$
$n = 12$
Daniel has 12 stamps.
Bryan has 24 stamps.
George has 108 stamps.

Page 36

1. $n + (n + 25) + (n + 23) = 93$
$3n + 48 = 93$
$n = 15$
Fred is 15 years old.
Mom is 38 years old.
Dad is 40 years old.

2. $3n + 220 = 310$
$n = 30$
The skateboard is $30.
The scooter is $90.
The bike is $190.

3. $9n + 6 = 3(n + 6)$
$n = 2$
Jimmy is 2 years old.
Brother is 18 years old.

4. $n + (n – 5) + (n + 2) + (n + 8) = 53$
$4n + 5 = 53$
$n = 12$
Jesse is 12 years old.
Maybelle is 7 years old.
Ellen is 14 years old.
Jeanne is 20 years old.

5. $n + (n + 15) + (n – 10) + (n + 23) = 108$
$4n + 28 = 108$
$n = 20$
Joseph had $20.00.
Elsa had $35.00.

Julian had $10.00.
Martha had $43.00.

6. $n + 2n + 4n = 105$
$7n = 105$
$n = 15$
Melissa had $15.00.
Christina had $30.00.
Charmain had $60.00.

7. $n + 3n + (3n – 10) = 74$
$7n – 10 = 74$
$n = 12$
Kristin had $12.00.
Matthew had $36.00.
Joshua had $26.00.

8. $n + (n + 8) + 3n + (n – 5) = 63$
$6n + 3 = 63$
$n = 10$
Andrew is 10 years old.
Kenneth is 18 years old.
Billy is 30 years old.
Cameron is 5 years old.

Page 38

1. 4/7 or 4:7
4/11 or 4:11
7/4 or 7:4
7/11 or 7:11
2. 5/8 or 5:8
5/13 or 5:13
8/5 or 8:5
8/13 or 8:13
3. 6/7 or 6:7
6/13 or 6:13
7/6 or 7:6
7/13 or 7:13
4. 60/1 or 60:1
5. 55/1 or 55:1
6. 16/1 or 16:1
7. 1,200/1 or 1,200:1
8. 24/1 or 24:1
9. 60/1 or 60:1
10. 365/1 or 365:1
11. 8/100 or 8:100

Page 39

1. 2:3 :: n:18
$n = 12$ blocks
2. 5:3 :: n:60
$n = 100$ pages
3. 5:7 :: n:630
$n = 450$ minutes
4. 14:3 :: n:90
$n = 420$ gallons
5. 170:4 :: n:240
$n = 10,200$ gallons
6. 20:3 :: 1000:n
$n = 150$ hours
7. 145:3 :: n:24
$n = 1,160$ lb.

Page 40

1. 55:1 :: n:7
$n = 385$ miles
2. 18:1 :: n:20
$n = 360$ miles
3. 60:1 :: n:5.5
$n = 330$ minutes
4. 24:1 :: n:13.5
$n = 324$ hours
5. 2,000,000:1 :: n:48
$n = 96,000,000$ tons
6. 2,980:n :: 40:1
$n = 74.5$ hr.
7. 100:9 :: n:40.5
$n = 450$ miles
8. 16:1 :: n:45
$n = 720$ oz.

Challenge: 86,400 sec.; 8,760 hr.

Page 41

1. 600 calories
2. 650 calories
3. 400 calories
4. 2,500 calories
5. handball and bicycling
6. 1,650 calories
7. bicycling and walking
8. 3-hr. walk
9. Answers will vary.
10. 8 states
11. 7 states
12. 12 states
13. 1 to 5 million

14. Answers will vary.
15. California has the most.
Wyoming has the least.
16. Answers will vary.

Page 42

1. Friday
2. Thursday
3. 15° to 20°
4. Monday
5. Wednesday and Friday
6. Tuesday and Saturday
7. Monday, Saturday, and Sunday
8. 91.7° or 92°
9. 71.7° or 72°
10. Answers will vary.
11. water
12. nitrogen
13. 32%
14. other category
15. 47%
16. Answers will vary.

Page 43

1. $+2 – 12 = -10$
You owe $10.00.
2. $32 – 40 = -8$
8 below 0
3. $-4 + -11 + -6 = -21$
21 below par
4. $-\$1000 + \$750 = \$250$
$250 owed
5. $-600 + 200 + 100 + 150 = -150$
He needed 150 points to get to 0.
6. $-69 + 35 = -34°$ F
7. $-129 – (+)136 = -265$
265° difference
8. $-80 – (+)134 = -214$
214° difference

3 ▶Practice • • • **Working with Algebraic Expressions**

Directions: Write the algebraic expression. If there is one variable, use . If there are two variables, use   and .

1. fourteen divided by a number _____

2. seven times a number _____

3. 10 less than a number _____

4. 12 more than a number _____

5. one number added to another number _____

6. a number divided by 6 _____

7. 4 times a number plus 5 times the same number _____

8. 4 times a number plus 5 times another number _____

9. 7 more than one-third of a number _____

10. 25 divided by a number _____

11. the sum of 6 and a number divided by 10 _____

12. one-half the product of 8 and a number _____

13. the sum of 5 and a number divided by 7 _____

14. the sum of 4 and a number divided by 10 _____

15. 20 decreased by 4 times a number _____

16. the sum of 20 and a number divided by 5 _____

17. The length of the gym floor is 5 feet longer than its width. Using   for the width, write an expression for the length of the room. _____

18. Three carnival tickets cost   cents. What is the cost of one? _____

Directions: Change the algebraic expressions to statements in words.

Algebraic Expression	**Statement in Words**
19. +	_____
20. –	_____
21. 4	_____
22. <u>8 </u>	_____
23. 2 – 5	_____
24. 8 +	_____
25.	_____
26. 22 –	_____
27. – 22	_____

Directions: Combine the like terms to simplify each expression.

28. $3 +$

29. $+$

30. $5 - 2$

31. $3 - 4$

32. $\frac{2}{3} + 3 +$

33. $12^2 - 3 +$

34. $4 - 3 + 1$

35. $2 + 3 - 7$

36. $9 + 2^3 - 4 - 6$

37. $\frac{8}{2} - 9 - 6 + 12y$

Directions: Evaluate the following expressions. Let $= 3$ and $= 9$.

38. $= \underline{\hspace{2cm}}$

39. $= \underline{\hspace{2cm}}$

40. $\frac{}{3} + \frac{t}{3} = \underline{\hspace{2cm}}$

41. $+ = \underline{\hspace{2cm}}$

42. $= \underline{\hspace{2cm}}$

Directions: Evaluate the following expressions. Let $= 5$, $= -4$, and $= 10$.

43. $= \underline{\hspace{2cm}}$

44. $+ = \underline{\hspace{2cm}}$

45. $= \underline{\hspace{2cm}}$

46. $- 5 = \underline{\hspace{2cm}}$

47. $= \underline{\hspace{2cm}}$

Directions: Evaluate the following expressions.

Let = 6, = 5, = 2

1. 3 + 6 = _____

2. 2 – 3 + 10 = _____

3. 9 – 4 = _____

4. 14(+) = _____

5. 3 – (+) = _____

Let = -3, = 4, and = -2.

6.   –   = _____

7. __ = _____

8. 4 – 2 – 3 = _____

9. 7(+) = _____

10. 3 + 2 = _____

Directions: Solve the equations using the formulas given. _____

11. The temperature outside is 59° F. What is it in Celsius? _____
    (Use this formula: $C = \frac{5}{9}(F - 32)$)

12. Your family plans to go on a short weekend vacation. Your mom wants to drive only 3 hours on back roads at 45 miles per hour. How far away can you go? (Use the formula: =   or
       =   x   .) _____

13. Fred Tye sells electronic equipment after school at Sparky's World. He earns $140 a week, plus 7% percent commission on all sales over $1,000. Last week, Fred sold $3,000 worth of equipment. How much did he earn? (Use this formula: earnings = salary + .07 (sales – $1000). _____

14. Mr. Marky is pacing off the perimeter (the distance around) his square property. One side is 90 feet. "Don't walk the other three sides," said his wife. "Just use the formula, P = 4s." "What does that mean?" said Mr. Marky. "It means," said his wife, "perimeter equals 4 times the length of any one side." What's the perimeter of Mr. Marky's property?

Directions: Solve each equation using an inverse operation.

15. 3 = -36

16.   + 20 = 100

17. 24 =   – 18

18. __ = 48
     3

19.   – 15 = 20

20. -72 = 9

21. -25 =

22. 60 = 42 +

Directions: Solve these two- and three-step equations.

1. $8 \quad - 4 = 60$

2. $9 \quad - 12 = 69$

3. $\dfrac{}{3} + 4 = 16$

4. $\dfrac{}{12} + 8 = 30$

5. $\dfrac{3}{4} \quad - 3 = 9$

6. $39 = 14 \quad - 3$

Directions: Combine the variables to solve the equations.

7. $7(2 + \quad) = 28$

8. $8 \quad + 2 + 2 \quad = 32$

9. $3 \quad - 2 \quad - 10 = -9$

10. $6(\quad - 3) = 18$

11. $2(3 + \quad) = 7$

12. $14 \quad - 10 - 4 \quad = 0$

13. $\quad + 2 \quad + 3 \quad = 12$

14. $\quad + 3 \quad + 2(\quad + 3) = 15$

Directions: Solve these equations with variables on both sides.

15. $4 \quad = 8 + 2$

16. $5(\quad - 4) = 3(\quad + 8)$

17. $3 \quad - 9 = 7 \quad + 5$

18. $7 \quad + 15 = 4 \quad + 37$

19. $3 \quad + 10 = 8$

20. $2(\quad - 3) = 4(\quad - 10)$

21. $5 \quad + 32 = 8 \quad + 17$

22. $6 \quad - 2 - 9 \quad = 4$

23. $48 - 4 \quad = 8 \quad - 12$

24. $28 - 2 \quad = 5$

25. $9 \quad + 17 = 6 \quad + 32$

26. $19 \quad - 14 - 21 \quad = -2$
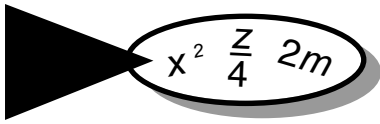
Page 8

1. -2
2. 3
3. -4
4. -9
5. 9
6. -110
7. -43
8. 2.7
9. 23
10. 7.89
11. -6
12. 4
13. -13
14. 15
15. -6
16. 12
17. 50
18. 12
19. 4
20. 7
21. -7
22. 4.4
23. -4.4
24. 18
25. 12
26. 17
27. -9
28. 16
29. -10
30. 7
31. 24
32. 5
33. -19
34. 15

Page 12

1. 63
2. 68.2
3. 46.2

4. 100
5. 54
6. 924
7. 60
8. -24
9. -70
10. -36
11. 24
12. -90
13. -4
14. -5
15. -3
16. 11
17. 3
18. 9
19. 3
20. 1
21. 3
22. 7
23. -2
24. 3
25. -27
26. 54
27. 28
28. -65
29. -13
30. 35
31. 2/9
32. -5
33. 4
34. -5

Pages 15 and 16

1. 14/
2. 7
3. -10
4. $+12$
5. $+$ or $+$
6. /6
7. 4 $+5$

8. 4 $+5$
9. /3 + 7 or 1/3 $+$ 7
10. 25/
11. $\dfrac{6+}{10}$
12. 1/2 (8) or 8 /2
13. $\dfrac{5+}{7}$
14. $\dfrac{4+}{10}$
15. 20 – 4
16. $\dfrac{20+x}{5}$
17. $+ 5$ or $5 +$
18. /3 or 1/3
19. one number added to another number
20. one number decreased by another number
21. 4 times a number
22. 8 divided by a number
23. 2 times a number, decreased by 5
24. 8 increased by a number
25. a number times another number
26. 22 decreased by a number
27. 22 less than a number
28. 4
29. 2
30. 3
31. -
32. 1 2/3 $+3$
33. 12 $^2 - 3 +$
34. $+1$

35. 3 -5 or -5 + 3
36. 3 $+ 2$ $^3 - 4$
37. -2 $+3$
38. $\dfrac{3}{9} = \dfrac{1}{3}$
39. 3(9) = 27
40. 3/3 + 9/3 = 12/3 = 4
41. 3 + 9 = 12
42. $\dfrac{9}{3} = 3$
43. 5(-4) = -20
44. -4 + 10 = 6
45. $\dfrac{10}{5} = 2$
46. 10 – 5 = 5
47. $\dfrac{-4}{10} = \dfrac{-2}{5}$

Page 20

1. 48
2. 55
3. 46
4. 112
5. -5
6. 2
7. -1 1/3 or -4/3
8. 29
9. 14
10. 5
11. 15° C
12. 135 miles
13. $280
14. 360 feet
15. $= -12$
16. $= 80$
17. $= 42$
18. $= 144$
19. $= 35$
20. $= -8$
21. $= -125$
22. $= 18$
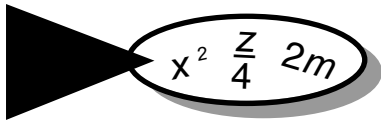
Page 24

1. = 8
2. = 9
3. = 36
4. = 264
5. = 16
6. = 3
7. = 2
8. = 3
9. = 1
10. = 6
11. = 1/2
12. = 1
13. = 2
14. = 3/2
15. = 4
16. = 22
17. = 3 1/2 or 7/2
18. = 7 1/3 or 22/3
19. = -2
20. = 17
21. = 5
22. = 2
23. = 5
24. = 4
25. = 5
26. = -6

Page 27

1. = 3
2. = 39
3. = 2
4. = -1 1/2 or -3/2
5. = -1
6. = -16
7. = 2 3/5 or 13/5
8. = -13
9. = -5
10. = 7
11. = 12

12. = 20

Page 28

1. = – –
2. = _ + _
3. = ____
4. = +
5. =
6. = –
7. = _
8. = –
9. = _
10. = _ – _
11. = _
12. = _
13. = _ – _
14. = _ —
15. = —
16. = _
17. = _ – _
18. equals the square root of ² – ² or
= $\sqrt{^2 - {}^2}$
19. = $\frac{}{2\pi}$
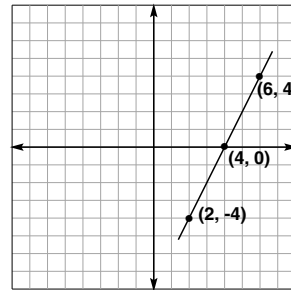20. = $\frac{ - 2}{2}$
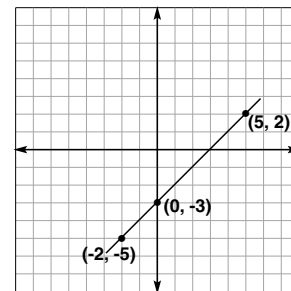
Page 32

1. (-5, 0)
2. (-2, 0)
3. (0, 3)
4. (0, 7)

5. (1, 0)
6. (4, 0)
7. (0, -3)
8. (0, -5)
9. (5, 5)
10. (1, -5)
11. (-5, -1)
12. (-6, 6)
13. (-1, 5)
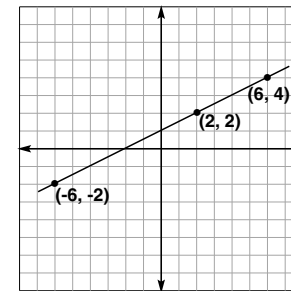14. (-5, 2)
15. (-6, -3)
16. (-3, -6)

Page 35

1.

2.

3.

Page 38

1.
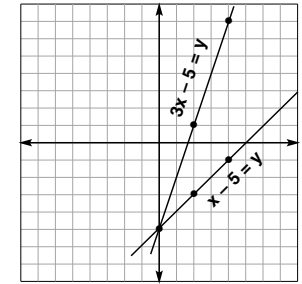
(0, -5)

2.
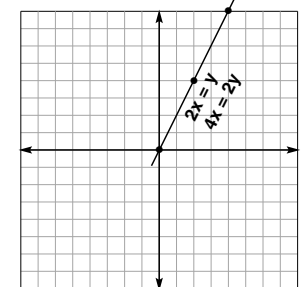
all solutions in common

3.
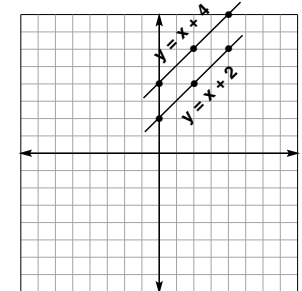
no solution

4.
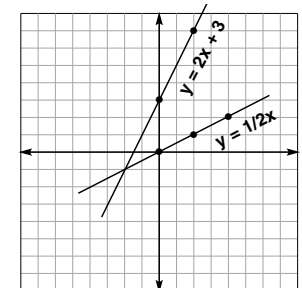
(-2, -1)

Name _____

Writing Systems of Equations 1

Directions: Assign two variables for each problem, and write the equations.
Do not solve.

1. A store receives a shipment of VCRs and CD players. A shipment of 5 VCRs and 4 CD players costs $1,950. A shipment of 3 VCRs and 6 CD players costs $2,250. Find the cost of a VCR and the cost of a CD player.

<u>Set up:</u>   <u>Equations:</u>

Let   ____ = _____   _____

        ____ = _____   _____

2. A basketball team stopped at a fast-food restaurant after a game. They divided into two groups. One group bought 5 chicken sandwiches and 7 hamburgers for a cost of $24.90. The second group spent $28.80 and bought 5 chicken sandwiches and 9 hamburgers. How much does a hamburger cost?

<u>Set up:</u>   <u>Equations:</u>

Let   ____ = _____   _____

        ____ = _____   _____

3. A travel agent offers 2 package vacation plans. The first plan costs $400 and includes 3 days at a hotel and a rental car for 2 days. The second plan costs $550 and includes 4 days at a hotel and a rental car for 3 days. The daily charge for the room and the car is the same under each plan. Find the cost per day for the room and for the car.

<u>Set up:</u>   <u>Equations:</u>

Let   ____ = _____   _____

        ____ = _____   _____

Writing Systems of Equations 1 *(cont.)*

4. The Math Club is having their end-of-the-year party. Natasha found that the cafeteria usually makes 200 cups of pineapple-ginger ale fruit punch. The cook told her that if she doubles the pineapple and triples the ginger ale, she will have a total of 420 cups of punch. How many cups of each are needed to make 420 cups of fruit punch?

<u>Set up:</u>   <u>Equations:</u>

Let   _____ = _____   _____

           _____ = _____   _____

5. A cruise ship has 680 rooms. Those with a view rent for $160 per night, and those without a view rent for $105 per night. On a night when the ship was completely occupied, revenues were $92,500. How many rooms of each type are on the ship?

<u>Set up:</u>   <u>Equations:</u>

Let   _____ = _____   _____

           _____ = _____   _____

6. A pair of boots and a pair of tennis shoes cost $196.12. The difference in their cost is $44.38. Determine the cost of each type of footwear.

<u>Set up:</u>   <u>Equations:</u>

Let   _____ = _____   _____

           _____ = _____   _____

Writing Systems of Equations 1 *(cont.)*

7. Two different types of batteries are needed to run Joshua's remote-controlled jeep. The two batteries produce a total voltage of 6.5 V. The difference in their voltage is 2.5 V. Determine the voltages of the two batteries.

<u>Set up:</u>   <u>Equations:</u>

Let _____ = _____   _____

     _____ = _____   _____

8. In the Alice High School band, the number of trumpet players is 4 times the number of French horn players. There are 35 trumpet and French horn players in the band. How many people play the trumpet?

<u>Set up:</u>   <u>Equations:</u>

Let _____ = _____   _____

     _____ = _____   _____

9. Jason, a vendor at the Minute Maid Park in Houston, sells two sizes of drinks. One costs $1.00 and the other costs $1.50. He knows he sold a total of 230 drinks for a total of $285.00. How many small drinks did he sell?

<u>Set up:</u>   <u>Equations:</u>

Let _____ = _____   _____

     _____ = _____   _____

Guided Practice Book/Assessment Answers

Writing Systems of Equations 1
GPB (pages 180–182)

1. Let x = $ VCR
   y = $ CD player
   5x + 4y = 1,950
   3x + 6y = 2,250

2. Let x = $ hamburger
   y = $ chicken burger
   7x + 5y = 24.90
   9x + 5y = 28.80

3. Let x = $ room
   y = $ car
   3x + 2y = 400
   4x + 3y = 550

4. Let x = # cups pineapple
   y = # cups ginger ale
   x + y = 200
   2x + 3y = 420

5. Let x = # rooms w/view
   y = # rooms w/o view
   x + y = 680
   160x + 105y = 92,500

6. Let x = $ boots
   y = $ tennis shoes
   x + y = 196.12
   x – y = 44.38

7. Let x = voltage battery 1
   y = voltage battery 2
   x + y = 6.5
   x – y = 2.5

8. Let x = # trumpet players
   y = # Fr. horn players
   x = 4y
   x + y = 35

9. Let x = # large
   y = # small
   x + y = 230
   1.5x + y = 285

Writing Systems of Equations 2
GPB (pages 183–185)

1. Let x = $ fish
   y = $ frog
   3x + y = 12
   2y = 12

2. Let x = $ acoustic guitar
   y = $ electric guitar
   y = x + 781
   12x + 13y = 72,628

3. Let x = # guys
   y = # girls
   x = y + 9
   x + y = 21

4. Let x = # slushies
   y = # conies
   .75x + y = 12.75
   x + y = 15

5. Let x = $ DVD
   y = $ VHS
   x = 2y
   x + 2y = 23.85

6. Let x = $ last week
   y = $ this week
   y = x + 60
   x + y = 340

7. Let x = # baseball players
   y = # basketball
         players
   x + y = 100
   y = x + 20

8. Let x = # small
   y = # large
   3x + 6y = 1,803
   x + y = 302
   large boxes: 299

9. Let x = $ small pack
   y = $ large pack
   x + y = 1.10
   2x + y = 1.45
   large pack: $.75

10. Let x = # T-shirts
    y = # key chains
    x + y = 261
    x = 2y
    key chains: 87
    T-shirts: 174

Inequalities and Systems Unit Review
GPB (pages 186–187)

1. C
2. D
3. A
4. B
5. D
6. C
7. B
8. A
9. C
10. D
11. C
12. B
13. A
14. A
15. C
16. D
17. C
18. D

Solving One-Variable Inequalities
Quiz—Form A (page 46)

1. Check graph.
2. Check graph.
3. Check graph.
4. Check graph.
5. $x < -\dfrac{5}{2}$
6. $k < -\dfrac{9}{10}$
7. $x \geq -\dfrac{5}{12}$
8. $m \geq -\dfrac{17}{3}$
9. $m > -\dfrac{2}{3}$
10. $n \geq \dfrac{1}{5}$
11. $v < \dfrac{100}{3}$
12. $m > -11$
13. $e \geq \dfrac{20}{3}$

Practice 31

Equations can often be written to make problem solving easier.

- What number less 25 is 30?

  $n - 25 = 30$ $\qquad\qquad$ $n = 55$
- What number is 6 times 70?

  $n = 6 \times 70$ $\qquad\qquad$ $n = 420$
- What number divided by 4 equals 9?

  $n/4 = 9$ $\qquad\qquad$ $n = 36$

Directions: Write an equation for each word problem. Then solve the equation. The first one is done for you.

1. What number is 12 less than 35?

   Equation: $\underline{\ n = 35 - 12\ }$

   Solution: $\underline{\ n = 23\ }$

2. What number added to 23 equals 41?

   Equation: _____

   Solution: _____

3. What number less 29 is 61?

   Equation: _____

   Solution: _____

4. What number added to 36 equals 53?

   Equation: _____

   Solution: _____

5. What number added to 19 equals 43?

   Equation: _____

   Solution: _____

6. What number divided by 4 equals 12?

   Equation: _____

   Solution: _____

7. What number times 12 equals 96?

   Equation: _____

   Solution: _____

8. What number divided by 8 equals 11?

   Equation: _____

   Solution: _____

9. What number times 19 equals 190?

   Equation: _____

   Solution: _____

10. What number divided into 42 equals 6?

    Equation: _____

    Solution: _____

3. no
4. 5 m.p.h.
5. 20 m.p.h.
6. the scale doesn't go 0 to 70
7. start at 0/use a different scale
8. 1995
9. 1998
10. 10 thousand dollars
11. the scale is distorted, starts at 40
12. 25 thousand dollars
13. scale starts at 40 thousand dollars
14. starts at 0 and go to 70

Page 27
1. 920 feet
   48,000 feet^2
2. 288 feet
   4,700 feet^2
3. 360 feet
   8,100 feet^2
4. 600 feet
   20,000 feet^2
5. 320 yd.
   6,000 yd.^{2}
6. 260 feet
   4,225 feet^2
7. 346 m
   7,300 m^2
8. 350 yd.
   7,150 yd.^{2}

Page 28
1. 240 feet^2
2. 450 feet^2.
3. 1,035 feet^2
4. 240 feet^2
5. 4,171 feet^2
6. 1,155 feet^2
7. 672 feet^2
8. 87.5 feet^2
9. 99.6 feet^2
10. 484 feet^2

Page 29
1. $C = \pi d$
   $C = 3.14 \times 9$
   28.26 centimeters
2. $C = \pi d$
   $C = 3.14 \times 23$
   72.22 centimeters
3. $C = 2\pi r$
   $C = 2 \times 3.14 \times 2$
   12.56 centimeters

4. $C = \pi d$
   $C = 3.14 \times 2$
   6.28 centimeters
5. $C = \pi d$
   $C = 3.14 \times 2.6$
   8.164 centimeters
6. $C = 2\pi r$
   $C = 2 \times 3.14 \times 12$
   75.36 inches
7. $C = 2\pi r$
   $C = 2 \times 3.14 \times 2$
   12.56 inches
8. $C = 2\pi r$
   $C = 2 \times 3.14 \times 3$
   18.84 centimeters

Page 30
1. $A = \pi r^2$
   $A = 3 \times 3 \times 3.14$
   28.26 cm^2
2. $A = \pi r^2$
   $A = 3.14 \times 8 \times 8$
   200.96 inches^2
3. $A = \pi r^2$
   $A = 3.14 \times 6 \times 6$
   113.04 cm^2
4. $A = \pi r^2$
   $A = 3.14 \times 7 \times 7$
   153.86 millimeters^2
5. $A = \pi r^2$
   $A = 3.14 \times 9 \times 9$
   254.34 millimeters^2
6. $A = \pi r^2$
   $A = 3.14 \times 2 \times 2$
   12.56 feet^2
7. $A = \pi r^2$
   $A = 3.14 \times 4 \times 4$
   50.24 feet^2
8. $A = \pi r^2$
   $A = 3.14 \times 4.5 \times 4.5$
   63.585 cm^2
9. $A = \pi r^2$
   $A = 3.14 \times 3.5 \times 3.5$
   38.465 cm^2
10. $A = \pi r^2$
   $A = 3.14 \times 1.15 \times 1.15$
   4.15265 cm^2

Page 31
1. 216 inches^3
2. 27 cm^3
3. 729 inches^3
4. 8 inches^3
5. 125 inches^3

6. 900 cubic puzzles
7. 192 cubic magnifying glasses
8. 1,000 cm^3 blocks
9. 120 games
10. 1,728 cubic puzzles

Page 33
1. library
2. town hall
3. gas station
4. (-11, 1)
5. (4, -4)
6. (-5, -9)
7. park
8. (-10, -7)
9. (-9, 5)
10. general store
11. drug store
12. III
13. I
14. II

Page 34
1. 3/10
2. 4/15
3. 9/50
4. 11/16
5. 1/2
6. 3/40
7. 2/3
8. 8/45
9. 2/5
10. 1/27

Page 35
1. $n = 35 - 12$
   $n = 23$
2. $23 + n = 41$
   $n = 18$
3. $n - 29 = 61$
   $n = 90$
4. $36 + n = 53$
   $n = 17$
5. $19 + n = 43$
   $n = 24$
6. $n/4 = 12$
   $n = 48$
7. $n \times 12 = 96$
   $n = 8$
8. $n/8 = 11$
   $n = 88$
9. $n \times 19 = 190$
   $n = 10$
10. $42/n = 6$
   $n = 7$

Page 36
1. 5:4 or 5/4
2. 4:5 or 4/5
3. 2:5 or 2/5
4. 5:2 or 5/2
5. 3:5 or 3/5
6. 5:3 or 5/3
7. 4:3 or 4/3

8. 3:4 or 3/4
9. 2:3 or 2/3
10. 3:2 or 3/2
11. 7:5 or 7/5
12. 5:7 or 5/7
13. 3:7 or 3/7
14. 7:3 or 7/3
15. 12:2 or 12/2 or 6:1 or 6/1
16. 2:12 or 2/12 or 1:6 or 1/6
17. 3:7 or 3/7
18. 7:3 or 7/3

Page 37
1. 1:4 :: 20:n
   $n = 80$ feet
2. 1:2 :: 25:n
   $n = 50$ feet
3. 3:15 :: 9:n
   $n = 45$ m
4. 4:1 :: 100:n
   $n = 25$ stories
5. 3:10 :: 33:n
   $n = 110$ yd.
6. 3:10 :: 15:n
   $n = 50$ m
7. 5:3 :: n:30
   $n = 50$ inches
8. 7:2 :: 42:n or
   2:7 :: n:42
   $n = 12$ inches

Page 38
1. 528
   9
   59 (58.67)
2. 911
   11
   83 (82.8)
3. 1,160
   13
   89 (89.2)
4. 138
   10
   14 (13.8)
5. 63
   12
   5 (5.25)
6. 175
   13
   13 (13.46)
7. 109
   16
   7 (6.8)

Page 39
1. (46, 47, 48, 49, 50, 52, 52, 52, 53, 54,

56)
52
52
2. (47, 49, 55, 56, 57, 58, 59, 59, 59, 60, 60, 61, 63)
   59
   59
3. (57, 59, 59, 60, 61, 61, 63, 63, 65, 66)
   59, 61, 63
   61
4. (47, 49, 49, 49, 51, 52, 53, 54, 55, 57, 59)
   49
   52
5. (39, 40, 44, 44, 45, 48, 50, 55, 57, 57, 58, 60, 60, 61)
   44, 57, 60
   52.5

Page 40
1. C
2. D
3. B
4. A
5. A
6. C
7. B
8. D
9. B
10. D

Page 41
1. B
2. D
3. C
4. A
5. D
6. A
7. C
8. A
9. B
10. C

Page 42
1. A
2. B
3. C
4. B
5. D
6. B
7. D
8. C
9. A
10. D

Page 43
1. C
2. C
3. B
4. D
5. D
6. B
7. A
8. D
9. B
10. C

Page 44
1. C
2. C
3. A
4. B
5. D
6. A
7. C
8. B
9. D
10. C

Page 45
1. C
2. A
3. B
6. C
7. A
8. B

Name _____

Solving Equations 2

Directions: Solve. Show all work.

1. $3x - 4 = 7x + 2$

2. $6p + 2 = -3p + 1$

3. $4m - 7 = 8m + 2$

4. $5x + 1 = 7x - 3$

5. $2m - 3 = 6m - 4$

6. $8a + 3 = 6a + 2$

7. $3x + 2x - 1 = 7x - 5 - 5$

8. $3a - 5a - 2 = 6a + a - 7$

9. $2x - 3 = 7x + 3 - 4x$

10. $4x + 5 = 10x - 6$

Solving Equations 2 *(cont.)*

11. $5f + 2 - 4 = 2f - 4f - 8$

12. $-8x - 6 = -9x - 4$

13. $7a + 9 - a = 3a + 4$

14. $10x + 6 = 7x + 5 + 1$

15. $-x - 2 = 4x + 6$

16. $3z + 12 = 6z + 10$

17. $6y - 8 - y = 19 + 9y$

18. $8x + 1 = 2x + 3$

19. $-9u - 17 = -5u - 7$

20. $11n - (-6) = 13n - 3$

Name _____

Algebra Applications with Angles

Directions: Solve for the variable and find the measure of each angle.
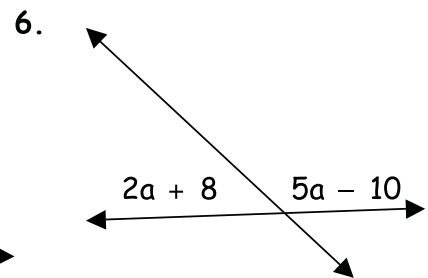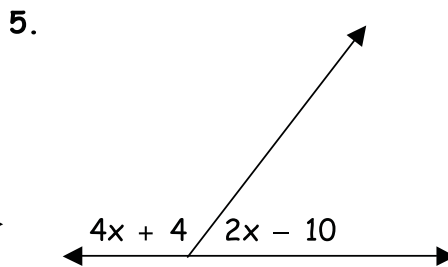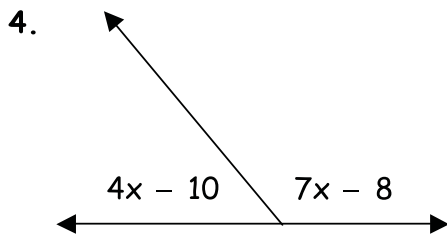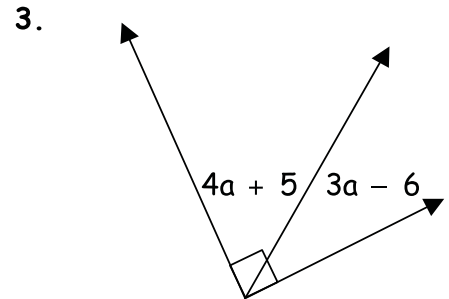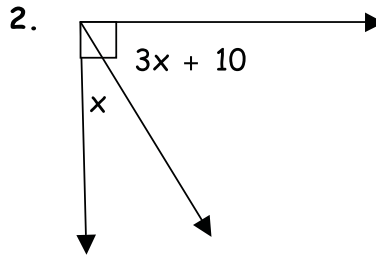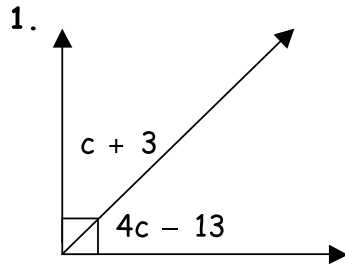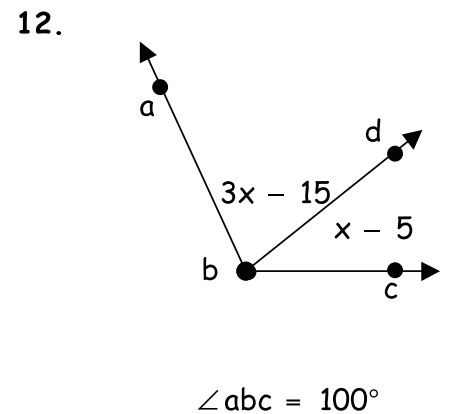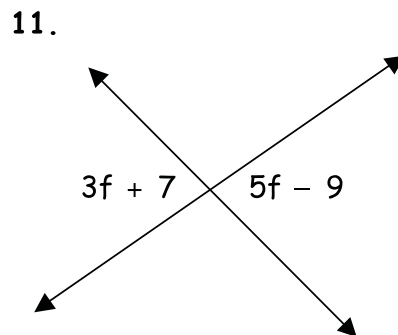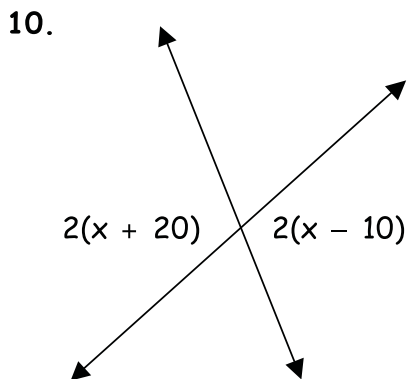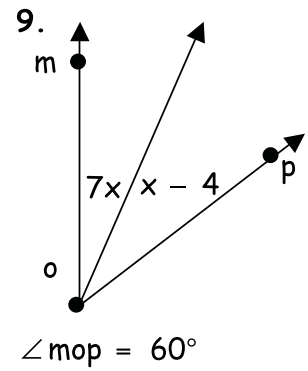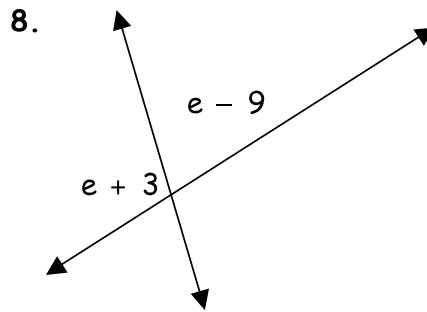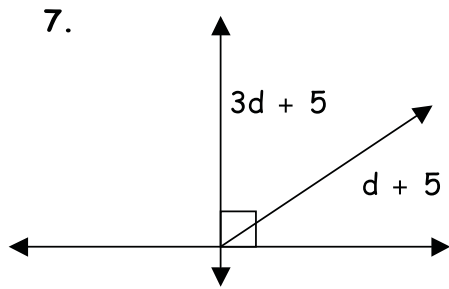
1.

$c + 3$

$4c - 13$

2.

$3x + 10$

x

3.

$4a + 5$ $3a - 6$

4.

$4x - 10$ $7x - 8$

5.

$4x + 4$ $2x - 10$

6.

$2a + 8$ $5a - 10$

Algebra Applications with Angles *(cont.)*

7.

$3d + 5$

$d + 5$

8.

$e - 9$

$e + 3$

9.

m

$7x$ $x - 4$

p

o

$\angle mop = 60°$

10.

$2(x + 20)$ $2(x - 10)$

11.

$3f + 7$ $5f - 9$

12.

a

d

$3x - 15$

$x - 5$

b

c

$\angle abc = 100°$

Transparency/Guided Practice Book Answers

Writing Expressions and Equations 10 *(cont.)*

3. Let x = # laps Jin
    $2x$ = # laps Marc
    $3x = 9$
    Marc: 6 laps
4. Let x = $ shirt
    $2x - 3$ = $ skirt
    $3x - 3 = 33$
    Skirt: $21

Algebra Applications with Angles 2 (trans17.pdf)

1. Let x = supplement angle
    $2x + 3$ = other angle
    $3x + 3 = 180$
    $x = 59$
    $59°, 121°$
2. Let x = complement angle
    $x + 56$ = other angle
    $2x + 56 = 90$
    $x = 17$
    $17°, 73°$
3. Let x = base angle
    $2x + 45 = 180$
    $x = 67.5$
    $67.5°$
4. $x = 17$

Cups and Chips 1 GPB (page 66)

1. $x = -\dfrac{2}{3}$
2. $x = -\dfrac{5}{6}$
3. $x = \dfrac{1}{2}$
4. $x = -1\dfrac{1}{2}$ or $-\dfrac{3}{2}$
5. $x = 2$
6. $x = 1\dfrac{2}{3}$ or $\dfrac{5}{3}$

Cups and Chips 2 GPB (page 67)

1. $x = -2$
2. $x = 1\dfrac{1}{5}$ or $\dfrac{6}{5}$
3. $x = -1\dfrac{1}{2}$ or $-\dfrac{3}{2}$
4. $x = 1$
5. $x = 2\dfrac{1}{3}$ or $\dfrac{7}{3}$
6. $x = -1\dfrac{3}{4}$ or $-\dfrac{7}{4}$

Cups and Chips 3 GPB (page 68)

1. $x = 7$
2. $x = -2$
3. $x = -1\dfrac{1}{4}$ or $-\dfrac{5}{4}$
4. $x = \dfrac{3}{4}$
5. $x = 3\dfrac{1}{2}$ or $\dfrac{7}{2}$
6. $x = \dfrac{1}{4}$

Solving Equations 1 GPB (page 69)

1. $x = 2$
2. $x = -2\dfrac{1}{2}$ or $-\dfrac{5}{2}$
3. $x = -2\dfrac{1}{2}$ or $-\dfrac{5}{2}$
4. $m = 2\dfrac{2}{5}$ or $\dfrac{12}{5}$
5. $p = -2$
6. $k = -1\dfrac{1}{6}$ or $-\dfrac{7}{6}$
7. $x = 1\dfrac{1}{5}$ or $\dfrac{6}{5}$
8. $p = -1$
9. $m = \dfrac{2}{3}$
10. $k = 3\dfrac{1}{2}$ or $\dfrac{7}{2}$
11. $x = 2$
12. $x = 3\dfrac{1}{2}$ or $\dfrac{7}{2}$

Solving Equations 2 GPB (pages 70–71)

1. $x = -1\dfrac{1}{2}$ or $-\dfrac{3}{2}$
2. $p = -\dfrac{1}{9}$
3. $m = -2\dfrac{1}{4}$ or $-\dfrac{9}{4}$
4. $x = 2$
5. $m = \dfrac{1}{4}$
6. $a = -\dfrac{1}{2}$
7. $x = 4\dfrac{1}{2}$ or $\dfrac{9}{2}$
8. $a = \dfrac{5}{9}$
9. $x = -6$
10. $x = 1\dfrac{5}{6}$ or $\dfrac{11}{6}$
11. $f = -\dfrac{6}{7}$
12. $x = 2$
13. $a = -1\dfrac{2}{3}$ or $-\dfrac{5}{3}$
14. $x = 0$
15. $x = -1\dfrac{3}{5}$ or $-\dfrac{8}{5}$

16. $z = \dfrac{2}{3}$
17. $y = -6\dfrac{3}{4}$ or $-\dfrac{27}{4}$
18. $x = \dfrac{1}{3}$
19. $u = -2\dfrac{1}{2}$ or $-\dfrac{5}{2}$
20. $n = 4\dfrac{1}{2}$ or $\dfrac{9}{2}$

Adding and Subtracting Fractions 2 GPB (page 72)

1. $-\dfrac{13}{3}$
2. $\dfrac{17}{2}$
3. $-\dfrac{33}{5}$
4. $\dfrac{13}{3}$
5. $-\dfrac{39}{4}$
6. $\dfrac{37}{20}$
7. $\dfrac{19}{12}$
8. $-\dfrac{93}{8}$
9. $\dfrac{46}{15}$
10. $-\dfrac{32}{3}$
11. $-\dfrac{11}{2}$
12. $-\dfrac{29}{5}$

Multiplying and Dividing Fractions 2 GPB (page 73)

1. -7
2. -4
3. $\dfrac{108}{5}$
4. $-\dfrac{15}{8}$
5. $\dfrac{11}{6}$
6. $-\dfrac{133}{4}$
7. $\dfrac{20}{9}$
8. 11
9. $-\dfrac{18}{7}$
10. $-\dfrac{17}{4}$
11. $\dfrac{32}{9}$
12. 25

Guided Practice Book/Assessment Answers *(cont.)*

Algebra Applications with Angles
GPB (pages 74–75)

1. $c = 20$
   $23°, 67°$
2. $x = 20$
   $20°, 70°$
3. $a = 13$
   $57°, 33°$
4. $x = 18$
   $62°, 118°$
5. $x = 31$
   $128°, 52°$
6. $a = 26$
   $60°, 120°$
7. $d = 20$
   $65°, 25°$
8. $e = 93$
   $96°, 84°$
9. $x = 8$
   $56°, 4°$
10. $x = 40$
    $120°, 120°$
11. $f = 8$
    $31°, 31°$
12. $x = 30$
    $75°, 25°$

Mixed Fractions
GPB (pages 76–77)

1. $-\dfrac{15}{2}$
2. $-\dfrac{13}{3}$
3. -4
4. $\dfrac{17}{2}$
5. $-\dfrac{108}{5}$
6. $-\dfrac{33}{5}$
7. $-\dfrac{15}{8}$
8. $-\dfrac{13}{3}$
9. $-\dfrac{11}{6}$
10. $\dfrac{13}{4}$
11. $-\dfrac{133}{4}$
12. $-\dfrac{173}{20}$
13. $-\dfrac{20}{9}$
14. $\dfrac{19}{12}$
15. -11
16. $-\dfrac{17}{4}$

17. $-\dfrac{93}{8}$
18. $\dfrac{32}{9}$

Solving Equations 1 Quiz—
Form A (page 44)

1. $x = 4$
2. $x = -5$
3. $x = -1$
4. $m = 4$
5. $p = -\dfrac{8}{5}$
6. $k = -\dfrac{7}{12}$
7. $x = 2$
8. $p = -\dfrac{6}{5}$
9. $m = \dfrac{6}{11}$
10. $k = -\dfrac{7}{3}$

Solving Equations 1 Quiz—
Form B (asess22b.pdf)

1. $x = -2$
2. $a = 5$
3. $m = -\dfrac{10}{3}$
4. $m = 4$
5. $p = -\dfrac{11}{3}$
6. $k = -\dfrac{11}{7}$
7. $x = \dfrac{3}{2}$
8. $p = -\dfrac{1}{4}$
9. $m = -\dfrac{3}{4}$
10. $n = -3$

Solving Equations 2 Quiz—
Form A (pages 45–46)

1. $x = -6$
2. $k = 20$
3. $x = 74$
4. $x = 7$
5. $p = \dfrac{3}{13}$
6. $a = -4$
7. $x = -14$
8. $k = -\dfrac{1}{10}$
9. $x = \dfrac{2}{17}$
10. $x = 5$

Solving Equations 2 Quiz—
Form B (asess23b.pdf)

1. $x = -7$
2. $k = \dfrac{9}{2}$
3. $x = 12$
4. $x = \dfrac{11}{2}$
5. $p = \dfrac{6}{7}$
6. $x = \dfrac{5}{3}$
7. $x = -4$
8. $k = \dfrac{3}{8}$
9. $x = 1$
10. $x = \dfrac{32}{3}$

Linear Equations Unit Test—
Form A (pages 47–50)

1. $x = 2$
2. $x = -9$
3. $x = \dfrac{4}{5}$
4. $x = 0$
5. $m = -\dfrac{1}{15}$
6. $p = -\dfrac{4}{3}$
7. $x = \dfrac{3}{2}$
8. $x = \dfrac{29}{20}$
9. $x = -7$
10. $p = -4$
11. Let x = # games last yr.
    $2x + 4$ = # games this yr.
    $2x + 4 = 24$
12. Let x = width
    $x + 6$ = length
    $4x + 12 = 92$
13. Let x = length of longer piece
    $x – 48$ = length of shorter piece
    $2x – 48 = 120$
14. Let x = # pts. Josh
    $2x + 3$ = # pts. Joel
    $3x + 3 = 33$
15. Let x = son's age
    $3x – 2$ = Jared's age
    $4x – 2 = 54$
16. Let x = regular price
    $\dfrac{1}{2}x + 20$ = sale price
    $\dfrac{1}{2}x + 20 = 220$
17. Let x = second number
    $4x$ = first number
    $x + 10$ = third number
    $6x + 10 = 250$

Name _____

Solving Equations 1

Directions: Solve. Show all work.

1. $2x + 3 = 6x - 5$ **2.** $8x + 4 = 6x - 1$ **3.** $4x - 2 = 6x + 3$

4. $8m - 4 = 3m + 8$ **5.** $4p - 3 = 8p + 5$ **6.** $8k + 4 = 2k - 3$

7. $3x - 5x + 4 = 6x - 2 - 3x$ **8.** $2p + 3 - 5 = 6p - 8 - 10p$

9. $8 - 4m - 6m = 3m - 4m + 2$ **10.** $3k + 1 - 6k = 4k + 8 - 9k$

11. $6x - 5 = 3x + 1$ **12.** $4x - 7 = 2x$

Writing Systems of Equations 2 *(cont.)*

Directions: Assign two variables for each problem, and write the equations. **Solve**.

9. Together, 1 small package of gum and 1 large package of gum cost $1.10. If you bought 2 small packages of gum and 1 large package of gum, they would cost $1.45. How much did the large package of gum cost?

<u>Set up:</u>   <u>Equations:</u>

Let   _____ = _____   _____

          _____ = _____   _____

<u>SOLVE:</u>

10. The Key Club is selling T-shirts and key chains. Its members sold a total of 261 items. Twice as many T-shirts were sold as key chains. How many items of each type were sold?

<u>Set up:</u>   <u>Equations:</u>

Let   _____ = _____   _____

          _____ = _____   _____

<u>SOLVE:</u>

Name _____

Solving for *y* Part 1

Directions: Solve for *y*.

1. $2x + 3y = 4$

2. $3x = 4y + 2$

3. $4y = 8x - 2$

4. $3y - 4x = 6$

5. $3x - 2y = 5$

6. $2x - 3 = 5y$

7. $6y = 2x - 3$

8. $4x - 3y = 10$

9. $3x - y = 4$

10. $6x - 3y = 8$

11. $4y = 8x + 3$

12. $7x = 5y + 2$

Transparency/Guided Practice Book Answers

Writing Expressions and Equations 10 *(cont.)*

3. Let x = # laps Mutt
   2x = # laps Jeff
   3x = 9
   Mutt: 6 laps
4. Let x = $ shirt
   2x − 3 = $ skirt
   3x − 3 = 33
   Skirt: $21

Algebra Applications with Angles 2

a. Let x = supplement angle
   2x + 3 = other angle
   3x + 3 = 180
   x = 59
   59°,121°
b. Let x = complement angle
   x + 56 = other angle
   2x + 56 = 90
   x= 17
   17°,73°
c. Let x = base angle
   2x + 45 = 180
   x = 67.5
   67.5°
d. x = 17

Writing Expressions and Equations 11
(trans14.pdf)

1. Let x = wt. of cone
   3x = wt. of ice cream
   4x = 8
   ice cream: 6 grams
2. Let x = the number
   2(x − 8) = -2
   number: 7
3. Let x = length
   $\frac{1}{5}x + 18$ = width
   $\frac{1}{5}x + 18 = 20$
   length: 10 meters
4. Let x = length of side 1
   4x − 5 = length of side 3
   2x + 3 = length of side 2
   7x − 2 = 68
   Sides: 10 m, 35 m, 23 m

Cups and Chips 1
(GPB page 24)

1. $x = -\frac{2}{3}$
2. $x = -\frac{5}{6}$
3. $x = \frac{1}{2}$

4. $x = -1\frac{1}{2}$
5. x = 2
6. $x = 1\frac{2}{3}$

Cups and Chips 2
(GPB page 25)

1. x = -2
2. $x = 1\frac{1}{5}$
3. $x = -1\frac{1}{2}$
4. x = 1
5. $x = 2\frac{1}{3}$
6. $x = -1\frac{3}{4}$

Cups and Chips 3
(GPB page 26)

1. x = 7
2. x = -2
3. $x = -1\frac{1}{4}$
4. $x = \frac{3}{4}$
5. $x = 3\frac{1}{2}$
6. $x = \frac{1}{4}$

Solving Equations 1
(GPB page 27)

1. x = 2
2. $x = -\frac{5}{2}$
3. $x = -\frac{5}{2}$
4. $m = \frac{12}{5}$
5. p = -2
6. $k = -\frac{7}{6}$
7. $x = \frac{6}{5}$
8. p = -1
9. $m = \frac{2}{3}$
10. $k = \frac{7}{2}$
11. x = 2
12. $x = \frac{7}{2}$

Solving Equations 2
(GPB pages 28–29)

1. $x = -\frac{3}{2}$
2. $p = -\frac{1}{9}$

3. $m = -\frac{9}{4}$
4. x = 2
5. $m = \frac{1}{4}$
6. $a = -\frac{1}{2}$
7. $x = \frac{9}{2}$
8. $a = \frac{5}{9}$
9. x = -6
10. $x = \frac{11}{6}$
11. $f = -\frac{6}{7}$
12. x = 2
13. $a = -\frac{5}{3}$
14. x = 0
15. $x = -\frac{8}{5}$
16. $z = \frac{2}{3}$
17. $y = -\frac{27}{4}$
18. $x = \frac{1}{3}$
19. $u = -\frac{5}{2}$
20. $n = \frac{9}{2}$

Adding and Subtracting Fractions
(GPB page 30)

1. $-\frac{13}{3}$
2. $\frac{17}{2}$
3. $-\frac{33}{5}$
4. $\frac{13}{3}$
5. $-\frac{39}{4}$
6. $\frac{37}{20}$
7. $\frac{19}{12}$
8. $-\frac{93}{8}$
9. $\frac{46}{15}$
10. $-\frac{32}{3}$
11. $-\frac{11}{2}$
12. $-\frac{29}{5}$

Guided Practice Book Answers *(cont.)*

Writing Systems of Equations 2
GPB (page 134)

1. Let x = $ fish
    y = $ frog
    3x + y = 12
    2y = 12
2. Let x = $ acoustic guitar
    y = $ electric guitar
    y = x + 781
    12x + 13y = 72,628
3. Let x = # guys
    y = # girls
    x = y + 9
    x + y = 21
4. Let x = # slushies
    y = # conies
    .75x + y = 12.75
    x + y = 15
5. Let x = $ DVD
    y = $ VHS
    x = 2y
    x + 2y = 23.85
6. Let x = $ last week
    y = $ this week
    y = x + 60
    x + y = 340
7. Let x = # baseball players
    y = # basketball
        players
    x + y = 100
    y = x + 20
8. Let x = # small
    y = # large
    3x + 6y = 1,803
    x + y = 302
9. Let x = $ small pack
    y = $ large pack
    x + y = 1.10
    2x + y = 1.45
    large pack: $.75
10. Let x = # T-shirts
    y = # key chains
    x + y = 261
    x = 2y
    key chains: 87
    T-shirts: 174

Writing Systems of Equations 3
GPB (page 137)

1. Let x = $ athletic shoes
    y = $ casual shoes
    20x + 10y = 750
    25x + 20y = 1,200
2. Let x = $ hardback
    y = $ paperback
    2x + 6y = 60
    2x + 3y = 39.75
3. Let x = # first size
    y = # second size
    6x + 10y = 1,710
    x + y = 205
4. Let x = $ spent on CDs
    y = $ spent on makeup
    x + y = 50
    x = y + 10
5. Let x = $ CD
    y = $ tape
    x = 3y
    2x + 3y = 47.70
    tape: $5.30
    CD: $15.90
6. Let x = # small
    y = # large
    x + y = 210
    .75x + 1.25y = 232.50
    large: 150
    small: 60

Systems of Equations Unit
Review 1 GPB (page 139)

1. check graph
2. (2, -1)
3. A
4. A
5. D
6. D
7. B
8. D
9. C
10. A
11. C
12. C

13. B
14. D
15. check graph
16. check graph

Measurement Review
(Systems of Equations Unit)
GPB (page 141)

1. Check answer using
    mathematics chart.
2. 200.96 cm^2
3. 986 cm^3
4. A
5. 6,428 in.^{3}
6. 1,040 in.^{2}
7. 209.5 ft.^{2}
8. 5 in.
9. 45 in.^{3}
10. 428 ft.^{2}

Systems of Equations Unit
Review 2 GPB (page 145)

1. check graph
2. (3, 0)
3. B
4. B
5. A
6. D
7. B
8. D
9. A
10. B
11. A
12. D
13. A
14. C
15. check graph
16. check graph

Semester Review 1
GPB (page 147)

1. II
2. {(-5, 4), (-3, 1), (-3, -2),
    (2, 2), (4, -5)}
3. {-5, -3, 2, 4}
4. {-5, -2, 1, 2, 4}
5. B

Guided Practice Book Answers

Solving for *y* Part 1
GPB (page 71)

1. $y = -\dfrac{2}{3}x + \dfrac{4}{3}$

2. $y = \dfrac{3}{4}x - \dfrac{1}{2}$

3. $y = 2x - \dfrac{1}{2}$

4. $y = \dfrac{4}{3}x + 2$

5. $y = \dfrac{3}{2}x - \dfrac{5}{2}$

6. $y = \dfrac{2}{5}x - \dfrac{3}{5}$

7. $y = \dfrac{1}{3}x - \dfrac{1}{2}$

8. $y = \dfrac{4}{3}x - \dfrac{10}{3}$

9. $y = 3x - 4$

10. $y = 2x - \dfrac{8}{3}$

11. $y = 2x + \dfrac{3}{4}$

12. $y = \dfrac{7}{5}x - \dfrac{2}{5}$

Solving for *y* Part 2
GPB (page 72)

1. $y = \dfrac{1}{2}x + 2$

2. $y = \dfrac{2}{3}x - \dfrac{4}{3}$

3. $y = -\dfrac{4}{5}x + \dfrac{11}{10}$

4. $y = \dfrac{3}{2}x + 2$

5. $y = \dfrac{5}{8}x + \dfrac{3}{2}$

6. $y = \dfrac{1}{2}x + 1$

7. $y = 6x + 4$

8. $y = -2x + \dfrac{3}{5}$

9. $y = -\dfrac{4}{3}x - \dfrac{1}{3}$

10. $y = x + 3$

11. $y = \dfrac{4}{3}x - 3$

12. $y = \dfrac{1}{2}x - \dfrac{9}{2}$

Functions, Domains, and Ranges
GPB (pages 73–74)

1. Rel = {(-3, 2), (-1, 6), (1, -2), (3, 5)}
   D = {-3, -1, 1, 3}
   R = {-2, 2, 5, 6}
2. Rel = {(3, -2), (6, 4), (8, -2), (10, -8)}
   D = {3, 6, 8, 10}
   R = {-8, -2, 4}
3. yes
4. no

5. no
6. yes
7. no
8. no
9. no
10. yes
11. yes
12. no
13. no
14. no

Graphing Mid-Unit Review
GPB (pages 75–76)

1. III
2. {(-5, 4), (-3, 1), (-3, -2), (2, 2), (4, -5)}
3. {-5, -3, 2, 4}
4. {-5, -2, 1, 2, 4}
5. B
6. B
7. D
8. C
9. B
10. B
11. C
12. C
13. A
14. A
15. C
16. B
17. B
18. D
19. D

Measurement Review
(Mid-Unit Graphing)
GPB (pages 77–80)

1. 1,920 ft.^{3}
2. 1,017.36 in.^{3}
3. 90p
4. B
5. 2,820 in.^{3}
6. 672 cm^2
7. 13 cm
8. 350.48 in.^{2}
9. D
10. 44 in.^{3}

Adding Integers (for Slope)
GPB (page 81)

1. -7
2. -5
3. 6
4. -2
5. 3
6. 5
7. 5
8. -5
9. -5
10. -2

11. 1
12. -2
13. -5
14. 1
15. -1
16. -4
17. -6
18. -2
19. 0
20. 2
21. 4
22. 2
23. 2
24. 8
25. -1
26. -1
27. -7
28. -5
29. 2
30. 3
31. 3
32. 8
33. 5
34. 1

Slope 1
GPB (pages 82–83)

1. A(-2, 1) B(2, -3)
   m = -1
2. A(3, 4) B(-2, -2)
   $m = \dfrac{6}{5}$
3. A(-4, 0) B(1, -3)
   $m = -\dfrac{3}{5}$
4. $m = \dfrac{3}{4}$
5. m = 0
6. m = undefined
7. $m = -\dfrac{3}{4}$
8. m = -2
9. $m = \dfrac{1}{6}$
10. $m = \dfrac{4}{3}$
11. $m = \dfrac{2}{3}$
12. $m = \dfrac{1}{4}$
13. $m = \dfrac{4}{3}$
14. $m = \dfrac{2}{3}$
15. $m = \dfrac{1}{4}$

Name _____

Writing Equations Packet

Directions: Assign the variable and write an equation for each of the following.
Do not solve.

1.   The first of two numbers is 3 times the second. Their sum is 88. Find the numbers.

Let _____ = _____

_____ = _____

Equation: _____

2.   The length of a rectangular field is 10 meters less than 9 times the width.
The perimeter is 140 meters. Find the length.

Let _____ = _____

_____ = _____

Equation: _____

3.   The larger of two numbers is 10 less than 5 times the smaller. Their sum is 146.
Find the smaller number.

Let _____ = _____

_____ = _____

Equation: _____

4.   The perimeter of a rectangle is 482 cm. The length is 6 cm greater than
4 times the width. Find the length.

Let _____ = _____

_____ = _____

Equation: _____

5.   Together, a football and a basketball cost $65. A football costs $5
more than $\frac{1}{2}$ of what a basketball costs. How much does a football cost?

Let _____ = _____

_____ = _____

Equation: _____

Writing Equations Packet *(cont.)*

6.   The sum of three numbers is 75. The second number is 5 more than
4 times the first, and the third is 2 times the first. Find the second number.

Let _____ = _____

_____ = _____

_____ = _____

Equation: _____

7.   If 7 less than 4 times a number is 29, find the number.

Let _____ = _____

Equation: _____

8.   Juana and Jada made $58 babysitting. Juana made $6 more than 3 times
as much money as Jada made. How much money did Juana make?

Let _____ = _____

_____ = _____

Equation: _____

9.   José and Isabel went running. José ran 2 miles less than $\frac{1}{2}$ as many miles
as Isabel. José ran 6 miles. How many miles did Isabel run?

Let _____ = _____

_____ = _____

Equation: _____

10.   Together, a dresser, a nightstand, and a vanity cost $1,605. The dresser
costs 3 times as much as the nightstand, and the vanity costs $300 more
than the nightstand. Find the cost of the vanity.

Let _____ = _____

_____ = _____

_____ = _____

Equation: _____

Name _____

Algebraic Expressions and Operations Test

Directions: Write an algebraic expression for each verbal expression.

1. a number increased by 4   1. _____

2. ten times a number   2. _____

3. three times a number decreased by 8 3. _____

4. 9 less than 6 times a number   4. _____

5. twice the difference of 12 and a number 5. _____

6. the quotient of a number and 3   6. _____

7. 30 increased by the square of a number 7. _____

Directions: Evaluate each expression.

8. $4^3 - 25$ **9.** $14 - 3(2)$ **10.** $3(2)^4$

11. $7 \cdot 4 - 3 \cdot 3$ **12.** $3 \cdot 2 + 12 \div 3 - 6$

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Algebraic Expressions and Operations Test *(cont.)*

13. $(9 + 1) \div 2 + 2$

14. $(7 - 3)(16 \div 4) - 5$

15. $[(9 + 3)(9 - 4) \div (9 + 3 - 2)]^2$

16. $[9^2 - (3 + 5)2]3$

Directions: Evaluate the following expression when $x = 6$.

17. $\dfrac{x^2 - x + 6}{x + 3}$

Algebraic Expressions and Operations Test *(cont.)*

Directions: Evaluate the following expressions when $w = 5$, $n = 9$, $v = 6$, and $t = 3$.

18. $3w + (n - v)t$ **19.** $2nt - v^2$

20. $(nw - t)v$

Directions: Determine whether each statement represents the additive identity, multiplicative identity, mutiplicative inverse, commutative, or associative property.

21. $(9 + 5) + 4 = 9 + (5 + 4)$ **21.**_____

22. $5 + 6 = 6 + 5$ **22.**_____

23. $3 \cdot 1 = 3$ **23.**_____

24. $\dfrac{3}{4} \cdot \dfrac{4}{3} = 1$ **24.**_____

25. $8 + 0 = 8$ **25.**_____

Guided Practice Book Answers *(cont.)*

Group Activity 2 *(cont.)*
47. -7
48. 14
49. -7
50. 4
51. 5
52. -11
53. 126
54. -9
55. 28
56. 1
57. -3
58. -26
59. 5
60. -7

Collecting Like Terms
GPB (page 46)
1. -5x
2. -6m
3. -10x + 4k
4. -9p
5. -8 – m
6. -12a – 3p
7. -14x
8. -2a
9. $-8x^2 - 2y$
10. -8x + 7y
11. -2m
12. -4x
13. -12p + 4x
14. 4k
15. -4mn – 5p
16. -5xy + 4x – 6y
17. 6mn – 9x
18. -2x
19. 2p
20. -12y

Distributing and Collecting
GPB (page 47)
1. 7x + 10
2. -5m + 12
3. -12k - 4
4. 3x – 11
5. -10p + 5
6. -13n + 35
7. -8x + 27
8. -21a – 28
9. -5x + 4
10. 10p – 24
11. -5
12. -29m – 1
13. -11x + 35
14. -18p – 30
15. 2x – 9
16. -13x – 25
17. -15k – 9
18. 8m – 3

Writing Equations Packet
GPB (pages 48–57)
1. Let x = second number
   3x = first number
   3x + x = 88 OR 4x = 88
2. Let x = width
   9x – 10 = length
   2x + 2(9x – 10) = 140 OR
   20x – 20 = 140
3. Let x = smaller number
   5x – 10 = larger number
   5x – 10 + x = 146 OR 6x – 10 = 146
4. Let x = width
   4x + 6 = length
   2x + 2(4x + 6) = 482 OR
   10x + 12 = 482
5. Let x = $ basketball
   $\frac{1}{2}x + 5$ = $ football
   $\frac{1}{2}x + 5 + x = 65$ OR $\frac{3}{2}x + 5 = 65$
6. Let x = first number
   4x + 5 = second number
   2x = third number
   x + 4x + 5 + 2x = 75 OR 7x + 5 = 75
7. Let x = the number
   4x – 7 = 29
8. Let x = Jada's money
   3x + 6 = Juana's money
   x +3x +6 = 58 OR 4x + 6 = 58
9. Let x = # miles Isabel
   $\frac{1}{2}x - 2$ = # miles José
   $\frac{1}{2}x - 2 = 6$
10. Let x = $ nightstand
   3x = $ dresser
   x + 300 = $ vanity
   x + 3x + x + 300 = 1,605 OR
   5x + 300 = 1,605
11. Let x = length of second piece
   4x – 10 = length of first piece
   x + 4x – 10 = 125 OR 5x – 10 = 125
12. Let x = # treats yesterday
   2x = # treats today
   x + 2x = 15 OR 3x = 15
13. Let x = $ student's ticket
   x + 5 = $ adult's ticket
   2x + 4(x + 5) = 50 OR 6x + 20 = 50
14. Let x = second number
   x + 3 = first number
   x + x + 3 = 73 OR 2x + 3 = 73
15. Let x = $ jeans
   x + 2 = $ shorts
   x – 1 = $ shirt
   x + 2 + x + [(2 + x) –3] = 37 OR
   3x + 1 = 37

16. Let x = # twirlers
   5x – 18 = # in drill team
   5x – 18 = 47
17. Let x = width
   x + 4 =length
   2x + 2(x+4) = 184 OR 4x + 8 = 184
18. Let x = $ triple-pack
   $\frac{2}{3}x - 6$ = $ twin-pack
   $\frac{2}{3}x - 6 = 42$
19. Let x = height at birth
   3x – 3 = height now
   3x – 3 = 240
20. Let x = $ manual wheelchair
   x + 600 = $ electric wheelchair
   x + x +600 = 3,200 OR
   2x + 600 = 3,200
21. Let x = wt. of Natasha's wheelchair
   x + 8 = wt. of Jawan's wheelchair
   x + x + 8 = 100 OR 2x + 8 = 100
22. Let x = # balloons Miguel
   x + 4 = # balloons Jing
   x + x + 4 = 8 OR 2x + 4 = 8
23. Let x = $ Dulce earned
   6x + 4 = $ Jamal earned
   x + 6x +4 = 53 OR 7x + 4 = 53
24. Let x = # hrs. Jake
   6x + 8 = # hrs. Jacinta
   (6x + 8) – 2 = # hrs. Shamika
   (6x + 8) – 2 = 30 OR 6x + 6 = 30
25. Let x = cost of CD player
   $\frac{1}{2}x + 10$ = cost of boom box
   $\frac{1}{2}x + 10 = 60$
26. Let x = number marbles Rasheed has
   7x + 6 = number of marbles Lacey has
   x + 7x + 6 = 70 OR 8x + 6 = 70
27. Let x = amount of $ Bo made
   7x – 83 = amount of $ Javier made
   x + 7x –83 = 381 OR 8x – 83 = 381
28. Let x = number of CDs Carla owns
   6x – 6 = number of CDs CeDaniel owns
   x + 6x – 6 = 78 OR 7x – 6 = 78
29. Let x = Marco time
   $\frac{1}{5}x - 2$ = Kwan's time
   $\frac{1}{5}x - 2 = 60$
30. Let x = miles Damon ran
   3x + 2 = miles Ruben ran
   x + 3x + 2 = 14 OR 4x + 2 = 14

Guided Practice Book/Assessment Answers

Writing Equations Packet *(cont.)*

31. Let x = days Jeong Kim attended

    $\frac{1}{2}x - 9$ = days Heather attended

    $x + \frac{1}{2}x - 9 = 183$

    $\frac{3}{2}x - 9 = 183$

32. Let x = birds from Tanzania

    $3x$ = birds from South Africa

    $3x = 90$

33. Let x = a number

    $x + \frac{3}{4}x = 49$ OR $\frac{7}{4}x = 49$

34. Let x = number of horses

    $2x + 5$ = number of cows

    $x + 2x + 5 = 26$ OR $3x + 5 = 26$

35. Let x = distance Takara ran

    $\frac{3}{8}x + 2$ = distance Janna ran

    $\frac{3}{8}x + 2 = 5$

36. Let x = second score

    $\frac{1}{2}x$ = first score

    $x + \frac{1}{2}x = 330$ OR $\frac{3}{2}x = 330$

37. Let x = amount Tashika pitched in

    $x + 5$ = amount Diego pitched in

    $2(x + 5)$ = amount Jazmin pitched in

    $x + x + 5 + 2(x + 5) = 27$ OR

    $4x + 15 = 27$

38. Let x = cost of ring

    $3x$ = cost of bracelet

    $x + 3x = 200$ OR $4x = 200$

39. Let x = amount Nikki brought

    $\frac{2}{3}x$ = amount LaRhonda brought

    $\frac{2}{3}x = 80$

40. Let x = size of smaller flock

    $3x$ = size of larger flock

    $x + 3x = 72$ OR $4x = 72$

41. Let x = amount Stephanie earned

    $\frac{1}{5}x + 10$ = amount Ming Lee earned

    $x + \frac{1}{5}x + 10 = 52$ OR $\frac{6}{5}x + 10 = 52$

42. Let x = side 2

    $8 + x$ = side 1

    $2(8+x)$ = side 3

    $x + 8 + x + 2(8 + x) = 44$ OR

    $4x + 24 = 44$

43. Let x = length

    $x - 7$ = width

    $2x + 2(x - 7) = 42$ OR $4x - 14 = 42$

44. Let x = miles Tisha walked

    $2x - 1$ = miles Julio walked

    $2x - 1 + x = 17$ OR $3x - 1 = 17$

45. Let x = amount Erin spent

    $3x + 3.50$ = amount Josefa spent

    $3x + 3.50 = 7.61$

46. Let x = amount Lexy spent

    $\frac{1}{2}x + 5$ = amount Lupe spent

    $3(\frac{1}{2}x + 5)$ = amount Keenan spent

    $x + \frac{1}{2}x + 5 + 3(\frac{1}{2}x + 5) = 500$ OR

    $3x + 20 = 500$

47. Let x = number of oranges

    $x + 6$ = number of apples

    $x + x + 6 = 20$ OR $2x + 6 = 20$

48. Let x = amount Amber spent

    $2x - 4$ = amount Oriana spent

    $2x - 4 = 16$

Algebraic Expressions and Operations Test—Form A (pages 72–74)

1. $n + 4$
2. $10n$
3. $3n - 8$
4. $6n - 9$
5. $2(12 - n)$
6. $n \div 3$
7. $30 + n^2$
8. 39
9. 8
10. 48
11. 19
12. 4
13. 7
14. 11
15. 36
16. 195
17. 4
18. 24
19. 18
20. 252
21. associative property
22. commutative property
23. multiplicative identity property
24. multiplicative inverse property
25. additive identity property

Algebraic Expressions and Operations Test—Form B (asess05b.pdf)

1. $n - 6$
2. $8n$
3. $6n + 8$
4. $5n - 4$
5. $2(12 + n)$
6. $3n$

7. $40 - n^2$
8. 68
9. 12
10. 64
11. 23
12. 11
13. 8
14. 10
15. 81
16. 99
17. $\frac{40}{9}$
18. 24
19. 18
20. 252
21. commutative property
22. associative property
23. multiplicative identity property
24. additive identity property
25. multiplicative inverse property

Adding Integers Quiz—Form A (page 75)

1. 4
2. –4
3. –5
4. –1
5. 4
6. –4
7. 1
8. 3
9. –9
10. –7
11. 2
12. –8
13. –7
14. 2
15. 1
16. 7
17. –6
18. –9
19. –4
20. 0
21. 3
22. 4
23. –11
24. 1
25. 3
26. –3
27. –2
28. –8
29. 2
30. –12
31. 4
32. –2