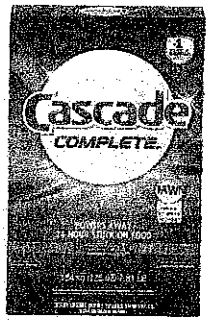
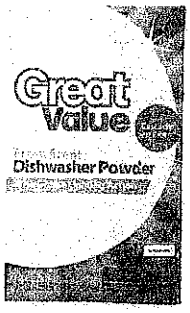
Introduction to Math 1
Unit 1 Agenda

Name_____

	UNIT 1: Solving Equations	Homework
1/25 Thurs	Accounting/Checkbook Task Activity	
1/26 Fri	Accounting/Checkbook Task Activity	
1/29 Mon	Integer Insanity Game Consumer Math- buying dishwasher detergent and pizza	
1/30 Tues	3.1-3.2 Distributive Property and Simplify Algebraic Expressions Packet Pages 109,114 Textbook p98-109	
1/31 Wed	3.3 Solving Equations by Adding or Subtracting Packet Pages 117-120 Textbook p110-114	
2/1 Thurs	3.4 Solving Equations by Multiplying or Dividing Packet Pages 122-126 Textbook p115-119	
2/2 Fri	3.5 Solving Two-Step Equations Packet Pages 127-131 Textbook p120-125	
2/5 Mon	3.5 Solving Two-Step Equations Puzzles and Activities	
2/6 Tues	3.5 Solving Two-Step Equations Packet Pages 127-131 Textbook p120-125	
2/7 Wed	3.6 Writing Two-Step Equations Packet Pages 132-133 Textbook p126-130	
2/8 Thurs	3.6 Writing Two-Step Equations Packet Pages 132-133 Textbook p126-130	
2/9 Fri	3.7 Using Formulas Packet Pages 137-141 Textbook p131-136	Early Release
2/12 Mon	3.7 Using Formulas Packet Pages 137-141 Textbook p131-136	
2/13 Tues	Study Guide and Review Textbook p138-140	
2/14 Wed	Practice Test Standardized Test Practice Textbook p141-142	
2/15 Thurs	**Unit 3 Test**	

Buying Dishwasher Detergent





How do we decide which size and brand of dish detergent to buy at Walmart? Do we get the name brand or store brand? Do you have any coupons? Does it matter? Are any of them on sale? Does it matter? Let's do some problem solving and find out.

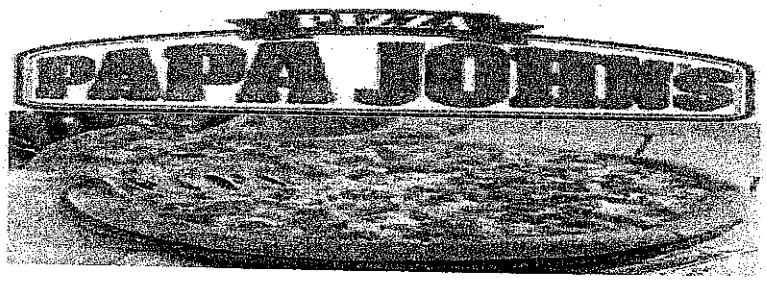
1. Your mom told you to go to the store to buy Cascade dishwasher detergent. When you get there one Cascade Complete box has 3.54 kg, 125 oz, and 7.91 lbs on the label and it costs $13.73. Another Cascade Complete box has 1.7 kg, 3.75 lbs, and 60 oz on the label and it costs $5.22. What should you consider before you buy one of them? Which one should you get?

2. What if you have a coupon for $1.00 off a Cascade product? Should you still get the same one? How does the coupon affect your decision making? What if the coupon doubles at Harris Teeter and it costs $7.79 for a 75 oz box? Should you get it there instead?

3. If Target has a sale for Cascade Complete that is 60 oz for $6.09, then should you go there instead?

4. As you are walking down the aisle, you notice the Great Value dishwasher detergent box has 75 oz, 4.68 lbs, and 2.12 kg on the box for $4.13. Should you get that instead? Which one is the better deal? How do you know?

5. How can you apply these concepts to another situation?



Your family decides to have pizza for dinner. What size pizzas should you get at Papa John's? How many pizzas? Should you get it delivered or order it carry-out? Do they have any specials? Do you have any coupons?

Papa John's has 4 sizes for their hand tossed original crust pizzas. The pizzas are measured by diameter in inches.

Small - 10" Medium - 12" Large - 14" XL - 16"

Here are the available specials at your local Papa John's:

Free pizza available after you order $15 or more.
Two medium 2-topping for $6.99 each.
Family Special – 1 large specialty and 1 large 2-topping for $23.
Three medium 1 topping for $16.65.
Large 2-topping and a cookie with $2 donated to Give Kids the World for $15.

NAME _____ DATE _____ PERIOD _____

3-1 Practice

The Distributive Property

Use the Distributive Property to write each expression as an equivalent expression. Then evaluate the expression.

1. $6(80 + 1)$ **2.** $7(70 - 4)$ **3.** $(300 + 6)4$ **4.** $(100 + 10)9$

5. $5(400 - 90)$ **6.** $-8(700 - 3)$ **7.** $4(20 - 9)$ **8.** $(100 - 3)(-7)$

9. $-1(75 - 9)$ **10.** $14(21 - 11)$ **11.** $-25(80 + 2)$ **12.** $31(450 - 18)$

Use the Distributive Property to write each expression as an equivalent algebraic expression.

13. $7(y + 11)$ **14.** $-6(t - 1)$ **15.** $-8(u - 2)$ **16.** $(r + 9)(-4)$

17. $-1(-h + 5)$ **18.** $-2(f + 3)$ **19.** $-4(b - 1)$ **20.** $1(7 - v)$

21. $-2(d - 5)$ **22.** $22(n + 10)$ **23.** $-50(z - 1)$ **24.** $-12(g + 12)$

25. $17(p + 4)$ **26.** $(k - 21)(-8)$ **27.** $(-32 - s)(-9)$ **28.** $-28(a - 5)$

29. $-20(19 - a)$ **30.** $33(d + 4)$ **31.** $-18(-q - 5)$ **32.** $-16(c + 45)$

33. $-19(v - 1)$ **34.** $-1(r + 27)$ **35.** $53(x + 11)$ **36.** $-17(-n + 1)$

37. PLANTS A planter weighs 2 pounds and holds 3 pounds of soil. Write two equivalent expressions for the total weight of nine planters. Then find the weight.

38. UNIFORMS A uniform costs $42 for the sweater and $29 for the slacks. Write two equivalent expressions for the total cost of six uniforms. Then find the cost.

Lesson 3-1

NAME _____ DATE _____ PERIOD _____

3-2 Practice

Simplifying Algebraic Expressions

Simplify each expression.

1. $6y - 4 + y$

2. $8u + 2u - 3u$

3. $-12 + 5g + 8 - g$

4. $-21w + 5 + 3w - 1$

5. $r + r + r + r + r$

6. $f - 3f + 2 - f + 1$

7. $-8q + 6 + 5q - 3$

8. $h + 5h - 3 - 6h$

9. $2a - 5(a + 1)$

10. $b - 2(b - 2)$

11. $9 - t - 3(t + 3)$

12. $-8 + 5(g + 2) - 2$

13. $12m + 9 - 2m - 16$

14. $4(y - 3) + 9 - 3y$

15. $8a + b - 3a + 4b$

16. $-11x + 4 + 8x - 4 + 3x$

17. $-14y + 12(x + y) - 12x$

18. $19g - 4h + 4 - 20(g - 1)$

19. $-5(c + d) - 4d + 5c - d$

20. $(8 - b)(-3) + 6b + 12 - 10b$

21. $-p + q + 2(p + q) - p - q$

22. $-55n + 28n + 21n + 7n - n$

23. $-12z + 4(z - 9) + 30 + z$

24. $-9 + w - v + 5w + 2v + 5$

25. $-6(y - 1) + 2y + 7 - y + 4$

26. $x - 10 + y - 2(x + y) + y$

Write an expression in simplest form that represents the total amount in each situation.

27. LUNCH You bought 3 pieces of chicken that cost x dollars each, a salad for \$3, and a drink for \$1.

28. SOCCER Sal has scored g goals this season. Ben has scored four times as many goals as Sal. Chun has scored three fewer goals than Ben.

NAME _____ DATE _____ PERIOD _____

3-3

Study Guide and Intervention

Solving Equations by Adding or Subtracting

Step 1	Identify the variable.
Step 2	To isolate the variable, add the same number to or subtract the same number from each side of the equation.
Step 3	Check the solution.

Example 1 **Solve $x + 2 = 6$.**

$x + 2 = 6$

$x + 2 - 2 = 6 - 2$ Subtract 2 from each side.

$x = 4$

Check: $x + 2 = 6$

$4 + 2 = 6$

$6 = 6$ ✔

The solution is 4.

Example 2 **Solve $x - 9 = -13$.**

$x - 9 = -13$

$x - 9 + 9 = -13 + 9$ Add 9 to each side.

$x = -4$

Check: $x - 9 = -13$

$-4 - 9 = -13$

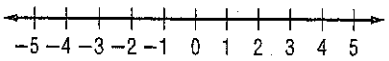
$-13 = -13$ ✔

The solution is -4.

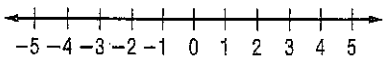
Exercises

Solve each equation. Graph the solution of each equation on the number line.

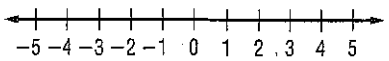
1. $x + 5 = 2$



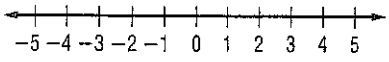
2. $11 + w = 10$



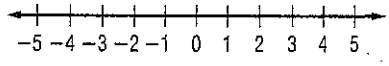
3. $k + 3 = -1$



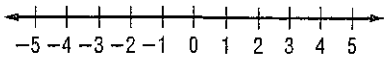
4. $m - 2 = 3$



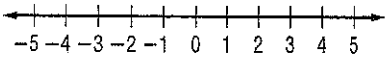
5. $a - 7 = -5$



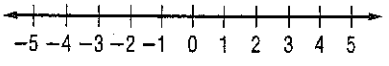
6. $b - 13 = -13$



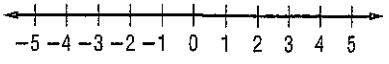
7. $-3 + h = -7$



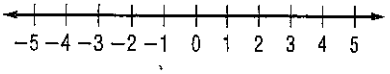
8. $-12 = y - 9$



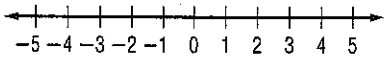
9. $2 + r = -3$



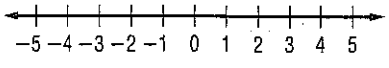
10. $9 + b = 9$



11. $7 + k = 10$



12. $g - 9 = -5$



Lesson 3-3

NAME _____ DATE _____ PERIOD ____

3-3

Practice

Solving Equations by Adding or Subtracting

Solve each equation. Check your solution.

1. $z + 6 = -5$	**2.** $x - 8 = -3$	**3.** $c - 2 = 21$	**4.** $v + 9 = 0$
5. $q + 10 = -30$	**6.** $w + 15 = 0$	**7.** $z + 12 = -19$	**8.** $b - 11 = 8$
9. $a - 12 = 0$	**10.** $r + 11 = 12$	**11.** $p + (-9) = 33$	**12.** $n - 16 = -16$
13. $s + 13 = -5$	**14.** $t - (-15) = 21$	**15.** $r - 14 = -23$	**16.** $m + (-3) = 9$
17. $d - 19 = 1$	**18.** $y + 30 = -1$	**19.** $u - 21 = 0$	**20.** $k - 18 = 2$
21. $f - 23 = 23$	**22.** $g - 24 = -24$	**23.** $h + 35 = 7$	**24.** $j + 40 = 25$
25. $x + 3 = -15$	**26.** $c + 22 = -27$	**27.** $v - 18 = -4$	**28.** $b - 41 = -30$
29. $h - 10 = 19$	**30.** $y - (-12) = 0$	**31.** $g + 58 = 9$	**32.** $n + 29 = 4$
33. $j + (-14) = 1$	**34.** $p - 21 = -2$	**35.** $k - (-13) = -8$	**36.** $m + 33 = 16$

37. SAVINGS ACCOUNT Jhumpa has \$55 in her savings account. This is \$21 more than David. Write and solve an equation to find the amount David has in his savings account.

38. WEATHER The temperature fell 16° between noon and 3:00 P.M. At 3:00, the temperature was −3°F. Write an equation to determine the temperature at noon.

Lesson 3-3

NAME _____ DATE _____ PERIOD _____

3-4

Study Guide and Intervention

Solving Equations by Multiplying or Dividing

Step 1	Identify the variable.
Step 2	To isolate the variable, multiply or divide each side of the equation by the same nonzero number to get the variable by itself.
Step 3	Check the solution.

Example 1 **Solve $-7x = 42$.**

$-7x = 42$

$\frac{-7x}{-7} = \frac{42}{-7}$ Divide each side by -7.

$x = -6$ Check your solution.

The solution is -6.

Example 2 **Solve $\frac{y}{2} = -2$.**

$\frac{y}{2} = -2$

$\left(\frac{y}{2}\right)2 = (-2)2$ Multiply each side by 2.

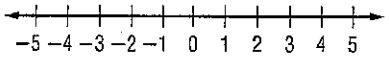
$y = -4$ Check your solution.

The solution is -4.

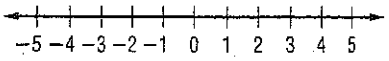
Exercises

Solve each equation. Graph the solution of each equation on the number line.

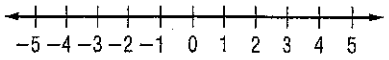
1. $-3a = 15$



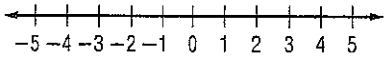
2. $-t = 5$



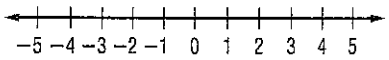
3. $-1 = \frac{n}{4}$



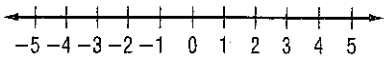
4. $7r = 28$



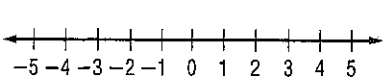
5. $0 = \frac{h}{7}$



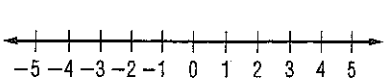
6. $24 = -8m$



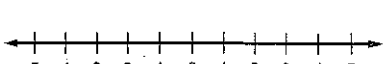
7. $-11b = 44$



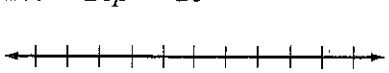
8. $\frac{a}{-2} = -1$



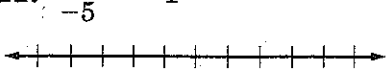
9. $12d = -48$



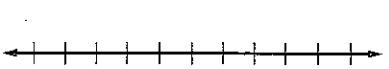
10. $-10p = 10$



11. $\frac{r}{-5} = -1$



12. $-11w = -33$



NAME _____ DATE _____ PERIOD ____

3-4

Practice

Solving Equations by Multiplying or Dividing

Solve each equation. Check your solution.

1. $8y = 56$

2. $\frac{w}{4} = 12$

3. $-3u = -12$

4. $\frac{r}{-5} = 15$

5. $9d = -9$

6. $-8f = 0$

7. $\frac{n}{-1} = 31$

8. $\frac{v}{14} = -7$

9. $-1b = 24$

10. $-12h = -72$

11. $\frac{r}{24} = -5$

12. $\frac{p}{-6} = -3$

13. $-15x = 90$

14. $-4g = -20$

15. $\frac{z}{20} = -1$

16. $11t = 0$

17. $23g = -92$

18. $-7d = -28$

19. $\frac{m}{-15} = 7$

20. $9k = -9$

21. $6w = 0$

22. $-4r = 120$

23. $\frac{u}{12} = 1$

24. $-11q = -99$

25. $16y = -192$

26. $\frac{n}{-8} = 0$

27. $-7j = 84$

28. $-21p = -231$

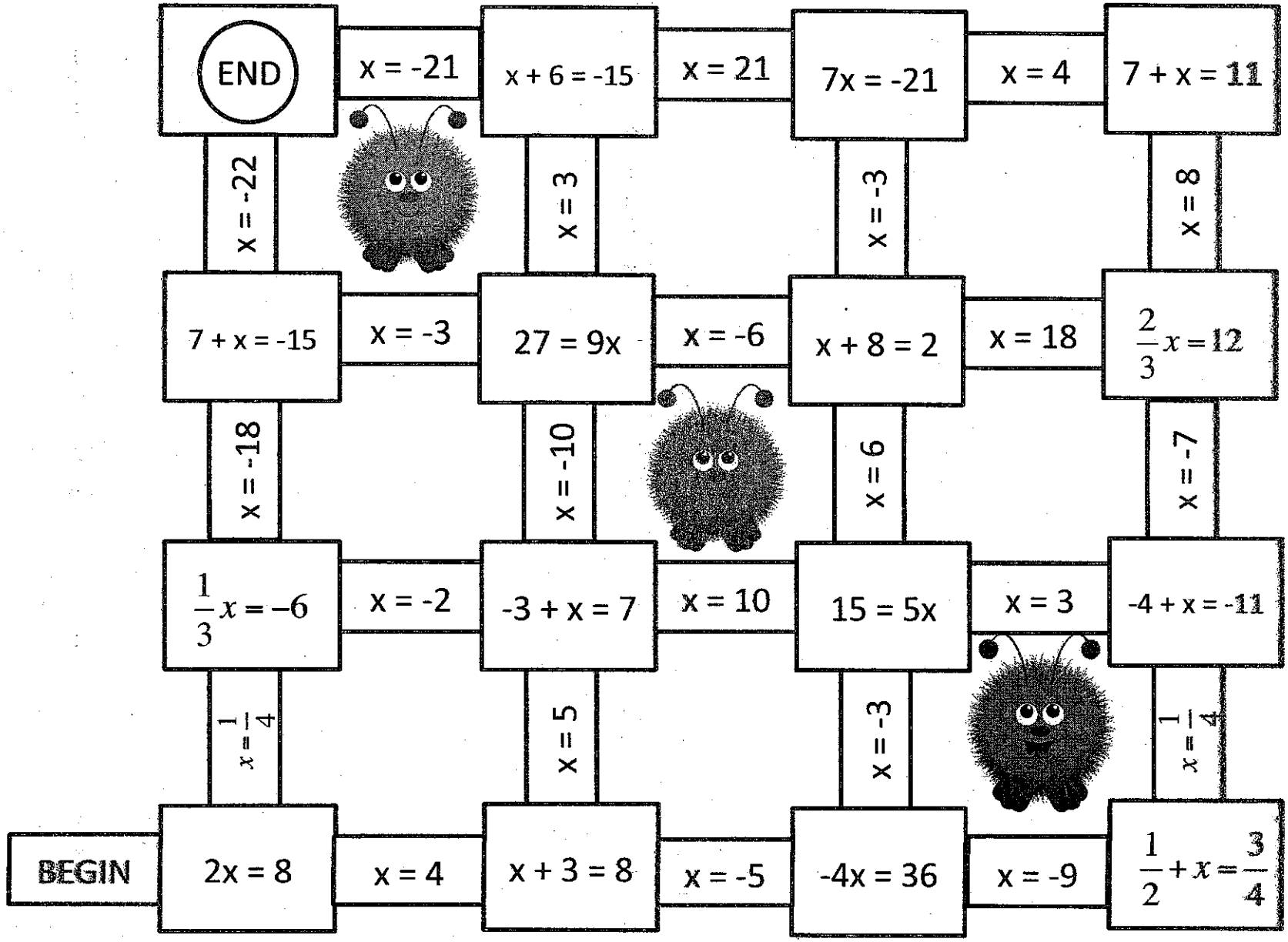
Write and solve an equation for each sentence.

29. The product of a number and -6 is -54.

30. The quotient of a number and 6 is -14.

31. **CLASS REPORTS** Each student needs 12 minutes to give a report. A class period is 48 minutes long. Write and solve an equation to determine the number of students who could give a report in one class period.

32. **COOKING** One pound of ground beef makes four hamburger patties. Write and solve an equation to determine how many pounds of beef are needed to make 36 hamburgers.


END
x = -21
x + 6 = -15
x = 21
7x = -21
x = 4
7 + x = 11
x = -22
x = 3
x = -3
x = 8
7 + x = -15
x = -3
27 = 9x
x = -6
x + 8 = 2
x = 18
$\frac{2}{3}x = 12$
x = -18
x = -10
x = 6
x = -7
$\frac{1}{3}x = -6$
x = -2
-3 + x = 7
x = 10
15 = 5x
x = 3
-4 + x = -11
$x = \frac{1}{4}$
x = 5
x = -3
$x = \frac{1}{4}$
BEGIN
2x = 8
x = 4
x + 3 = 8
x = -5
-4x = 36
x = -9
$\frac{1}{2} + x = \frac{3}{4}$

NAME _____ DATE _____ PERIOD _____

3-5 Study Guide and Intervention

Solving Two-Step Equations

A two-step equation contains two operations. To solve two-step equations, use inverse operations to undo each operation in reverse order. First, undo addition/subtraction. Then, undo multiplication/division.

Example **Solve $\frac{c}{2} - 13 = 7$.**

$\frac{c}{2} - 13 = 7$

$\frac{c}{2} - 13 + 13 = 7 + 13$ Add 13 to each side.

$\frac{c}{2} = 20$

$\left(\frac{c}{2}\right)2 = (20)2$ Multiply each side by 2.

$c = 40$

Check:

$\frac{c}{2} - 13 = 7$

$\frac{40}{2} - 13 = 7$

$20 - 13 = 7$

$7 = 7$ ✔

The solution is 40.

For some problems, it may be necessary to combine like terms before solving.

Exercises

Solve each equation. Check your solution.

1. $5t + 2 = 7$ **2.** $2x + 5 = 9$ **3.** $6u - 8 = 28$ **4.** $8m - 7 = 17$

5. $16 = 2w + 6$ **6.** $50 = 6d + 8$ **7.** $21 = 42 + 7k$ **8.** $4a - 10 = 42$

9. $7c - 4 = -32$ **10.** $12 - 3m = 18$ **11.** $28 = 2h - 18$ **12.** $-10 = -5x - 25$

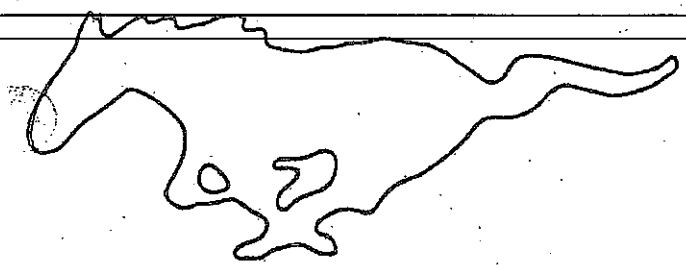
13. $\frac{m}{4} + 6 = 70$ **14.** $5 + \frac{p}{2} = 45$ **15.** $18 = \frac{g}{3} + 6$ **16.** $4 + \frac{n}{5} = 29$

17. $\frac{m}{7} - 9 = 5$ **18.** $\frac{k}{9} - 3 = -11$ **19.** $13 + \frac{a}{4} = -3$ **20.** $-3 + \frac{c}{2} = 12$

21. $\frac{v}{-3} + 8 = 22$ **22.** $8x - 16 + 8x = 16$ **23.** $12a - 14a = 8$

24. $7c - 8 - 2c = 17$ **25.** $6 = -y + 42 - 2y$ **26.** $16 + 8r - 4r + 4 = 24$

Lesson 3-5



NAME _____ DATE _____ PERIOD ____

3-5

Practice

Solving Two-Step Equations

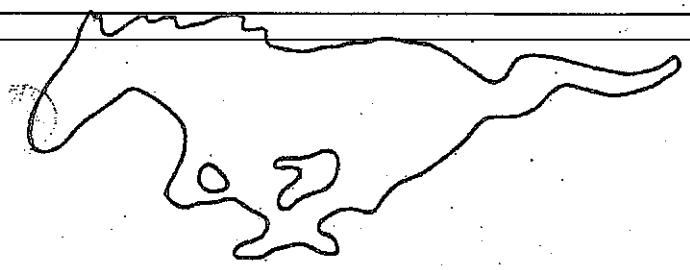
Solve each equation. Check your solution.

1. $6p + 22 = 10$
2. $\frac{r}{3} - 4 = 2$
3. $5d - 9 = -24$
4. $21q - 11 = 10$
5. $\frac{v}{-6} + 1 = 0$
6. $7h + 20 = -8$
7. $8k - 40 = 16$
8. $\frac{w}{2} - 16 = 5$
9. $\frac{s}{4} - 5 = 1$
10. $\frac{x}{8} + 7 = 9$
11. $\frac{z}{10} - 20 = -20$
12. $\frac{r}{-2} + 11 = 15$
13. $9q + 10 = 118$
14. $\frac{n}{5} - 4 = -10$
15. $6w - 125 = 1$
16. $\frac{r}{3} - 16 = 2$
17. $9y - 11 - 5y = 25$
18. $20 - 15d = 35$
19. $\frac{u}{-9} - 8 = -4$
20. $-6h + 4 - 3 + h = 11$
21. $5p - 4p = 7$
22. $18 - \frac{x}{3} = -7$
23. $21 + 9j - 10 = -277$
24. $12b - 9 + 2b - b = -87$
25. $1 + \frac{a}{-9} - 4 = 0$
26. $4w - w - 26 = 19$
27. $5 - 4y + y - 1 = -23$

28. **RENTAL AGREEMENTS** A furniture rental store charges a down-payment of \$100 and \$75 per month for a table. Hilde paid \$550 to rent the table. Solve $75n + 100 = 550$ to find the number of months Hilde rented the table.

29. **BUSINESS** At work, Jack must stuff 1000 envelopes with advertisements. He can stuff 12 envelopes in one minute, and he has 112 envelopes already finished. Solve $1000 = 12n + 112$ to find how many minutes it will take Jack to complete the task.

Lesson 3-5



NAME _____ DATE _____ PERIOD _____

3-6

Skills Practice

Writing Two-Step Equations

Translate each sentence into an equation. Then find each number.

1. Eleven less than 5 times a number is 24.

2. The quotient of a number and −9 increased by 10 is 11.

3. Five less than the product of −3 and a number is −2.

4. Fifteen more than twice a number is −23.

5. The difference between 5 times a number and 4 is 16.

6. Nine more than −8 times a number is −7.

7. The difference between 12 and ten times a number is −28.

8. Seven more than three times a number is 52.

9. Eleven less than five times a number is 19.

10. Thirteen more than four times a number is −91.

11. Seven less than twice a number is 43.

Solve each problem by writing and solving an equation.

12. **SHOPPING** The total cost of a suit and 4 ties is $292. The suit cost $200. Each tie cost the same amount. Find the cost of one tie.

13. **AGES** Mary's sister is 7 years older than Mary. Their combined ages add up to 35. How old is Mary?

NAME _____ DATE _____ PERIOD _____

3-6

Study Guide and Intervention

Writing Two-Step Equations

You can use two-step equations to represent situations in which you start with a given amount and then increase it at a certain rate.

Example **PRINTING: A laser printer prints 9 pages per minute. Liza refilled the paper tray after it had printed 92 pages. In how many more minutes will there be a total of 245 pages printed?**

EXPLORE You know the number of pages printed and the total number of pages to be printed. You need to find the number of minutes required to print the remaining pages.

PLAN Let m = the number of minutes. Write and solve an equation. The remaining pages to print is $9m$.

remaining pages + pages printed = total pages

$9m$ + 92 = 245

SOLVE

$$9m + 92 = 245$$
$$9m + 92 - 92 = 245 - 92$$
$$9m = 153$$
$$9m = \frac{153}{9}$$
$$m = 17$$

EXAMINE The remaining 153 pages will print in 17 minutes. Since 245 – 153 = 92, the answer is correct.

Exercises

Solve each problem by writing and solving an equation.

1. **METEOROLOGY** During one day in 1918, the temperature in Granville, North Dakota, began at −33° and rose for 12 hours. The high temperature was about 51°. About how many degrees per hour did the temperature rise?

2. **SAVINGS** John has $825 in his savings account. He has decided to deposit $65 per month until he has a total of $1800. In how many months will this occur?

3. **SKYDIVING** A skydiver jumps from an airplane at an altitude of 12,000 feet. After 42 seconds, she reaches 4608 feet and opens her parachute. What was her average velocity during her descent?

4. **FLOODING** The water level of a creek has risen 4 inches above its flood stage. If it continues to rise steadily at 2 inches per hour, how long will it take for the creek to be 12 inches above its flood stage?

NAME DATE PERIOD

3-7 Study Guide and Intervention

Using Formulas

The formula $d = rt$ relates distance d, rate r, and time t, traveled.

Example 1 **Find the distance traveled if you drive at 40 miles per hour for 3 hours.**

$d = rt$

$d = 40 \times 3$ Replace r with 40 and t with 3.

$d = 120$ The distance traveled is 120 miles.

The formula $P = 2(\ell + w)$ relates perimeter P, length ℓ, and width w for a rectangle.

The formula $A = \ell w$ relates area A, length ℓ, and width w for a rectangle.

Example 2 **Find the perimeter and area of a rectangle with length 7 feet and width 2 feet.**

$P = 2(\ell + w)$

$P = 2(7 + 2)$

$P = 2(9)$

$P = 18$

The perimeter is 18 feet.

$A = \ell \cdot w$

$A = 7 \cdot 2$

$A = 14$

The area is 14 square feet.

Exercises

1. **TRAIN TRAVEL** How far does a train travel in 12 hours at 48 miles per hour?
2. **TRAVEL** How long does it take a car traveling 40 miles per hour to go 200 miles?
3. **BICYCLING** What is the rate, in miles per hour, of a bicyclist who travels 56 miles in 4 hours?
4. **RACING** How long will it take a driver to finish a 980-mile rally race at 70 miles per hour?

Find the perimeter and area of each rectangle.

5. 3 in., 7 in.

6. 6 m, 9 m

7. 3 ft, 12 ft

8. 3 cm, 5 cm

9. 10 yd, 15 yd

10. 18 cm, 20 cm

Lesson 3-7

NAME _____ DATE _____ PERIOD _____

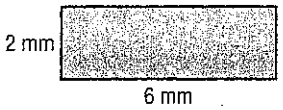
3-7 Skills Practice

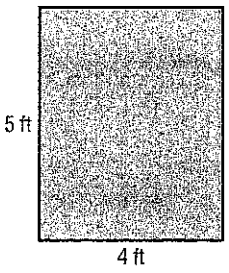
Using Formulas

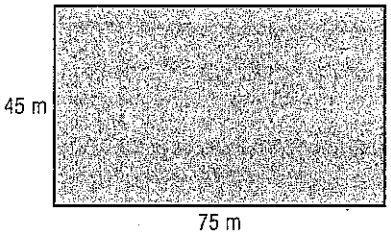
1. **AIR TRAVEL** A plane is traveling 9 miles per minute. How much time is needed to travel 216 miles?

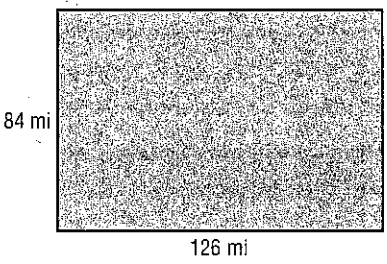
2. **JOGGING** What is the rate, in feet per second, of a girl who jogs 315 feet in 45 seconds?

Find the perimeter and area of each rectangle.

3. 

4. 

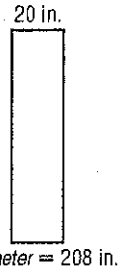
5. 

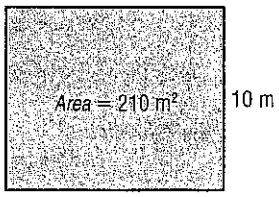
6. 

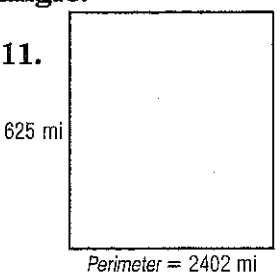
7. a rectangle that is 21 inches long and 13 inches wide

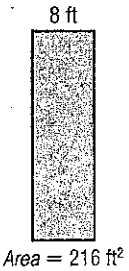
8. a square that is 25 centimeters on each side

Find the missing dimension of each rectangle.

9. 

10. 

11. 

12. 

13. The perimeter of a rectangle is 100 centimeters. Its width is 9 centimeters. Find its length.

14. The area of a rectangle is 319 square kilometers. Its width is 11 kilometers. Find its length.

NAME _____ DATE _____ PERIOD _____

3-7

Practice

Using Formulas

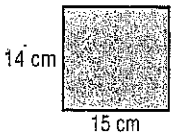
1. **AIR TRAVEL** What is the rate, in miles per hour, of a plane that travels 1680 miles in 3 hours?

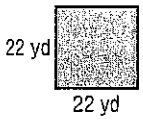
2. **TRAVEL** A train is traveling at 54 miles per hour. How long will it take to go 378 miles?

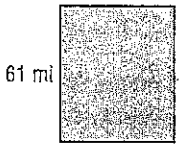
3. **SWIMMING** What is the rate, in feet per second, of a swimmer who crosses a 164-foot-long pool in 41 seconds?

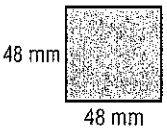
4. **BALLOONING** A balloon is caught in a wind traveling at 25 feet per second. If the wind is constant, how long will it take the balloon to travel 1000 feet?

Find the perimeter and area of each rectangle.

5. 

6. 

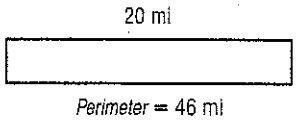
7. 

8. 

9. a rectangle that is 92 meters long and 18 meters wide

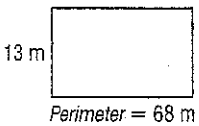
10. a rectangle that is 30 inches long and 29 inches wide

Find the missing dimension in each rectangle.

11. 

12. 

13. 

14. 

15. **GEOMETRY** The area of a rectangle is 1260 square inches. Its length is 36 inches. Find the width.

Lesson 3-7