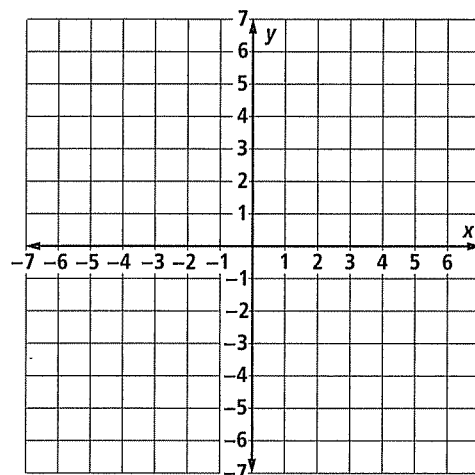
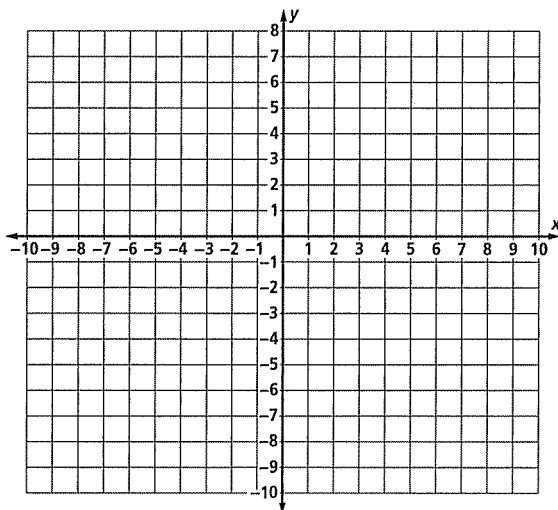


7-7B

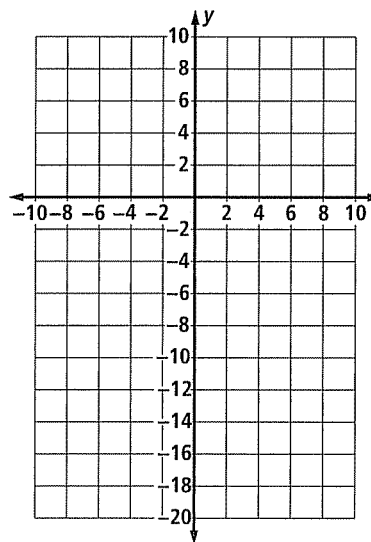
8. On the grid at the right, graph the quadrilateral with vertices $(4, 4)$, $(5, -3)$, $(-2, -5)$, and $(-4, 3)$ and its image under a size change of magnitude 0.4.



9. On the grid below, graph the quadrilateral with vertices $(2, 3)$, $(2, -4)$, $(-2, -2)$ and $(-2, 3)$ and its image under a size change of magnitude 2.4.



10. On a grid, graph the quadrilateral with vertices $(2, 1)$, $(2, -2)$, $(-2, -3)$ and $(-2, 2)$ and its image under a size change of magnitude $3\frac{3}{4}$.



8-1A Lesson Master

Questions on SPUR Objectives
See pages 549–551 for objectives.

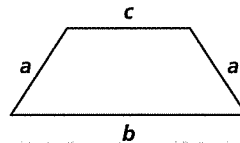
PROPERTIES Objective D

- Write $4t$ as a repeated addition. _____
- Write $u + u + u + u + u + u + u$ as a product. _____
- Simplify $\frac{1}{2} + 1 + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$. _____
- Simplify $r + r + r + r$. _____
- Identify the coefficients in the expression: $3x - 5y + z$. _____

In 6–8, a. identify like terms. b. Simplify the expression.

- $6s + 3t + 9t + s$ a. _____ b. _____
- $8v - 3v - 5u + 2v$ a. _____ b. _____
- $6m + 3m - 5m - m + m$ a. _____ b. _____

9. Give a formula in simplest form for the perimeter of the quadrilateral at the right.



10. a. Explain how the Repeated Addition Property of Multiplication can be used to simplify $3x + 6x$.

- b. Will your explanation in Part a work for $3x + 6y$? Explain your answer.

11. The phrase *multiplicative identity* refers to what number?

12. Give three different instances of expressions that can be used in a multiplication problem that are equivalent to the number 1, the Multiplicative Identity.

8-1B Lesson Master**PROPERTIES**

Objective D: Recognize and use the Repeated Addition Property of Multiplication and the Multiplication Properties of 1, 0, -1 , and positive and negative numbers.

In 1–4, write the expression as a repeated addition.

1. $7 \cdot \frac{4}{5}$ _____

2. $4 \cdot 8.6$ _____

3. $2a$ _____

4. $6(-w)$ _____

In 5–8, write the repeated addition as a product.

5. $-83 + -83 + -83 + -83 + -83$ _____

6. $\frac{5}{3} + \frac{5}{3} + \frac{5}{3} + \frac{5}{3} + \frac{5}{3} + \frac{5}{3}$ _____

7. $m + m + m + m + m + m + m + m$ _____

8. $-f + -f + -f + -f + -f$ _____

In 9–12, collect like terms and simplify the expression.

9. $\frac{1}{3} + 4 + \frac{1}{3} + \frac{1}{3}$ _____

10. $2a + 4b + b + 5a$ _____

11. $0.5y + 7z - 2y - z$ _____

12. $x - 6z - 2x + y + -7z + 6z$ _____

In 13–16, identify the coefficients in the expression, and simplify it.

13. $6d - 3d$ _____

14. $12y - y - 7y$ _____

15. $2r + 9r - 5r - 7r$ _____

16. $-6k - 8p + 12p - 4p + 2k$ _____

In 17–20, simplify the expression, . . .

a. retaining the parentheses.

b. without the parentheses.

17. $3(p + r) + 2(p + r)$ a. _____ b. _____

18. $2(m + n) - (m + n)$ a. _____ b. _____

19. $-4(x - y) + (x - y)$ a. _____ b. _____

20. $(3a + b) + 2(3a + b)$ a. _____ b. _____

21. Show why $(4x)(4y) \neq 4(x + y)$

22. Jean bought 3 pairs of jeans and 4 T-shirts at the mall. Including taxes, each T-shirt cost \$9.71 and each pair of jeans cost \$35.53.

a. Use the Repeated Addition Property of Multiplication to find the total bill.

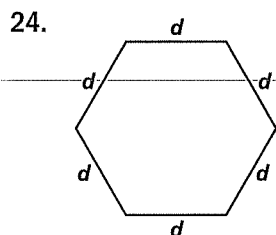
b. Use the Distributive Property to find the total bill.

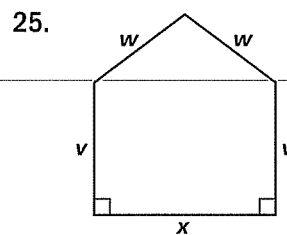
23. Consider the expression $0.79 \cdot 100\%(A)$.

a. Use the Multiplicative Identity Property of One to write an equivalent expression.

b. Simplify the expression.

In 24 and 25, give a formula in simplest form for the perimeter of the polygon.





8-2A Lesson Master**Questions on SPUR Objectives**
See pages 549–551 for objectives.**USES** Objective F

In 1–3, give two conversion factors that could be derived from the equality.

- 2 pints = 1 quart _____ and _____
- 1,000 meters = 1 kilometer _____ and _____
- 36 inches = 1 yard _____ and _____

In 4 and 5, do the multiplication. Include the rate units in your answer.

- $2.25 \frac{\text{hours of practice}}{\text{day}} \cdot 6 \frac{\text{days}}{\text{week}}$ _____
- $360 \frac{\text{miles}}{\text{day}} \cdot 0.05 \frac{\text{gallon}}{\text{mile}}$ _____

In 6–10, show your calculation and give your answer.

- If Marlene runs 4.85 miles an hour and she runs 2 hours each day, how many miles does she run in 8 weeks?

_____ calculation _____ answer

- It takes Sam about one minute to read 500 words. How many hours will it take him to read a 396-page book with about 450 words per page?

_____ calculation _____ answer

- If Sharon earns \$6.75 an hour and works 20 hours a week, how much does she earn in a year? (52 weeks in a year.)

_____ calculation _____ answer

- One foot equals how many centimeters? (1 inch = 2.54 cm)

_____ calculation _____ answer

- How many seconds are there in a 30-day month?

_____ calculation _____ answer

8-2B Lesson Master**VOCABULARY**

1. a. Explain the relationship between a rate factor and a conversion factor.

- b. Give an example of each.

In 2 and 3, write the conversion equation that corresponds to each conversion factor.

2. $1 \frac{\text{day}}{24 \text{ hours}}$ _____

3. $5,280 \frac{\text{feet}}{1 \text{ mile}}$ _____

USES Objective F: Apply the Rate Factor Model for Multiplication.

4. Consider the expression $2.5 \text{ hours} \cdot 50 \frac{\text{miles}}{\text{hour}}$.

- a. Identify the rate factor. _____
- b. Identify the rate unit. _____
- c. Do the multiplication. _____
- d. Make up a question that leads to the multiplication.

- e. Write a general formula for the distance D , clearly identifying any other variables.

In 5–8, do the multiplication. Include units in all answers.

5. $5 \frac{\text{students}}{\text{car}} \cdot 4 \frac{\text{cars}}{\text{field trip}}$ _____

6. $3 \text{ classes} \cdot 22 \frac{\text{students}}{\text{class}} \cdot 3 \frac{\text{pencils}}{\text{student}}$ _____

7. $8 \frac{\text{hot-dog buns}}{\text{package}} \cdot 10 \frac{\text{packages}}{\text{case}} \cdot 5 \frac{\text{cases}}{\text{picnic}}$ _____

8. $5 \frac{\text{points}}{\text{item}} \cdot 20 \frac{\text{items}}{\text{test}} \cdot 6 \text{ tests}$ _____

In 9–16, show your calculation and give the answer.

9. 4 miles equals how many feet? (1 mi = 5,280 ft)

calculation: _____ answer: _____

10. Convert 7.5 acres to square feet. (1 acre = 43,560 ft²)

calculation: _____ answer: _____

11. Andrea picked 2 bushels of cherries. How many pints is this?
(1 bushel = 4 pecks; 1 peck = 16 pt)

calculation: _____ answer: _____

12. Convert 20,000 cubic centimeters to quarts. (1 L = 1,000 cm³; 1 L ≈ 1.06 qt)

calculation: _____ answer: _____

13. A Ruby-throated hummingbird, on average, makes 52 wing-beats per second during flight. How many wing-beats will the hummingbird make during one minute of flight?

calculation: _____ answer: _____

14. If Donald reads 40 pages per hour and he reads 2 hours each day, how many pages will he read in 5 weeks?

calculation: _____ answer: _____

15. Kim earns 7.5 dollars for each lawn she cuts. If she cuts 6 lawns each week, how much will she earn in 7 weeks?

calculation: _____ answer: _____

16. As part of the buffet for her family reunion, Anna is making sliced-turkey sandwiches. Sliced turkey costs \$7.98 per pound at a local store. If Anna decides to use 4 ounces per sandwich and wants to make 30 sliced-turkey sandwiches, how much will she spend on sliced turkey?

calculation: _____ answer: _____

17. Maliha, an Asian elephant at the St. Louis Zoo, weighed 341 pounds at birth. Then she lost 30 pounds due to an illness. However, over the next 3 weeks, she gained 11 pounds each week. How much did she weigh at that point? _____

8-3A Lesson Master

Questions on SPUR Objectives
See pages 549–551 for objectives.

SKILLS Objective A

In 1–6, simplify.

1. $-8 \cdot -6$ _____ 2. $3 \cdot -7 \cdot -2 \cdot -3$ _____
3. $-5(16 + -3 \cdot 5 - 2)$ _____ 4. $-39 + 5 \cdot -8$ _____
5. $-\frac{2}{3} \cdot -\frac{3}{4} \cdot -\frac{4}{5}$ _____ 6. $(-2.5)^4$ _____
7. Evaluate $-1 \cdot -5 \cdot ab$ when $a = -1.2$ and $b = \frac{4}{5}$. _____

PROPERTIES Objective DIn 8–10, answer *always*, *sometimes but not always*, or *never*.

8. The product of two negative numbers is negative. _____
9. The product of one positive and one negative number has the sign of the number with the largest absolute value. _____
10. The product of any number and -1 is negative. _____

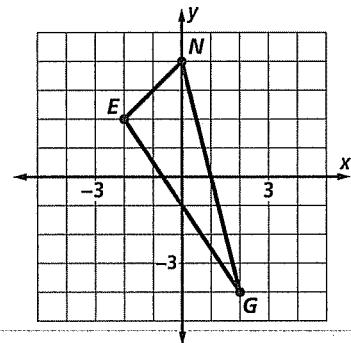
In 11 and 12, solve the equation.

11. $-1n = 35$ _____ 12. $108 \cdot t \cdot -1 = 0$ _____

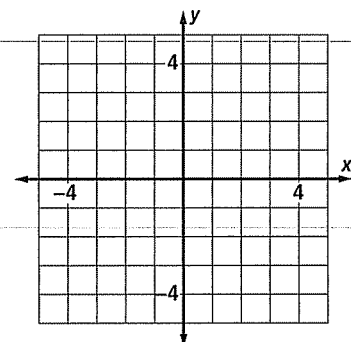
REPRESENTATIONS Objective K

13. Graph the image of $\triangle NEG$ under a size change of magnitude -0.5 .

Is this transformation an expansion or a contraction?



14. Quadrilateral $QUAD$ has vertices $Q = (-2, 0)$, $U = (-1, 3)$, $A = (2, 2)$, and $D = (0, -2)$. Graph $QUAD$. Then graph $Q'U'A'D'$, its image under a size change of magnitude -1.5 .



8-3B Lesson Master**SKILLS** Objective A: Multiply positive and negative numbers.

In 1–10, simplify.

- | | | | |
|------------------------------------|-------|---------------------------------------|-------|
| 1. $12 \cdot -1$ | _____ | 2. $-7 \cdot -6$ | _____ |
| 3. $-18 \cdot -7$ | _____ | 4. $-18 \cdot 7$ | _____ |
| 5. $-4 \cdot -5 \cdot -6$ | _____ | 6. $-4 \cdot -5 \cdot 6$ | _____ |
| 7. $8 + 3 \cdot -7$ | _____ | 8. $6(-3 + 2 \cdot -2 - 1)$ | _____ |
| 9. $(-8)^3$ | _____ | 10. $-\frac{3}{4} \cdot -\frac{5}{6}$ | _____ |
| 11. If $z = 2$, calculate $-7z$. | _____ | 12. If $m = -8$, calculate $-5m$. | _____ |

PROPERTIES Objective D: Recognize and use the Repeated Addition Property of Multiplication and the Multiplication Properties of 1, 0, -1 , and positive and negative numbers.In 13–16, answer *always*, *sometimes but not always*, or *never*.

13. The product of a number and -1 is the opposite of that number. _____
14. The product of two negative numbers is positive. _____
15. The third power of any nonzero number is negative. _____
16. The product of a negative number and 0 is negative. _____

In 17 and 18, a situation is given. a. What multiplication problem involving negative numbers is suggested by the situation? b. What is the product and what does it mean?

17. A bicycle that Celine wants has decreased in price by \$47 a month for 3 months.
- a. _____
- b. _____
18. Mark has been hiking downhill at 1,350 m/hr. How does his altitude 3 hours ago compare with his altitude now?
- a. _____
- b. _____

In 19–22, simplify.

19. $(-1)^9$ _____
20. $(-1)^{10}$ _____
21. $-44 \cdot -3 \cdot 0 \cdot 61$ _____
22. $-7 \cdot u \cdot -1 \cdot 7$ _____

In 23 and 24, solve the equation.

23. $-1e = e$ _____

24. $296 \cdot a \cdot -1 = 0$ _____

REPRESENTATIONS

Objective K: Performs expansions or contractions with negative magnitudes on a coordinate plane.

25. Describe the relationship between a preimage and image under a size change of magnitude -1 .

In 26–29, multiple choice.

26. The image of $(-2, 3)$ under a size change of magnitude -0.5 is _____

A $(-1, 1.5)$ B $(1, 1.5)$ C $(1, -1.5)$ D $(-1, -1.5)$

27. The image of $(2, -6)$ under a size change of magnitude -2 is _____

A $(-4, 12)$ B $(4, 12)$ C $(4, -12)$ D $(-4, -12)$

28. The image of $(3, 5)$ under a size change of magnitude -1 is _____

A $(-3, 5)$ B $(3, 5)$ C $(3, -5)$ D $(-3, -5)$

29. The image of a point in the third quadrant under a size change of magnitude -1.4 is in quadrant _____

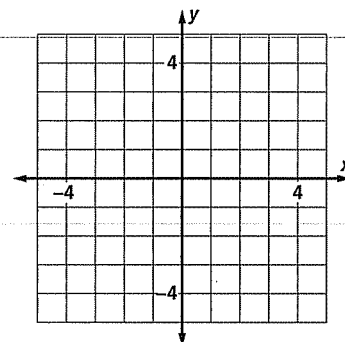
A I

B II

C III

D IV

30. A quadrilateral has vertices $P(-2, 4)$, $Q(4, 0)$, $R(0, -2)$, and $S(-4, 0)$. Graph $PQRS$ and its image under a size change of magnitude -0.5 .



8-4A Lesson Master**Questions on SPUR Objectives**
See pages 549–551 for objectives.**USES** Objective J

1. Give an example of independent events. Explain why they are independent.

2. Give an example of events that are not independent. Explain why they are not independent.

In 3–7, for each situation show your calculation and give the answer.

3. You figure you have a 3 in 5 probability of getting an A on your math test and a 1 in 2 chance of getting an A on your history test. What is the probability you get an A on both?

calculation: _____ answer: _____

4. In a certain game show, you have 4 chances in 6 for picking a box with a prize. There are 2 chances in 6 that the prize is \$100. What is the probability of selecting a box that contains a prize of \$100?

calculation: _____ answer: _____

5. The floods on the Mississippi River in 1993 were 500-year floods. A 500-year flood is a flood with a 1 out of 500 probability that water levels will reach a certain height. What is the probability of having two such floods one year after another? (Assume floods are independent events.)

calculation: _____ answer: _____

6. If you toss a fair coin, what is the probability you will get five heads in a row?

calculation: _____ answer: _____

7. In 2006, Joe Mauer won the American League batting title with a .347 average. Use this as his probability of getting a hit in a single time at bat, and assume each at bat is an independent event. If Mauer came to bat four times in a game, what is the probability he would *not* get a hit?

calculation: _____ answer: _____

8-4B Lesson Master**VOCABULARY**

1. If two events are independent, does the occurrence of one event affect the probability of the other event? _____

In 2–4, tell if events A and B are *independent* or *not independent*.

2. A die is tossed and a coin is flipped. Event A : Tossing a 6 on the die Event B : Flipping heads on the coin _____
3. Two dice are tossed. Event A : Tossing a sum of 4 Event B : Getting a 3 on the first die. _____
4. A person has one ticket to a raffle at a fair and one ticket to a drawing at an auction. Event A : Winning the raffle at the fair Event B : Losing the drawing at the auction. _____

USES Objective J: Calculate probabilities of independent events.

In 5–8, A is the event that Sam's soccer team wins and B is the event that Miriam's basketball team wins. $P(A) = 0.2$, $P(B) = 0.55$. A and B are independent events. Find the probabilities.

5. $P(A \text{ and } B)$ _____ 6. $P(A \text{ and not } B)$ _____
7. $P(B \text{ and not } A)$ _____ 8. $P(\text{not } A \text{ and not } B)$ _____

In 9–10, for each situation show your calculation, and give the answer.

9. You think your probability of getting an A in science is $\frac{1}{4}$ and your probability of getting an A in math is $\frac{2}{5}$. If these are independent events, what is the probability that you will get an A in both subjects?

calculation

answer

10. 500 tickets were sold for the Holiday Raffle and 2,000 tickets were sold for the Sports Raffle. If you bought 3 tickets to the Holiday Raffle and 1 ticket to the Sports Raffle, what is the probability that you will win both?

calculation

answer

In 11–19, for each situation show your calculation, and give the answer.

11. What is the probability of tossing tails with a fair coin and tossing a number less than 5 with a fair die?

calculation: _____ answer: _____

12. Two trays of snacks are brought out at a party. One tray has 20 snacks, half of which are filled with cheese. The other tray has 18 snacks, one third of which are filled with cheese. If you take one snack from each tray, what is the probability you will pick two cheese-filled snacks?

calculation: _____ answer: _____

13. In a contest, there is a prize behind one of 12 doors. You must pick one of 50 keys and then try to open only one of the 12 doors. What is the probability that you will pick the right key and try it in the correct door?

calculation: _____ answer: _____

14. If you toss a fair coin, what is the probability of tossing 6 heads in a row?

calculation: _____ answer: _____

15. Suppose you toss a fair coin and get 6 straight heads. What is the probability that on the next 6 flips you will get 6 straight tails?

calculation: _____ answer: _____

16. If you toss a fair coin 6 times, what is the probability of tossing alternating heads and tails?

calculation: _____ answer: _____

17. In one of your drawers, 3 of 8 T-shirts are black. In another drawer, 4 of 5 pairs of pants are jeans. If you select at random, what is the probability that you will pull out a black T-shirt and a pair of jeans?

calculation: _____ answer: _____

18. Ty Cobb was the American League batting champion 12 times. His best batting average was .420. Use this as his probability of getting a hit in a single at bat, and assume each at bat is an independent event. If Ty Cobb were to bat five times in a game, what is the probability he would *not* get a hit?

calculation: _____ answer: _____

19. In each deck of playing cards, $\frac{13}{52}$ of the cards are spades. You have two full decks of cards and draw one card from each deck. What is the probability that both cards you draw are spades?

calculation: _____ answer: _____

8-5A Lesson MasterQuestions on SPUR Objectives
See pages 549–551 for objectives.**USES** Objective I

1. Sales tax in a certain city is 8.375%. You buy a t-shirt costing \$14.95.
 - a. Calculate the amount of tax you will pay. a. _____
 - b. What is the total amount you will pay? b. _____
 - c. What single multiplication problem could you do to calculate the total cost? c. _____
2. In a new suburban area, the number of students in the local schools is increasing by 10% a year.
 - a. If there were 325 students two years ago, how many students are there this year? a. _____
 - b. If there were S students three years ago, how many students are there this year? b. _____
3. Joanne bought a boxed set of *Lord of the Rings* books on sale for 35% off. If the original price was \$22.95 and she must pay 6% sales tax, what is the total cost of the books? _____
4. The value of a certain stock decreased in value 12% in 2004 and then increased in value 12% in 2005.
 - a. If the value was \$120 at the start of 2004, how much was it worth at the end of 2005? a. _____
 - b. If the value was V at the start of 2004, how much was it worth at the end of 2005? b. _____
5. You received a \$1,000 savings certificate from your grandmother. If it earns 5% interest every year, how much will it be worth three years from now? _____
6. *Fill in the blank.* An increase of 20% in price followed by a 10% decrease on the new price results in a total increase of _____
7. If the value of a stock decreased by 30%, by what percent does it have to increase to regain the original value? _____
8. A drawing is reduced to 70% of its original dimensions. If it had been 15 cm high, what is its reduced height? _____

8-5B Lesson Master

USES Objective I: Answer questions involving percents and combined percents.

1. Paco wants to build a model of the Mayflower. The Mayflower was approximately 90 feet long. If the model is to be about 2.2% of the actual size, how long will the model be? _____
2. Prices at the Quincy school cafeteria are 250% of what they were when Kevin's mother attended Quincy. If Kevin's mother used to pay \$0.82 for lunch, how much is Kevin paying now? _____
3. Using a computer, Liz reduced a drawing to 60% of its original dimensions. If the drawing had been 5.5 inches high, what is its reduced height? _____
4. How much is a 15% tip on a \$64 bill? _____
5. Employees at Gerard's Department Store get a 20% discount off the ticketed price when they make a purchase. A stereo cabinet is priced at \$1420.
 - a. How much would a non-employee pay for the stereo cabinet if the sales tax is 6%? a. _____
 - b. What is the employee price for the stereo cabinet without sales tax? b. _____
 - c. How much would an employee pay for the stereo cabinet with the 6% sales tax? c. _____
6. An airline has a plan in which a spouse can travel for 75% of the base cost of a ticket, and a child under 12 can travel for 50% of the base cost.
 - a. Using this plan, what will it cost a married couple with three children under 12 to fly if the base cost is \$280? a. _____
 - b. What percent discount is this compared with all five people paying full price? b. _____
7. The chess club had 14 members at the beginning of the year and membership increased by 50% by the end of the year.
 - a. How many members were there at the end of the year? a. _____
 - b. By the end of the next year there were only 14 members. What percent decrease was this? b. _____
8. A share of stock worth \$100 loses 90% of its value. Then, over the next year, the value of the stock increases by 90%. What is the new value of the stock? _____

9. Carlos had a 10% off coupon and spent it on a computer game that was marked down 30%. What was his total discount? _____

10. After a discount of 20%, the dress Sharon wanted was \$85. What was the original price of the dress? _____

11. A collectible comic book worth \$40 two years ago gained 15% in value the next year, but then lost 15% in value this year. What is it worth now? _____

12. A piece of property increased in value by 14% in one year and by 10% in the next year. What was the percent of increase over the two years? _____

13. A piece of property increased in value by 14% in one year and decreased in value by 10% the next year. What was the percent change in value over the two years? _____

14. The price of an item in a store is reduced by 50%. Then the price is reduced by another 50%. What is the total percent change as a result of the two discounts? _____

15. Explain why the cost of an item discounted 20% can be calculated by multiplying the original price by 0.8.

16. Explain why the cost of an item discounted 20% and then taxed 8% can be calculated by multiplying the original price by 0.864.

8-6A Lesson Master**Questions on SPUR Objectives**
See pages 549–551 for objectives.**SKILLS** Objective B

In 1–3, solve mentally.

1. $6x = 18$

$x =$ _____

2. $48 = 8m$

$m =$ _____

3. $10d = 75$

$d =$ _____

In 4–6, use the Multiplication Property of Equality to solve the equation.
Check your answer.

4. $15q = 50$

5. $4.2 = 0.14r$

6. 75% of $s = 15$

PROPERTIES Objective E

7. What does the Multiplication Property of Equality allow you to do?
-
- Why is this procedure useful?

- 8.
- Fill in the blank.*
- If
- $x = 3y$
- , then
- $10x =$
- _____.

9. To solve
- $60 = 1.5m$
- , what should be done to both sides of the equation?

_____**USES** Objective GIn 10–12, write an equation of the form $ax = b$ for each situation, and then solve the equation.

10. A rectangle has area
- 475 ft^2
- and width 25 ft. Find its length.

equation: _____

answer: _____

11. At Liddle Middle School, 32% of the students are 7th graders. If there are 112 students in the seventh grade, how many students are in the school?

equation: _____

answer: _____

12. At a speed of 17 miles per second, approximately how many hours would it take a spaceship to travel to the moon, a distance of 239,000 miles?

equation: _____

answer: _____

8-6B Lesson Master**SKILLS**Objective B: Solve and check equations of the form $ax = b$
and $ax + b = c$.

In 1–9, give the reciprocal of each expression.

1. -5

2. $-\frac{4}{9}$

3. $\frac{1}{6}$

4. -1.8

5. 1

6. $-2\frac{3}{4}$

7. $-e$

8. $\frac{1}{e}$

9. $\frac{-m}{n}$

In 10–21, solve and check.

10. $3x = 42$

11. $4t = -34$

12. $-d = 40.9$

13. $-9y = 54$

14. $-104 = -4r$

15. $\frac{-8}{5}x = 96$

16. $-7.4k = 111$

17. $-9 = -25g$

18. $\frac{-1}{8}q = \frac{5}{24}$

19. $3.2x = -0.456$

20. $4d + 2d = -16$

21. $\frac{1}{2}t - 4t = -0.7$

PROPERTIES

Objective E: Recognize and use the Multiplication Properties of Equality and Inequality.

22. Give an instance of the Multiplication Property of Equality. _____
23. Given the equation $\frac{3}{4}x = -6$, Tom wrote $\frac{1}{4}x = -2$, and Tim wrote $3x = -24$. Show why both Tim and Tom are correct, and solve the equation.
- _____
- _____
24. *Multiple choice.* What should be done to the equation $\frac{4}{5}y = 20$ to solve for y ? _____
- A Multiply both sides by $\frac{5}{4}$. B Multiply both sides by $\frac{-4}{5}$.
- C Divide both sides by $\frac{5}{4}$. D Divide both sides by $\frac{-4}{5}$.

USES

Objective G: Find unknowns in real situations involving multiplication.

In 25 and 26, write an equation of the form $ax = b$ for each situation, and then solve the equation.

25. Mrs. Doherty wants to make a 150-square foot rectangular vegetable garden along the side of her garage. If the garage is 20 feet long, how wide should the garden be?

equation

answer

26. Four-fifths of a number is 212. What is the number?

equation

answer

REVIEW

Chapter 2, Objective C

In 27–32, translate into a mathematical expression.

27. twelve less 8 _____ 28. twelve less than 8 _____
29. Eight is less than 12. _____ 30. the product of 11 and 17 _____
31. 6 more than half a number _____ 32. 6 decreased by twice a number _____

8-7A Lesson Master

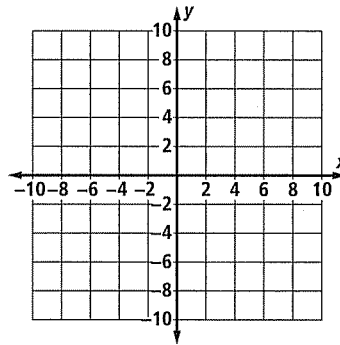
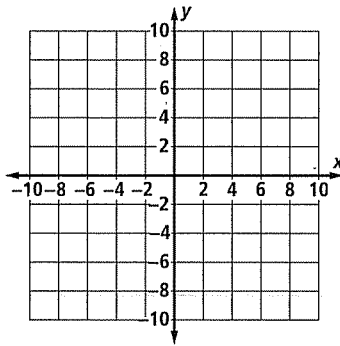
Questions on SPUR Objectives
See pages 549–551 for objectives.

REPRESENTATIONS Objective L

In 1 and 2, find two points that satisfy the given equation. Graph the line for the two points, and then check with a third point.

1. $y = 4x - 1$

2. $y = -2x + 3$

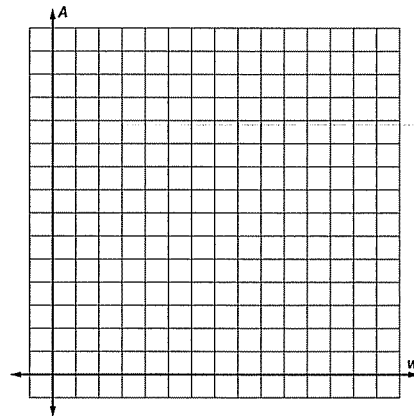


3. Martha opened a savings account with \$25. Every week she saves \$10. Let A be the amount Martha has saved and w be the number of weeks she has been saving.

a. Write an equation relating A and w .

b. Graph your equation at the right.

c. Use the graph to estimate when Martha will have saved \$100.



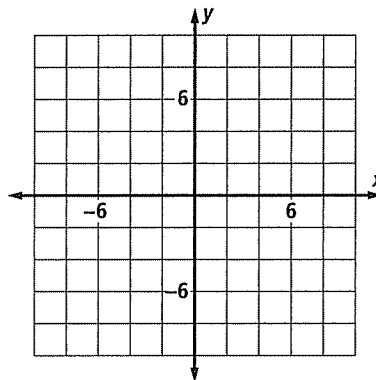
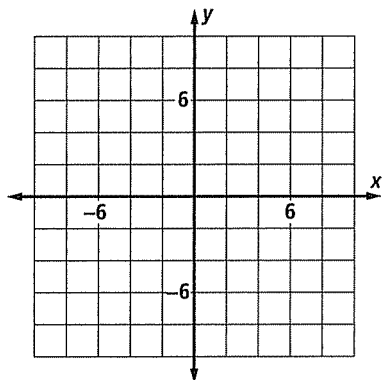
8-7B Lesson Master**REPRESENTATIONS** Objective L: Graph equations of the form $y = ax + b$.

1. Explain how to use a graphing utility to estimate the solution of
- $3.7x = 2$
- .

In 2–5, find two points that satisfy the given equation. Graph the line for the two points and then check with a third point.

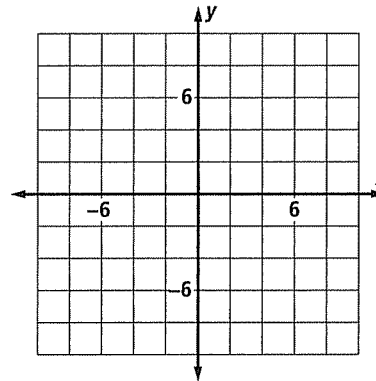
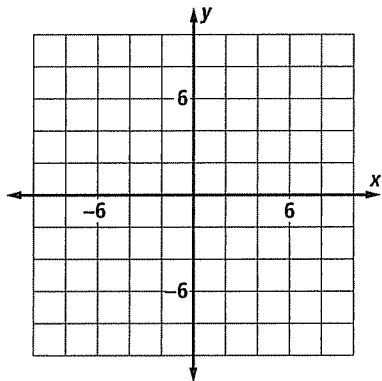
2. $y = 3x - 2$

3. $y = -4x + 1$



4. $y = -x - 5$

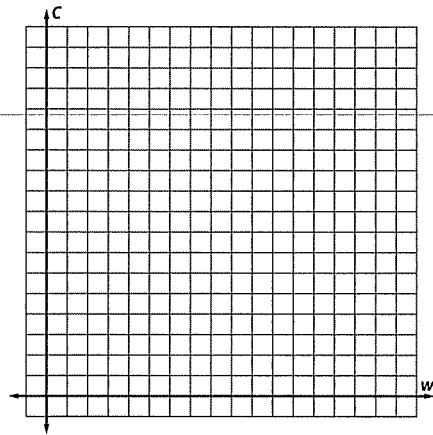
5. $y = \frac{2}{3}x - 2$



6. The cost to run a classified ad is \$7 plus 75¢ per word. Let C be the total cost in dollars, and w be the number of words in the ad.

a. Write an equation relating C and w .

b. Graph your equation.



In 7 and 8, graph all three lines on the grid provided.

7. $y = 2x + 4$

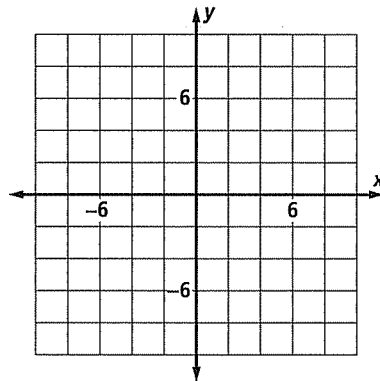
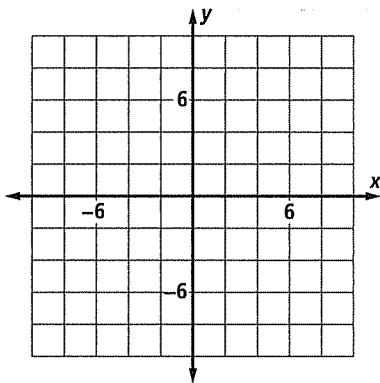
$y = 2x - 1$

$y = 2x - 7$

8. $y = -4x + 3$

$y = x + 3$

$y = \frac{1}{2}x + 3$



9. What do you notice about the graphs for Question 7?

10. What do you notice about the graphs for Question 8?

8-8A Lesson Master

Questions on SPUR Objectives
See pages 549–551 for objectives.

SKILLS Objective B

In 1 and 2, the equation is of the form $ax + b = c$.

- a. Identify a , b , and c .
b. Solve the equation.

1. $6p + 5 = 29$

a. _____

b. _____

2. $-18 = -6 + 2q$

a. _____

b. _____

In 3–6, solve and check.

3. $6 + \frac{3}{4}c = 9$

4. $25 = 2(0.25D + 6.25)$

5. $15 + 3w + 12 + w = 3$

6. $6\frac{1}{2} = 1\frac{1}{3} + \frac{2}{5}m + 2\frac{1}{2}$

In 7 and 8, write an equation for each situation and answer the question.

7. Madeline has \$10 to buy snacks for a party. After spending \$4.79 for soda, she wants to buy peanuts costing \$1.49 per pound. To the nearest tenth, how many pounds of peanuts can she get?

equation

answer

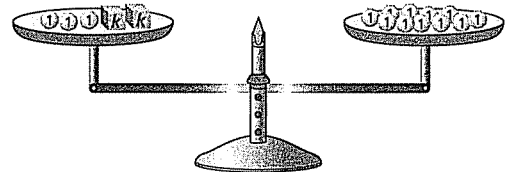
8. To graduate from high school, Marlin needs 50 hours of community service. He already has 18 hours. If he wants to plan his time for a twelve-week period to complete his requirement, how many hours per week should he volunteer?

equation

answer

9. a. The balance scale diagram at the right represents what equation?

- b. Solve the equation.



8-8B Lesson Master**SKILLS** Objective B: Solve and check equations of the form $ax = b$
and $ax + b = c$.In 1 and 2, the equation is of the form $ax + b = c$.a. Identify a , b , and c .

b. Solve the equation.

1. $8w + -2 = -26$

a. _____

b. _____

2. $12 = -\frac{1}{2}q + 8$

a. _____

b. _____

In 3–18, solve and check.

3. $3b + 9 = 33$

4. $67 = 8m + 11$

5. $140y - 800 = 600$

6. $4d + 7 + 6d = 97$

7. $22 + 5p = 58$

8. $11 = -4 + 7e + 9 - e$

9. $2.9a + 3.7 = 15.3$

10. $1.21 = 0.55f - 1.1$

11. $\frac{6}{5}k + 20 = 140$

12. $\frac{1}{3} + \frac{2}{5}x + \frac{3}{4} = 2\frac{1}{12}$

13. $12 = \frac{7}{10}g - 44$

14. $-34 + 94n = 1000$

15. $17 - 5d = 2$

16. $7(2 - m) - 11 = -4$

17. $-39.6 = 12 - 0.4x$

18. $\frac{-5}{12}n + 18 = -2$

In 19–24, write an equation for each situation and answer the question.

19. Tom has a 490-page book to read. If he has already read 56 pages, how many more pages should he read each week to finish in 6 weeks?

equation: _____ answer: _____

20. Stan paid \$6.50 for some salami. The salami was \$3.09 a pound, and he used a \$2.00-off coupon. To the nearest tenth of a pound, how much salami did Stan buy?

equation: _____ answer: _____

21. In North Lorrington, it costs 90¢ to take a cab, plus 15¢ for every $\frac{1}{5}$ mile traveled. If a cab fare was \$4.50, how long was the trip?

equation: _____ answer: _____

22. A music store has 286 tubes of trombone grease in stock. The manager likes to reorder when there are only 20 tubes left on the shelf. If an average of 8 tubes are sold each week, in how many weeks will the manager need to order more?

equation: _____ answer: _____

23. An automatic teller machine is stocked with \$40,000. It is refilled when there is \$2,500 left. If an average of \$3,100 is withdrawn per day, in how many days will the machine need to be refilled?

equation: _____ answer: _____

24. A worm is in a well 2 meters below ground level. If it descends at the rate of 1.5 meters per hour, how long will it take the worm to reach the bottom, 18 meters below ground level?

equation: _____ answer: _____

Draw a balance scale diagram to represent

- a. each equation, and
b. its solution.

25. $2h + 5 = 11$

a.

b.

8-9A Lesson Master

Questions on SPUR Objectives
See pages 549–551 for objectives.

SKILLS Objective C

In 1–8, solve the inequality.

- | | | | |
|---|-------|--------------------------|-------|
| 1. $5x \geq -45$ | _____ | 2. $-3m < 14$ | _____ |
| 3. $9 - 6q \leq -15$ | _____ | 4. $4.5t + 1.2 > -4.2$ | _____ |
| 5. $3\frac{1}{2} > -1\frac{1}{2} - \frac{3}{10}b$ | _____ | 6. $8s - 12s \geq -6$ | _____ |
| 7. $3(4 - g) + 5(3 - g) < 31$ | _____ | 8. $-2c + 9 \leq 3c + 4$ | _____ |

PROPERTIES Objective E

In 9–11, write the new, equivalent inequality under the given operation.

9. Multiply both sides of $p > -3$ by -4 . _____
10. Add -4 to both sides of $1 \leq c$. _____
11. Multiply both sides of $4 - z < 3z + 1$ by -2 . _____

USES Objective H

In 12–14, write an inequality and answer the question.

12. Amy has at most half an hour to spend e-mailing her friends. If it takes her 4 minutes to write a short e-mail, to how many friends can she write?

inequality answer

13. The heaviest backpack Juan can carry safely weighs 15 pounds. His notebook weighs 4 pounds. If his books average 3.5 pounds, how many books can he carry?

inequality answer

14. Carly has \$40 of birthday money to spend. She plans to buy a DVD for \$10.95 and several CDs costing \$13.99 each. How many CDs can she buy?

inequality answer

8-9B Lesson Master**SKILLS** Objective C: Solve and check inequalities of the form $ax + b < c$.

In 1–12, solve the inequality, and check your solution.

- | | |
|--|--------------------------|
| 1. $3a < 42$ | 2. $4 < 5s$ |
| 3. $3d + 4 > 3$ | 4. $4.3f - 4.6 > 4$ |
| 5. $-3g - 4 < 6$ | 6. $4 - 5h \leq -6$ |
| 7. $7j - \frac{1}{2} \geq \frac{5}{8}$ | 8. $-3 - 6k \leq -9$ |
| 9. $\frac{1}{3}m - \frac{1}{3} \leq \frac{5}{9}$ | 10. $5.6 \geq 1 - 2.3n$ |
| 11. $5(3b - 2) + 4 \geq 8$ | 12. $-3(4 - 2v) - v < 4$ |

PROPERTIES Objective E: Recognize and use the Multiplication Properties of Equality and Inequality.

13. How does the Multiplication Property of Inequality differ from the Multiplication Property of Equality?

14. Which of the following inequalities are equivalent? _____

A $4y < -7$	B $7 > -4y$	C $4y > 7$	D $-4y > 7$
E $-4y > -7$	F $-7 > 4y$	G $7 < -4y$	H $4y > -7$

15. Justify each step in this solution of the inequality
- $4 < x + 7 - 7x$
- .

a. $4 + -7 < x - 7x$ _____

b. $-3 < -6x$ _____

c. $\frac{1}{6}(-3) > \frac{-1}{6}(-6x)$ _____

d. $\frac{1}{2} > 1x$ _____

e. $x < \frac{1}{2}$ _____

USES Objective H: Solve inequalities arising from real situations.

In 16–20, write an inequality, and answer the question.

16. Celia must earn at least \$450 a week in order to pay her bills. If her job pays \$18.50 per hour, about how many hours a week must she work?

_____ inequality

_____ answer

17. Celia gets a better job that pays \$21 per hour. Now about how many hours a week must she work?

_____ inequality

_____ answer

18. Celia really only has time to work 20 hours per week. How much must she earn per hour to work 20 or fewer hours per week?

_____ inequality

_____ answer

19. The \$450 per week includes saving \$15 each week for a vacation. What is the minimum number of weeks Celia must work in order to have \$1,000 for a vacation?

_____ inequality

_____ answer

20. Mr. Buck deposits \$55 each week into his bank account. After a number of weeks, he is told that his deposits total less than \$1,000. At most, how many weeks of deposits did he make?

_____ inequality

_____ answer

21. The product of two integers is less than or equal to 480. Each of the integers is greater than 10.

- a. Name three possible pairs of integers that satisfy the conditions of the problem.

- b. Name the pair of integers that satisfies the conditions of the problem that contains the largest possible factor.