NAME _____ DATE _____ PERIOD _____

Lesson 1 Homework Practice

Algebraic Expressions

Evaluate each expression if $r = 5$, $s = 2$, $t = 7$, and $u = 1$.

1. $s + 7$

2. $9 - u$

3. $3t + 1$

4. $5r - 4$

5. $t - s$

6. $u + r$

7. $11t - 7$

8. $6 + 3u$

9. $4r - 10s$

10. $3u^2$

11. $2t^2 - 18$

12. $r^2 + 8$

13. $\frac{s}{2}$

14. $\frac{30}{r}$

15. $\frac{(3 + u)^2}{8}$

Evaluate each expression if $a = 4.1$, $b = 5.7$, and $c = 0.3$.

16. $a + b - c$

17. $10 - (a + b)$

18. $b - c + 2$

19. **MOON** The expression $\frac{w}{6}$ gives the weight of an object on the Moon in pounds with a weight of w pounds on Earth. What is the weight of a space suit on the Moon if the space suit weighs 178.2 pounds on Earth?

20. Complete the table.

Pounds (p)	Ounces ($16p$)
1	16
2	32
3	
4	
5	

NAME _____ DATE _____ PERIOD _____

Lesson 1 Problem-Solving Practice

Algebraic Expressions

1. FIELD TRIP The seventh grade math classes are going on a field trip. The field trip will cost \$7 per student. Write an expression to find the cost of the field trip for s students. What is the total cost if 26 students go on the trip?	**2. SOCCER** Jason earns \$20 per game as a referee in youth soccer games. Write an expression to find how much money Jason will earn for refereeing any number of games. Let n represent the number of games Jason has refereed. How much will he earn for refereeing 6 games?
3. PROFIT The expressions $c - e$, where c stands for the money collected and e stands for the expenses, is used to find the profit from a basketball concession. If \$500 was collected and expenses were \$150, find the profit for the concession.	**4. SAVINGS** Kata has a savings account that contains \$230. She decides to deposit \$5 each month from her monthly earnings for baby-sitting after school. Write an expression to find how much money Kata will have in her savings account after x months. Let x represent the number of months. Then find out how much she will have in her account after 1 year.
5. MONEY Mr. Wilson has \$2,500 in his savings account and m dollars in his checking account. Write an expression that describes the total amount that he has in both accounts.	**6. ANIMALS** Write an expression to represent the total number of legs on h horses and c chickens. How many legs are there in 5 horses and 6 chickens?
7. T-SHIRTS The band wants to order T-shirts. The T-shirts cost \$15 each plus a shipping fee of \$10. Write an expression to find the total cost of c T-shirts.	**8. TEMPERATURE** The expression $\frac{9}{5}C + 32$, where C stands for temperature in degrees Celsius, is used to convert Celsius to Fahrenheit. If the temperature is 20 degrees Celsius, find the temperature in degrees Fahrenheit.

NAME _____ DATE _____ PERIOD _____

Lesson 2 Homework Practice

Sequences

Describe the relationship between the terms in each arithmetic sequence. Then write the next three terms in each sequence.

1. 0, 5, 10, 15, …

2. 1, 3, 5, 7, …

3. 18, 27, 36, 45, …

4. 7, 19, 31, 43, …

5. 8, 18, 28, 38, …

6. 25, 26, 27, 28, …

7. 0.4, 0.8, 1.2, 1.6, …

8. 3.7, 3.7, 3.7, 3.7, …

9. 5.1, 6.2, 7.3, 8.4, …

10. 17, 31, 45, 59, …

11. 30, 50, 70, 90, …

12. 14, 41, 68, 95, …

NUMBER SENSE **Find the 40th term in each arithmetic sequence.**

13. 4, 8, 12, 16, …

14. 13, 26, 39, 52, …

15. 6, 12, 18, 24, …

16. GEOMETRY The lengths of the sides of a 6-sided polygon are an arithmetic sequence. The length of the shortest side is 3 meters. If the length of the next longer side is 5 meters, what is the length of the longest side?

17. FREE FALLING OBJECT A free falling object increases speed by a little over 22 miles per hour each second. The arithmetic sequence 22, 44, 66, …, represents the speed after each second, in miles per hour, of a dropped object. How fast is a rock falling after 8 seconds if it is dropped over the side of a cliff?

NAME _____ DATE _____ PERIOD _____

Lesson 2 Problem-Solving Practice

Sequences

1. NUMBERS The multiples of two form a sequence as follows: 2, 4, 6, 8, 10, 12, 14, 16, …. Describe the sequence you see. What about the multiples of three? Four? Five?	**2. OLYMPICS** The summer Olympics occur every four years. If the last summer Olympics happened in 2008, when are the next three times that it will occur? Describe the sequence the Olympic years form.
3. BABY-SITTING Tonya charges $3.50 per hour to baby-sit. The sequence $3.50, $7.00, $10.50, $14.00, … represents how much she charges for each subsequent hour. For example, $10.50 is the third term that represents how much she charges for 3 hours. What are the next three terms in the sequence? How much does she charge for 7 hours of baby-sitting?	**4. JOGGING** Luther starts jogging 8 minutes on the first day and then increases his time by 4 minutes each day. How many minutes will he jog the fifth day?
5. BACTERIA Three bacteria are in a dish. Each hour the number of bacteria increases by four. If at the end of the first hour there are 12 bacteria, how many bacteria are there at the end of the next three hours?	**6. ENROLLMENT** The enrollment at Grove Middle School is expected to increase by 40 students each year for the next 5 years. If their current enrollment is 600 students, find their enrollment after each of the next 5 years.
7. SALARY Mrs. Malone's current salary is $15,000. She expects it to increase $1,000 per year. Write the first 6 terms of a sequence that represents her salary. The first term should be her current salary. What does the sixth term represent?	**8. FIBONACCI** The Fibonacci sequence is named after Leonardo Fibonacci who first explored it. Look at the Fibonacci sequence below and describe its pattern. 1, 1, 2, 3, 5, 8, 13, 21, 34, …

NAME _____ DATE _____ PERIOD _____

Lesson 3 Homework Practice

Properties of Operations

Name the property shown by each statement.

1. $1 \cdot (a + 3) = a + 3$

2. $2p + (3q + 2) = (2p + 3q) + 2$

3. $(ab)c = c(ab)$

4. $2t \cdot 0 = 0$

5. $m(nr) = (mn)r$

6. $0 + 2s = 2s$

State whether the following conjectures are *true* or *false*. If *false*, provide a counterexample.

7. The product of an odd number and an even number is always odd.

8. The sum of two whole numbers is always larger than either whole number.

Simplify each expression. Justify each step.

9. $2d(3)$

10. $2y + (4 + 5y)$

11. **FAXES** Marcellus sent four faxes to Gem. The first fax took 14 seconds to send, the second fax 19 seconds, the third 16 seconds, and the fourth 11 seconds. Use mental math to find out how many seconds it took to fax all four documents to Gem. Explain your reasoning.

12. **SNOW** The first four snowfalls of the year in Shawnee's hometown measured 1.6 inches, 2.2 inches, 1.8 inches, and 1.4 inches. Use mental math to find the total amount of snow that fell. Explain your reasoning.

NAME _____ DATE _____ PERIOD _____

Lesson 3 Problem-Solving Practice

Properties of Operations

1. PROPERTY Alana's house sits on a rectangular lot with dimensions 62.4 feet by 108.6 feet. Use mental math to find the perimeter.

2. SHOPPING Sera went to the mall and made four purchases. She spent \$2.85, \$5.11, \$7.89, and \$4.15. Use mental math to determine how much money Sera spent at the mall.

3. VIDEO GAME Porsche bought a new video game. The first time she played, it took her 24 minutes to reach Level 2, the second time it took 18 minutes, the third time it took 16 minutes, and the fourth time it took 12 minutes. Use mental math to determine how many minutes she spent at Level 1 while playing these four games.

4. FLOWERS Bethany placed a bouquet of roses in a vase full of water. Each day she recorded how much water had evaporated from the vase before refilling it. The results are shown in the table below. Over the course of five days how much water had evaporated? Use mental math to find your answer.

Day	1	2	3	4	5
Evaporation (in.)	0.8	0.2	1.1	0.9	1

5. RECORDS Olympia listened to some old records. The first song lasted 2 minutes and 12 seconds, the second lasted 2 minutes and 16 seconds, the third 2 minutes and 18 seconds, and the fourth 3 minutes and 4 seconds. Use mental math to determine the total playing time for all four records.

6. DISTANCE Anza gave Angela directions to her house from school. Angela was to head south for 2.2 miles, then west for 3.5 miles, then south again for 5.8 miles. Use mental math to determine how far school is from Anza's house. Explain your reasoning.

7. GROCERIES Tayshawn saw the following sign in a butcher shop. If he buys one of each item, how much will he spend? Use mental math to help find your answer. Explain your reasoning.

SALE
Roast - \$7.19
Bread - \$1.56
Milk - \$2.81
Yogurt - \$0.44

NAME _____ DATE _____ PERIOD _____

Lesson 4 Homework Practice

The Distributive Property

Use the Distributive Property to evaluate each expression.

1. $(16 - 6)2$

2. $4(12 + 3)$

3. $-3(-7 + 2)$

4. $(8 + 3)(-1)$

5. $5(7 + 3)$

6. $-2(8 - 5)$

Use the Distributive Property to rewrite each expression.

7. $(2 + g)8$

8. $4(h - 5g)$

9. $-7(5 - n)$

10. $8(2m + 1)$

11. $6x(y - z)$

12. $-3(2b - 2a)$

13. DINING OUT The table shows the different prices at a diner.

Item	Cost ($)
Sandwich	$5
Drink	$2
Dessert	$3

a. Write two equivalent expressions for the total cost if two customers order each of the items.

b. What is the total cost for both customers?

14. SUNDAES Carmine bought 5 ice cream sundaes for his friends. If each sundae costs $4.95, how much did he spend? Justify your answer by using the Distributive Property.

NAME _____ DATE _____ PERIOD _____

Lesson 4 Problem-Solving Practice

The Distributive Property

1. SCHOOL PLAY Marika and her three friends attended the school play. Tickets cost $5.75 each, and Marika paid for everyone. Find the total cost of the tickets. Justify your answer by using the Distributive Property.

2. LUNCH Althea buys a carton of milk each day at school. The milk costs $0.90. How much does she spend on milk during a typical 5-day week? Justify your answer by using the Distributive Property.

3. BOOKSTORE The sign below indicates the cost for several items at Ting's middle school bookstore. If Ting wants to buy two of each item, how much will it cost? Justify your answer by using the Distributive Property.

Item	Price ($)
Pencil	1.00
Pen	2.50
Notebook	3.00

4. HOCKEY The table shows the price of a ticket and food items at a hockey game.

a. Suppose Coleman and two of his friends go to the game. Write an expression that could be used to find the total cost for them to go to the game and buy one of each item.

b. What is the total cost for all three people?

Item	Cost ($)
Ticket	7.00
Hot dog	3.50
Fries	2.25
Candy bar	1.50

5. PICTURES Belinda wants to buy 5 pictures to hang in her family room. If each picture costs $30.90, how much will it cost her to buy all five? Justify your answer by using the Distributive Property.

6. FLASH DRIVES Mr. Kaplan is ordering 30 flash drives for the students in his class. If each one costs $11.95, how much will he pay? Justify your answer by using the Distributive Property.

7. FORMULA Mr. and Mrs. Newby are buying baby formula. Each case of formula costs $59.89. If they want to purchase four cases, how much will they pay? Justify your answer by using the Distributive Property.

8. TIRES Mao needs four new tires for his car. Each tire costs $88.70. How much will it cost him to buy the tires? Justify your answer by using the Distributive Property.

NAME _____ DATE _____ PERIOD _____

Homework Practice

Problem-Solving Investigation: Make a Table

Use the *make a table* strategy to solve Exercises 1–4.

1. **READING** Shayna is reading a new novel. The last three nights she has read 25, 31, and 37 pages. If she continues reading in this pattern, how many pages of the book can she expect to have read after the sixth night?

2. **TEMPERATURE** The table shows the daily high temperature for a city for the past four days. If the patttern continues, what would you expect the high temperature to be for the next two days?

Day	Temperature (˚F)
Sun.	72
Mon.	73
Tues.	75
Wed.	78

3. **NUMBERS** What are the next three numbers in the pattern below?
138, 113, 88, ____, ____, ____

4. **TYPING** Parker is taking a typing class. His scores on his timed typing tests are 18, 20, and 24 words per minute. Parker has two more timed tests to take in the course. If the pattern continues, how many words per minute can Parker expect to be able to type at the end of the course?

Use any strategy to solve Exercises 5–8.

5. **DANCE** The cheerleaders are practicing a dance routine in which all 36 of them need to be in a triangular formation. There will be two more cheerleaders in each row than the previous row. How many rows will be in the formation?

6. **GEOMETRY** Draw the next two figures in the pattern shown below.

7. **PRECIPITATION** The table shows the average monthly precipitation for Seattle, Washington. About how much precipitation can Seattle expect to receive during March through August? For the whole year?

Average Monthly Precipitation for Seattle, Washington (in.)					
Jan.	5.1	May	1.7	Sept.	1.6
Feb.	3.7	June	1.4	Oct.	3.0
Mar.	3.3	July	0.7	Nov.	5.1
Apr.	2.2	Aug.	0.9	Dec.	5.4

8. **CAKE** Tiffany is cutting a rectangular cake for a party. She needs 30 equal-sized pieces to serve all the guests. How many cuts will Tiffany need to make in the cake?

NAME _____ DATE _____ PERIOD _____

Problem-Solving Practice

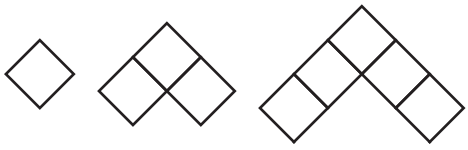
Problem-Solving Investigation: Make a Table

1. WAGES The table shows the amount of annual pay raise Miss Jones received the last three years. If the pattern in her pay continues, how much can she expect her pay increase to be five years from now?

Year	Annual Raise ($)
Two Years Ago	500
Last Year	1,000
Current year	1,500

2. BABY SITTING For the last five weeks, Sahara has baby sat 4, 5, 7, 8, and 10 hours each week. If the pattern continues, how many total hours will she have baby sat in 10 weeks?

3. GEOMETRY Draw the next two figures in the pattern shown below.



4. EXERCISE A trainer is recording a client's progress each week. The table shows the client's weight each week for the first four weeks of the program. If the pattern continues, how much total weight can he expect to lose after following the program for 12 weeks?

Week	1	2	3	4
Weight (lb)	145	142	139	136

5. CLUBS Attendance at the last three foreign language club meetings has been 24, 20, and 16 students. If attendance continues to change in this pattern, how many students can be expected to attend the next meeting?

6. STUDYING For his history exam tomorrow, Zachary has studied for 2 hours and 40 minutes. This is 10 minutes more than twice the amount of time he spent studying for his last exam. How many more minutes did Zachary study for his history exam than his last exam?

NAME _____ DATE _____ PERIOD _____

Lesson 5 Homework Practice

Simplify Algebraic Expressions

Identify the terms, like terms, coefficients, and constants in each expression.

1. $4b + 7b + 5$

2. $8 + 6t - 3t + t$

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

4. $2z - z + 6$

5. $4 + h - 8 - h$

6. $y - y - 2 + 2$

Write each expression in simplest form.

7. $h + 6h$

8. $10k - k$

9. $3b + 8 + 2b$

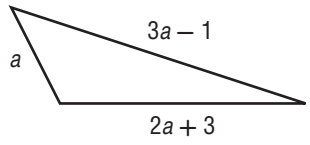
10. $-\frac{3}{4}x - \frac{1}{3} + \frac{7}{8}x - \frac{1}{2}$

11. $5c - 3d - 12c + d$

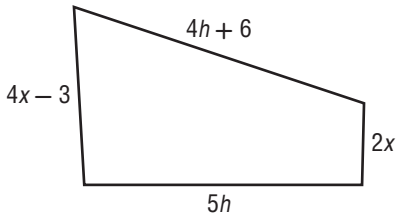
12. $-y + 9z - 16y - 25z$

MEASUREMENT Write an expression in simplest form for the perimeter of each figure.

13.



14.



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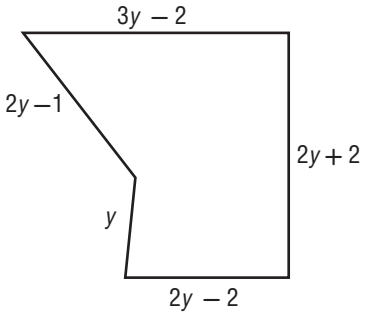


16. SHOPPING Maggie bought c CDs for \$12 each, b books for \$7 each, and a purse costing \$24.

a. Write an expression to show the total amount of money Maggie spent.

b. If Maggie bought 4 CDs and 3 books, how much money did she spend?

NAME _____ DATE _____ PERIOD _____

Lesson 5 Problem-Solving Practice

Simplify Algebraic Expressions

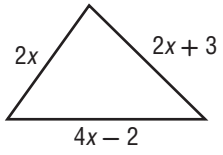
1. GAMES At the Beltway Outlet store, you buy x computer games for \$13 each and a magazine for \$4. Write an expression in simplest form that represents the total amount of money you spend.

2. TENNIS Two weeks ago, Star bought 3 cans of tennis balls. Last week, she bought 4 cans of tennis balls. This week, she bought 2 cans of tennis balls. The tennis balls cost d dollars per can. Write an expression in simplest form that represents the total amount that Star spent.

3. AMUSEMENT PARKS Sari and her friends played miniature golf. There were p people in the group. Each person paid \$5 for a round of golf and together they spent \$9 on snacks. Write an expression in simplest form that represents the total amount that Sari and her friends spent.

4. BICYCLING The bicycle path at the park is a loop that covers a distance of m miles. Dot biked 2 loops each on Monday and Wednesday and 3 loops on Friday. On Sunday, Dot biked 10 miles. Write an expression in simplest form that represents the total distance that Dot biked this week.

5. GEOMETRY Write an expression in simplest form for the perimeter of the triangle below.



6. SIBLINGS Mala is y years old. Her sister is 4 years older than Mala. Write an expression in simplest form that represents the sum of the ages of the sisters.

NAME _____ DATE _____ PERIOD _____

Lesson 6 Homework Practice

Add Linear Expressions

Add. Use models if needed.

1. $(9x + 7) + (x + 3)$

2. $(-4x + 6) + (x - 5)$

3. $(-3x + 15) + (-3x + 2)$

4. $(-2x + 10) + (-8x - 1)$

5. $(-2x + 4) + (x - 11)$

6. $(8x + 9) + (-6x - 1)$

7. $(-6x + 3) + (5x - 4)$

8. $(2x - 4) + (-x + 9)$

9. $(-8x + 2) + (-5x + 7)$

10. $(-4x - 2) + (13x + 1)$

11. $(-7x - 14) + (x - 6)$

12. $(12x + 3) + (-7x + 5)$

13. $(4x - 1) + (-5x + 17)$

14. $(-9x + 2) + (-8x - 2)$

15. $(1.3x + 2.4) + (-6.1x - 3.2)$

16. $(0.5x - 0.6) + (0.75x - 0.1)$

17. GEOMETRY A rectangle has side lengths of $(3x + 6)$ inches and $(2x - 4)$ inches. Write an expression to represent the perimeter of the rectangle. Then find the value of x if the perimeter is 94 inches.

18. CRUISE SHIPS The table shows the number of cruise ships in a harbor on various days.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Number	$x - 4$	$x + 9$	$2x$	$3x - 7$	4

a. Write an expression for the total number of cruise ships in the harbor on Monday and Tuesday.

b. Write an expression for the total number of cruise ships in the harbor on all 5 days.

NAME _____ DATE _____ PERIOD _____

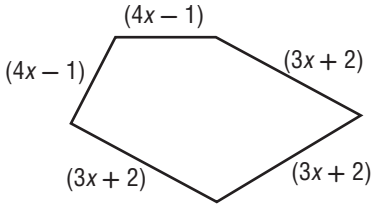
Lesson 6 Problem-Solving Practice

Add Linear Expressions

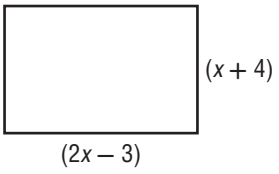
1. SWIMMING The table gives the number of laps Pragitha swam each week. Write an expression for the total number of laps she swam all four weeks.

Week	1	2	3	4
Laps	$x + 2$	$3x$	$2x + 1$	$4x - 6$

2. GEOMETRY Write an expression for the perimeter of this pentagon. If the perimeter is 157 units, find x.



3. BEDROOM Write an expression for the perimeter of the bedroom shown below.



4. HOCKEY The table shows the number of goals scored during each game. Write an expression for the total number of goals scored in these 3 games.

Game	1	2	3
Goals	$2x$	$x + 2$	$3x - 1$

5. FLIGHT An airline charges $\$(22x + 20)$ for a ticket, $\$(x + 1)$ to check a bag, $\$2x$ for food, and $\$(15x - 16)$ to upgrade to first class. Write an expression to represent the total cost of flying first class, checking a bag, and buying food on the plane.

6. FOOD Loy paid $\$(4x + 7)$ for a beef roast and $\$(2x - 5)$ for five pounds of potatoes. Write an expression for the total amount he spent on food.

NAME _____ DATE _____ PERIOD _____

Lesson 7 Homework Practice

Subtract Linear Expressions

Subtract. Use models if needed.

1. $(9x + 7) - (x + 3)$

2. $(3x - 4) - (x - 5)$

3. $(-3x + 15) - (-3x + 2)$

4. $(-2x + 10) - (-8x - 1)$

5. $(-2x + 4) - (x - 11)$

6. $(8x + 9) - (6x - 1)$

7. $(x + 3) - (5x - 4)$

8. $(2x - 4) - (-x + 9)$

9. $(-8x + 2) - (-5x + 7)$

10. $(-4x - 2) - (13x + 1)$

11. $(-7x - 14) - (x - 6)$

12. $(12x + 3) - (-7x + 5)$

13. $(3x - 1) - (-5x + 17)$

14. $(-9x + 2) - (-8x - 2)$

15. $(1.3x + 2.4) - (6.1x - 3.2)$

16. $(-0.5x - 0.4) - (0.75x - 0.6)$

17. FOOTBALL The Dolphins scored $2x - 7$ points, while the Jaguars scored $- 5x - 3$ points. How many more points did the Dolphins score than the Jaguars?

18. LUNCH The table shows the cost of a sandwich and a drink at a local cafeteria. How much more does a sandwich cost than a drink?

Item	Sandwich	Drink
Cost ($)	$2x + 1.50$	$x + 0.49$

19. COLLEGE COSTS The table shows some college costs. How much more is tuition than the cost of fees and room and board?

Item	Tuition	Fees	Room and Board
Cost ($)	$8x + 75$	$x + 50$	$x + 3$

NAME _____ DATE _____ PERIOD _____

Lesson 7 Problem-Solving Practice

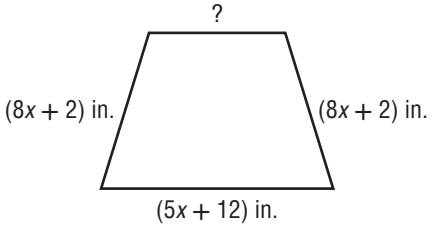
Subtract Linear Expressions

1. GASOLINE The table gives the cost of a gallon of gasoline at two stations. How much more does gasoline cost at Gas For Less than at Cut-Rate?

Cut-Rate	$-2x + 3.5$
Gas for Less	$x - 1.2$

2. GEOMETRY What is the difference in the areas of the polygons shown?

3. PLACEMATS Find the missing side of the placemat shown if the perimeter is $28x + 11$ inches.



4. SHOES Uthara has $6x - 7$ pairs of shoes while China has $2x + 3$ pairs of shoes. How many more pairs of shoes does Uthara have than China?

5. INSECTS A grasshopper has a length of $(5x - 2)$ inches. A spider has a length of $(2x - 1)$ inches. How much longer is the grasshopper?

6. PANTHERS Two Florida panthers were weighed. One weighs $6x + 21$ pounds and the two together weigh $14x + 11$ pounds. How much does the other panther weigh alone?

NAME _____ DATE _____ PERIOD _____

Lesson 8 Homework Practice

Factor Linear Expressions

Find the GCF of each pair of monomials.

1. 20, $45x$

2. $15r$, 25

3. $8xy$, $14x$

4. $30w$, $70w$

5. $4st$, $12s$

6. $11gh$, $33g$

7. $16mn$, $24m$

8. $25f$, $60g$

9. $33c$,$55cd$

10. $50j$, $75jk$

11. $27cd$, $72cde$

12. $48t$, $60st$

Factor each expression. If the expression cannot be factored, write *cannot be factored.*

13. $4x + 12$

14. $8r - 14$

15. $5x + 35$

16. $7 + 14x$

17. $32x - 15$

18. $24 + 32x$

19. $6x - 9$

20. $48 + 24x$

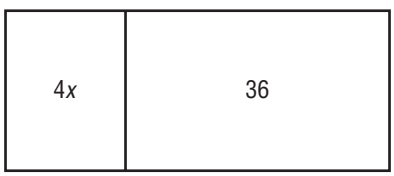
21. $72 - 18x$

22. $25x + 14$

23. $100x + 150$

24. $130x - 13$

25. **GEOMETRY** The rectangle shown below has a total area of $(4x + 36)$ square feet. Factor $4x + 36$.



26. **FUNDRAISING** The Art Club receives \$10 plus \$2 for every sculpture they sell for a fundraiser. The expression $2x + 10$ represents the amount the Art Club receives if they sell x sculptures. Factor $2x + 10$.

NAME _____ DATE _____ PERIOD _____

Lesson 8 Problem-Solving Practice

Factor Linear Expressions

1. MEASUREMENT A sidewalk has an area that can be represented by the expression $(8x + 24)$ feet. Factor the expression $8x + 24$.

2. RENTAL The cost of renting a speedboat can be represented by the expression $50x + 250$, where x is the number of hours it is rented. Factor the expression $50x + 250$.

3. GEOMETRY The rectangle shown below has an area of $(28x + 49)$ inches. Factor the expression $28x + 49$.

4. CONCERT Four friends went to a concert and paid \$12 total for parking and \$$x$ per ticket. The expression $\$4x + \$12$ represents the total cost paid of all four friends. Factor $4x + 12$.

5. FINANCIAL LITERACY Marisa has \$40 in her savings account and plans to save \$x each month for 5 months. The expression \$5x + \$40 represents the total amount in the account after 5 months. Factor the expression 5x + 40.

6. FRAMING A square picture frame has a perimeter of $(20x + 32)$ inches. What is the length of one side of the picture frame?