

In 1–12, factor out the greatest common monomial factor.

- | | | |
|------------------|---------------------|-----------------------|
| 1. $3x^2 + 18$ | 2. $6x - 12$ | 3. $5x^2 - 25$ |
| 4. $4x + 10$ | 5. $8x^2 + 4$ | 6. $2x^2 + 8x$ |
| 7. $7x^2 - 21x$ | 8. $6x^2 - 9x$ | 9. $10x^2 + 35x$ |
| 10. $20x^2 + 6x$ | 11. $2x^2 + 4x - 8$ | 12. $12x^2 - 9x + 15$ |

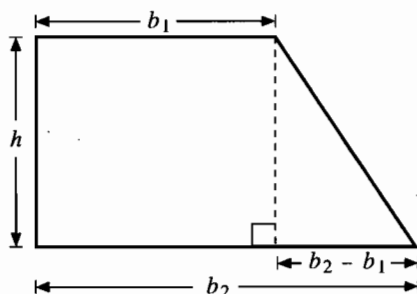
In 13–27, factor the expression.

- | | | |
|-----------------------|-----------------------|------------------------------------|
| 13. $x^2 - 49$ | 14. $x^2 + 12x + 36$ | 15. $4x^2 + 12x + 9$ |
| 16. $8x^2 - 8x + 2$ | 17. $9x^2 - 121$ | 18. $9x^2 + 6x + 1$ |
| 19. $x^2 - 16x + 64$ | 20. $12x^2 - 75$ | 21. $\frac{1}{9}x^2 - \frac{1}{4}$ |
| 22. $25x^2 - 20x + 4$ | 23. $5x^2 + 20x + 20$ | 24. $49x^2 - 14x + 1$ |
| 25. $9x^2 - 30x + 25$ | 26. $49 - (x + 2)^2$ | 27. $20 - 5(x - 3)^2$ |

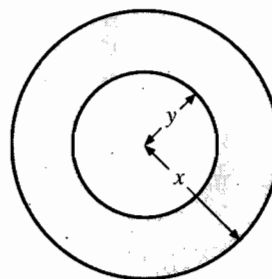
In 28–30, use the technique described in Example 4 to find the indicated right triangle triple. (Exercise 28 has 2 solutions.)

- | | | |
|-----------------------|------------------------|------------------------|
| 28. $9^2 + b^2 = c^2$ | 29. $10^2 + b^2 = c^2$ | 30. $11^2 + b^2 = c^2$ |
|-----------------------|------------------------|------------------------|

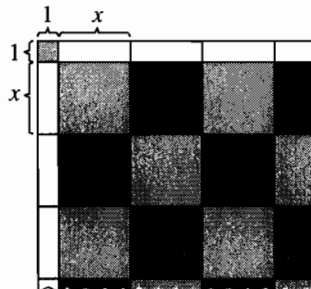
31. **Trapezoid** The formula for the area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$. Derive this formula by finding the sum of the areas of the rectangle and triangle that make up the trapezoid.



32. **Washers** Washers are available in various sizes. Find an expression for the area of one flat side of a washer. Factor the expression. What is the area if $x = 5$ cm and $y = 2$ cm?



33. **Quilt** A square quilt for a child's bed has a border made up of 36 pieces with an area of x each, and 4 small squares with an area of 1 square inch each. The main part of the quilt is made up of 81 squares with an area of x^2 each. Find an expression for the area of the quilt. Factor the expression. If the quilt is 5 ft by 5 ft, what are the dimensions of the inside squares?



Extra Practice**10.5**

Name _____

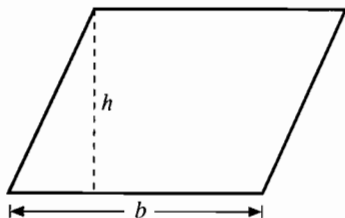
In 1–12, factor the trinomial.

- | | | |
|----------------------|----------------------|-----------------------|
| 1. $x^2 + 8x + 15$ | 2. $x^2 - 5x + 4$ | 3. $x^2 - x - 42$ |
| 4. $x^2 + 6x - 16$ | 5. $2x^2 - 5x - 3$ | 6. $3x^2 + 10x - 8$ |
| 7. $7x^2 - 31x + 12$ | 8. $5x^2 + 7x + 2$ | 9. $6x^2 - 11x + 3$ |
| 10. $30x^2 + x - 1$ | 11. $20x^2 - 7x - 6$ | 12. $10x^2 + 17x + 3$ |

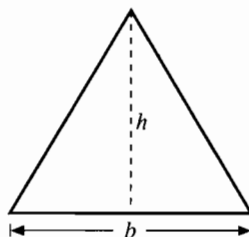
In 13–24, use the discriminant to decide whether the polynomial can be factored with integer coefficients. If it can, factor it.

- | | | |
|----------------------|---------------------|-----------------------|
| 13. $8x^2 + 2x - 3$ | 14. $x^2 + 2x + 2$ | 15. $x^2 - 7x + 7$ |
| 16. $4x^2 + 8x - 12$ | 17. $3x^2 + 2x - 2$ | 18. $12x^2 + 16x - 3$ |
| 19. $4x^2 - 3x + 8$ | 20. $2x^2 - 5x - 6$ | 21. $2 - 13x + 15x^2$ |
| 22. $6 - 5x - 4x^2$ | 23. $3x^2 + 8x + 3$ | 24. $2x^2 - 6x + 3$ |

25. **Geometry** The area of a parallelogram is given by $A = x^2 + 4x - 12$. Find expressions for possible lengths and heights of the parallelogram.



26. **Geometry** The area of a triangle is given by $A = x^2 + \frac{11}{2}x + \frac{5}{2}$. Find an expression for possible bases and heights of the triangle. (Hint: First factor out $\frac{1}{2}$.)



27. **Summer Reading** The library sponsored a summer reading program for children. The number of children participating, C , each week can be modeled by $C = t^2 + 10t + 16$ where t represents the week and $t = 0$ corresponds to the first week. The first week there are 2 groups of children. Each week, for 5 weeks, a new group is added. Find a model for the average number of children in each group. Use the model to find the number of children in each group during each week.

28. **Summer Job** Every summer you work at a grocery store. Your daily wages, W , can be modeled by $W = -\frac{1}{4}t^2 - 3t + 40$ where t represents the year and $t = 0$ corresponds to the summer of 1988. The first summer you work 8 hours a day. Each summer for the next 4 years you work 1 hour less per day. Find a model for your average hourly wage each summer. Use the model to find your hourly rate during each summer.