

## Multiplying Polynomials

**Find each product.**

1)  $6v(2v + 3)$

2)  $7(-5v - 8)$

3)  $2x(-2x - 3)$

4)  $-4(v + 1)$

5)  $(2n + 2)(6n + 1)$

6)  $(4n + 1)(2n + 6)$

7)  $(x - 3)(6x - 2)$

8)  $(8p - 2)(6p + 2)$

19)  $(4a + 2)(6a^2 - a + 2)$

20)  $(7k - 3)(k^2 - 2k + 7)$

## Factoring Trinomials (a = 1)

**Factor Completely**

1)  $b^2 + 8b + 7$

2)  $n^2 - 11n + 10$

3)  $m^2 + m - 90$

4)  $n^2 + 4n - 12$

5)  $n^2 - 10n + 9$

6)  $b^2 + 16b + 64$

7)  $m^2 + 2m - 24$

8)  $x^2 - 4x + 24$

## Factoring Trinomials ( $a > 1$ )

Factor each completely.

1)  $3p^2 - 2p - 5$

2)  $2n^2 + 3n - 9$

3)  $3n^2 - 8n + 4$

4)  $5n^2 + 19n + 12$

5)  $2v^2 + 11v + 5$

6)  $2n^2 + 5n + 2$

7)  $7a^2 + 53a + 28$

8)  $9k^2 + 66k + 21$

## Factoring Special Cases

Factor each completely.

9)  $k^4 - 36$

10)  $n^4 - 49$

11)  $98n^2 - 200$

12)  $3 + 6b + 3b^2$

13)  $400 - 36v^2$

14)  $100x^2 + 180x + 81$

15)  $10n^2 + 100n + 250$

16)  $49n^2 - 56n + 16$

## Solving Equations by Completing the Square

Solve each equation by completing the square.

1)  $a^2 + 2a - 3 = 0$

2)  $a^2 - 2a - 8 = 0$

3)  $p^2 + 16p - 22 = 0$

4)  $k^2 + 8k + 12 = 0$

5)  $r^2 + 2r - 33 = 0$

6)  $a^2 - 2a - 48 = 0$

7)  $m^2 - 12m + 26 = 0$

8)  $x^2 + 12x + 20 = 0$

19)  $n^2 + 13n + 22 = 7$

20)  $5n^2 + 19n - 68 = -2$

21)  $r^2 - 9r - 38 = -9$

## Using the Quadratic Formula

Solve each equation with the quadratic formula

1)  $m^2 - 5m - 14 = 0$

2)  $b^2 - 4b + 4 = 0$

5)  $x^2 + 4x + 3 = 0$

6)  $2x^2 + 3x - 20 = 0$

7)  $4b^2 + 8b + 7 = 4$

8)  $2m^2 - 7m - 13 = -10$

### **Distance - Rate - Time Word Problems**

- 1) An aircraft carrier made a trip to Guam and back. The trip there took three hours and the trip back took four hours. It averaged 6 km/h on the return trip. Find the average speed of the trip there.
- 2) A passenger plane made a trip to Las Vegas and back. On the trip there it flew 432 mph and on the return trip it went 480 mph. How long did the trip there take if the return trip took nine hours?
- 3) A cattle train left Miami and traveled toward New York. 14 hours later a diesel train left traveling at 45 km/h in an effort to catch up to the cattle train. After traveling for four hours the diesel train finally caught up. What was the cattle train's average speed?
- 4) Jose left the White House and drove toward the recycling plant at an average speed of 40 km/h. Rob left some time later driving in the same direction at an average speed of 48 km/h. After driving for five hours Rob caught up with Jose. How long did Jose drive before Rob caught up?

### **Work Word Problems**

**Solve each question. Round your answer to the nearest hundredth.**

- 1) Working alone, Ryan can dig a 10 ft by 10 ft hole in five hours. Castel can dig the same hole in six hours. How long would it take them if they worked together?
- 2) Shawna can pour a large concrete driveway in six hours. Dan can pour the same driveway in seven hours. Find how long it would take them if they worked together.
- 3) It takes Trevon ten hours to clean an attic. Cody can clean the same attic in seven hours. Find how long it would take them if they worked together.
- 4) Working alone, Carlos can oil the lanes in a bowling alley in five hours. Jenny can oil the same lanes in nine hours. If they worked together how long would it take them?

## Systems of Equations Word Problems

- 1) Find the value of two numbers if their sum is 12 and their difference is 4.
- 2) The difference of two numbers is
3. Their sum is 13. Find the numbers. 3) Flying to Kampala with a tailwind a plane averaged 158 km/h. On the return trip the plane only averaged 112 km/h while flying back into the same wind. Find the speed of the wind and the speed of the plane in still air.
- 5) The sum of the digits of a certain two-digit number is 7. Reversing its digits increases the number by 9. What is the number?
- 6) A boat traveled 210 miles downstream and back. The trip downstream took 10 hours. The trip back took 70 hours. What is the speed of the boat in still water? What is the speed of the current?