

MULTIPLY

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

$$\begin{array}{r} x+7 \\ \times x+9 \\ \hline x^2+7x \\ 9x+63 \\ \hline x^2+16x+63 \end{array}$$

2. $(x-8)(x+12)$

$$\begin{array}{r} x^2+12x-8x-96 \\ \hline x^2+4x-96 \end{array}$$

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

$$\begin{array}{r} 12x^2-32x-3x+8 \\ \hline 12x^2-35x+8 \end{array}$$

4. $(x+11)(x+11)$

$$\begin{array}{r} x^2+11x+11x+121 \\ \hline x^2+22x+121 \end{array}$$

5. $(x-5)(x-5)$

$$\begin{array}{r} x^2-5x-5x+25 \\ \hline x^2-10x+25 \end{array}$$

6. $(2x-9)(2x+9)$

$$\begin{array}{r} 4x^2+18x-18x-81 \\ \hline 4x^2-81 \end{array}$$

Factor a Common Monomial

7. $15x-27xy+3y$

$$3(5x-9xy+y)$$

8. $28x^3y-5x^2y+12y$

$$y(28x^3-5x^2+12)$$

9. $24a^3b^2c+6a^2b^2c^2-48ab^2c^3$

$$6ab^2c(4a^2+ac-8c^2)$$

Factor Using the Diamond Method

10. x^2+3x+2

$$(x+1)(x+2) \quad \begin{array}{c} 2 \\ 1 \quad 2 \\ \hline 3 \end{array}$$

11. $x^2+14x+24$

$$(x+2)(x+12) \quad \begin{array}{c} 24 \\ 2 \quad 12 \\ \hline 14 \end{array}$$

12. $x^2-5x-14$

$$(x-7)(x+2) \quad \begin{array}{c} -14 \\ -7 \quad 2 \\ \hline -5 \end{array}$$

13. $x^2+7x-60$

$$(x+12)(x-5) \quad \begin{array}{c} -60 \\ 12 \quad -5 \\ \hline 7 \end{array}$$

14. $-12x-64+x^2$

$$\begin{array}{r} x^2-12x-64 \\ (x-16)(x+4) \end{array} \quad \begin{array}{c} -64 \\ -16 \quad 4 \\ \hline -12 \end{array}$$

15. $x^2-12x+36$

$$\begin{array}{r} (x-6)(x-6) \\ (x-6)^2 \end{array} \quad \begin{array}{c} 36 \\ -6 \quad -6 \\ \hline -12 \end{array}$$

16. x^2-225

$$(x+15)(x-15) \quad \begin{array}{c} -225 \\ 15 \quad -15 \\ \hline 0 \end{array}$$

17. x^2-169

$$(x+13)(x-13) \quad \begin{array}{c} 169 \\ 13 \quad -13 \\ \hline 0 \end{array}$$

ALGEBRA TOPICS

Test #3 Study Guided

18. $3x^2 + 13x + 4$

$3x^2$	x
$12x$	4

$\begin{array}{r} 12 \\ \times 1 \\ \hline 12 \\ 13 \end{array}$

$(3x+1)(x+4)$

2.15 = 30

19. $2x^2 - 13x + 15$

$2x^2$	$-10x$
$-3x$	15

$\begin{array}{r} 30 \\ \times -10 \\ \hline -30 \\ -10 \end{array}$

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

20. $6x^2 + x - 2$

21. $6x^2 + 13x + 6$

$6x^2$	$4x$
$9x$	6

$(3x+2)(2x+3)$

Solve each equation.

22. $x^2 = 49$

$\sqrt{x^2} = \sqrt{49}$
 $x = \pm 7$

23. $7x^2 = 21$

$\sqrt{7x^2} = \sqrt{21}$
 $x = \pm \sqrt{3}$

24. $5x^2 - 125 = 0$

$+125 +125$
 $5x^2 = 125$
 $x^2 = 25$
 $x = \pm 5$

25. $3x^2 - 11x = 0$

$x(3x-11) = 0$
 $x = 0$; $3x-11=0$
 $3x=11$
 $x = 11/3$

26. $30x^2 + 225x = 0$

$5x(6x+45) = 0$
 $5x=0$; $6x+45=0$
 $6x = -45$
 $x = -45/6 = -15/2$

27. $-9x^2 = 12x$

$-9x^2 - 12x = 0$
 $-3x(3x+4) = 0$
 $-3x=0$; $3x+4=0$
 $x=0$; $3x=-4$
 $x = -4/3$

28. $x^2 + 14x + 24 = 0$

$(x+2)(x+12) = 0$
 $x+2=0$; $x+12=0$
 $x = -2$; $x = -12$

29. $x^2 + 7x - 60 = 0$

$(x+12)(x-5) = 0$
 $x+12=0$; $x-5=0$
 $x = -12$; $x = 5$

30. $-12x - 64 + x^2 = 0$

$x^2 - 12x - 64 = 0$
 $(x+4)(x-16) = 0$
 $x+4=0$; $x-16=0$
 $x = -4$; $x = 16$

31. $3x^2 + 13x + 4 = 0$

$3x^2$	x
$12x$	4

$\begin{array}{r} 12 \\ \times 1 \\ \hline 12 \\ 13 \end{array}$

$(3x+1)(x+4) = 0$
 $3x+1=0$; $x+4=0$
 $3x=-1$; $x=-4$
 $x = -1/3$; $x = -4$

32. $6x^2 + x - 2 = 0$

$6x^2$	$-3x$
$4x$	-2

$\begin{array}{r} -12 \\ \times -3 \\ \hline -12 \\ 1 \end{array}$

$(2x-1)(3x+2) = 0$
 $2x-1=0$; $3x+2=0$
 $2x=1$; $3x=-2$
 $x = 1/2$; $x = -2/3$

33. $6x^2 + 13x - 6 = 0$

$6x^2$	$4x$
$9x$	6

$\begin{array}{r} 36 \\ \times 4 \\ \hline 36 \\ 13 \end{array}$

$3x+2=0$; $2x+3=0$
 $3x=-2$; $2x=-3$
 $x = -2/3$; $x = -3/2$