

Practice Test Two

7. Factor by grouping.

$$\underbrace{8st + 28t}_{\text{blue}} - \underbrace{10s - 35}_{\text{green}}$$

$$4t(\underbrace{2s + 7}_{\text{purple}}) - \underbrace{5}_{\text{green}}(\underbrace{2s + 7}_{\text{purple}})$$

$$(2s + 7)(4t - 5)$$

12. Factor the trinomial.

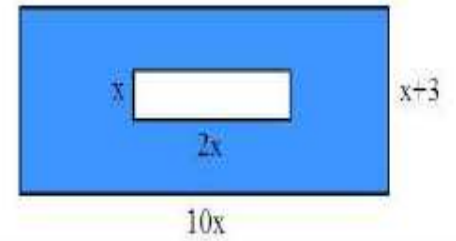
$$w^2 + 16w + 60$$

$$(w + 6)(w + 10)$$

$$\frac{60}{6, 10}$$

9.

Write an expression for the area of the shaded region, then factor completely.



Big Rectangle

Little Rectangle

$$\begin{aligned} A_{\text{big}} &= 10x(x+3) \\ &= 10x^2 + 30x \end{aligned}$$

$$\begin{aligned} A_{\text{little}} &= x(2x) \\ &= 2x^2 \end{aligned}$$

$$A = A_{\text{big}} - A_{\text{little}}$$

$$A = \underline{10x^2 + 30x} - \underline{2x^2}$$

$$A = \underline{8x^2 + 30x}$$

$$= 2x(4x + 15)$$

8. Factor completely.

$$\underbrace{6b^2y - 4b^2} + \underbrace{30by - 20b}$$

$$2b^2(\underline{3y - 2}) + 10b(\underline{3y - 2})$$

$$(3y - 2)(2b^2 + 10b)$$

$$2b(b + 5)(3y - 2)$$

15. Factor the trinomial.

$$t^2 + 3t + 88$$

88

$$(t \quad)(t \quad)$$

doesn't factor

$$a - 81ax^4$$

$$a(1 - 81x^4)$$

$$a[1^2 - (9x^2)^2]$$

$$a(1 + 9x^2)(1 - 9x^2)$$

$$1^2 - (3x)^2$$

$$(1 + 3x)(1 - 3x)$$

$$a(1 + 9x^2)(1 + 3x)(1 - 3x)$$

21.

Factor.

$$5s^2 - 9s - 2$$

$$\begin{array}{cc} \underline{5s^2} & \underline{-2} \\ \textcircled{1} \boxed{5} & \textcircled{1} \boxed{2} \end{array}$$

$$(s - 2)(5s + 1)$$

$\boxed{-10s}$
 $+5$

23.

Factor.

$$20c^2 + 73c + 63$$

$$20c^2 + 73c + 63 = \square$$

$$\begin{array}{cc} \underline{20c^2} & \underline{63} \\ 1, 20 & 1, 63 \\ 2, 10 & 3, 21 \\ \textcircled{4} \boxed{5} & \textcircled{7} \boxed{9} \end{array}$$

$$(4c + 9)(5c + 7)$$

19.

Factor completely. R

$$4x^{10} - 32x^9 - 260x^8$$

$$4x^8 (x^2 - 8x - 65)$$

$$4x^8 (x + 5)(x - 13)$$

$$\begin{array}{r} -65 \\ \hline 1, 65 \\ 5, 13 \end{array}$$

34.

Factor.

$$196a^2 - 100b^2 = (14a)^2 - (10b)^2$$

$$(14a + 10b)(14a - 10b)$$

$$2(7a + 5b) \cdot 2(7a - 5b)$$

$$4(7a + 5b)(7a - 5b)$$

35. Factor completely.

$$c^4 - 4096$$

$$(c^2)^2 - 64^2$$

$$(c^2 + 64)(c^2 - 64)$$

$$(c^2 + 64)(c + 8)(c - 8)$$

27. Factor by grouping.

$$56c^2 - 122c + 42$$

$$2(28c^2 - 61c + 21)$$

$$2[28c^2 - 12c - 49c + 21]$$

$$2[4c(7c-3) - 7(7c-3)]$$

$$2(7c-3)(4c-7)$$

$$\sqrt{88}$$

$$21, 28$$

$$14, 42$$

$$12, 49$$

45.

Factor.

$$\underbrace{v^3 - 49v^2}_{\text{blue}} - \underbrace{4v + 196}_{\text{green}}$$

$$v^2(\underline{v - 49}) - 4(\underline{v - 49})$$

$$(v - 49)(v^2 - 4)$$

$$(v - 49)(v + 2)(v - 2)$$

26. $2x^2 - 2y^2$

36. $h^4 + h^3 + h^2$

42. $3w^2 - w - 2$

50. $15u^2 - 2u^2v^2 + 2uv^3$

60. $4x^4 - 4x$

74. $20x^2 + 3xy + 2y^2$

6.6 Solving Quadratic Equations by Factoring

Zero Factor Theorem:

If $ab=0$, then $a=0$ or $b=0$.

6. $(x - 7)(x + 3) = 0$

16. $(m - 4)^2 = 0$

18. $y^2 - 25 = 0$

Quadratic Equation

22. $p^2 - 16p + 64 = 0$

28. $6k^2 - 7k = -1$

34. $m(m + 6) = -9$

38. Find every number such that triple the square of the number is equal to four times that number.
40. The product of two consecutive natural numbers is 306. Find the numbers.
42. The difference of the squares of two consecutive even natural numbers is 60.

48. The front elevation of one wing of a house is shown. Because of budget constraints, the total area of the front of this wing must be 352 square feet. The height of the triangular portion is 14 feet less than the base. Find the base length.

