

# Quiz

$$3. \quad x^2 - 14x - 15 = (x + 1)(x - 15)$$

$$\frac{15}{1, 15}$$

$$4. \quad \frac{-12a^3 + 36a^2 - 3a}{3a}$$

$$\frac{-12a^3}{3a} + \frac{36a^2}{3a} - \frac{3a}{3a}$$

$$-4a^2 + 12a - 1$$

$$30. 8x^2y + 34xy - 84y$$

$$2y (4x^2 + 17x - 42)$$

$$2y [4x^2 - 7x + 24x - 42]$$

$$2y [x(4x - 7) + 6(4x - 7)]$$

$$2y (4x - 7)(x + 6)$$

$$\underline{-168}$$

$$1, 168$$

$$2, 84$$

$$3, 56$$

$$4, 42$$

$$6, 28$$

$$7, 24$$

---


$$2y (4x^2 + 17x - 42)$$

$$2y (x + 6)(4x - 7)$$

$\begin{array}{c} +24x \\ -7x \end{array}$

$\underline{4x^2}$	$\underline{-42}$
1, 4	1, 42
2, 2	2, 21
	3, 14
	6, 7

$$34. -x^2 + 4x + 21$$

$$-(x^2 - 4x - 21) = -1(x - 7)(x + 3)$$

$$44. \overbrace{25x^2 - 20x + 4}$$

$$\frac{100}{10, 10}$$

$$\underbrace{25x^2 - 10x - 10x + 4}$$

$$5x(\underline{5x - 2}) - 2(\underline{5x - 2})$$

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

$$(5x)^2 - 20x + 2^2$$

$$(5x - 2)^2$$

$$46. m^4 + 10m^2 + 25$$

$$(m^2 + 5)(m^2 + 5)$$

$$48. 3y^2 - 6y + 3$$

$$3(y^2 - 2y + 1) = 3(y - 1)(y - 1)$$

50.  $9y^2 + 48y + 64$

52.  $2x^2 + 7x - 72$

57.  $-9x + 20 + x^2$

60.  $m^2 + 20mn + 100n^2$

72.  $-15x^2 + 26x - 8$

68.  $12x^3 - 34x^2 + 24x$

74.  $9q^4 - 42q^3 + 49q^2$

80.  $1 + 16x^2 + x^4$

92.  $3a^2b^2 + 12ab + 1$

Ex: (p 390)

14.  $15x^2 + 11x + 2$

20.  $2x^2 - 7x + 3$

34.  $30a^2 + 38a - 20$

## 6.5: Factoring Binomials

Note :  $(x+3)(x-3)$

$$x^2 - 3x + 3x - 9 = x^2 - 9$$

$$(w+a)(w-a)$$

$$w^2 - wa + aw - a^2$$

$$w^2 - a^2$$

~~NOTE~~  $w^2 + a^2$  does  
NOT factor

Ex: (p 396)

$$2. x^2 - 36 = x^2 - 6^2 = (x+6)(x-6)$$

$$6. 49a^2 - 16 = (7a)^2 - 4^2 \\ = (7a+4)(7a-4)$$

$$14. -9t^2 + 1 = 1 - 9t^2$$

$$1^2 - (3t)^2 = (1+3t)(1-3t)$$

$$20. n^4 - 16 \quad (n^2)^2 - 4^2$$

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

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

$$38. x^2 - 225y^2 = x^2 - (15y)^2$$

$$(x + 15y)(x - 15y)$$

$$44. 36x^2y - 25y = y(36x^2 - 25)$$

$$y[(6x)^2 - (5)^2] = y(6x + 5)(6x - 5)$$

$$16x^2 + y^2 = \text{prime}$$

**56.**  $100 - \frac{4}{81}n^2$

**64.**  $100x^3y - 49xy^3$

**70.**  $25y^4 - 100y^2$

## 6.6: Solving Quadratic Equations by Factoring

### Quadratic Equation

A quadratic equation is one that can be written in the form

$$ax^2 + bx + c = 0$$

where  $a, b,$  and  $c$  are real numbers and  $a \neq 0$ .

### Zero Factor Theorem

If  $a$  and  $b$  are real numbers and if  $ab = 0$ , then  $a = 0$  or  $b = 0$ .

Ex: (p 408)

2.  $(x + 4)(x - 10) = 0$

4.  $(x + 11)(x + 1) = 0$

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

20.  $x^2 + 2x - 63 = 0$

22.  $x^2 - 5x + 6 = 0$

24.  $x^2 - 3x = 0$

28.  $x^2 = 9$

30.  $(x + 3)(x + 8) = x$

32.  $x(4x - 11) = 3$

34.  $-2y^2 + 72 = 0$

36.  $6x^2 + 57x = 30$

42.  $4y^3 - 36y = 0$

44.  $15x^3 + 24x^2 - 63x = 0$

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

48.  $x^2 + 15x = 0$

50.  $5(3 - 4x) = 9$

52.  $4y^2 - 81 = 0$

60.  $9x^2 + 7x = 2$

62.  $3x^2 - 6x - 9 = 0$

64.  $(y - 5)(y - 2) = 28$

74.  $2x^2 + 12x - 1 = 4 + 3x$

76.  $4x^2 - 20x = -5x^2 - 6x - 5$