

Name:

## UNIT 7 STUDY GUIDE



Multiply the following expressions.

$$1. (\overbrace{x+12})(x-12)$$
$$x^2 + 12x - 12x - 144$$
$$x^2 - 144$$

$$2. (3x-2)(3x+2)$$
$$9x^2 - 4$$

$$3. (x+6)^2$$
$$x^2 + 12x + 36$$

$$4. (2x-5)^2$$
$$4x^2 - 20x + 25$$

Solve each factored expression for  $x$  (hint – Think ZPP):

$$5. 2x(x-7) = 0$$
$$2x=0 \quad x-7=0$$
$$x=0 \quad x=7$$

$$6. (x+1)(x-10) = 0$$
$$x+1=0 \quad x-10=0$$
$$x=-1 \quad x=10$$

$$7. (x-3)(x-8) = 0$$
$$x=3 \quad x=8$$

$$8. (1-2x)(x+12) = 0$$
$$1-2x=0 \quad x=-12$$
$$-2x=-1$$
$$x=\frac{1}{2}$$

Factor out the GCF of each expression

$$9. \frac{9a^3}{3a^2} + \frac{15a^2}{3a^2}$$
$$3a^2(3a+5)$$

$$10. \frac{10y^2}{2y} + \frac{14y^3}{2y} - \frac{2y}{2y}$$
$$2y(5y+7y^2-1)$$

$$11. \frac{18y}{9} + \frac{27}{9}$$
$$9(2y+3)$$

$$12. \frac{-5x}{-5x} + \frac{25x^4}{-5x} - \frac{15x^3}{-5x}$$
$$-5x(1-5x^3+3x^2)$$

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Solve.

$$13. \quad x^2 + 2x - 3 = 0$$
$$(x+3)(x-1) = 0$$
$$x = -3 \quad x = 1$$

$$14. \quad x^2 + 3x - 4 = 0$$
$$(x+4)(x-1) = 0$$
$$x = -4 \quad x = 1$$

$$15. \quad x^2 - 4x - 5 = 0$$
$$(x+1)(x-5) = 0$$
$$x = -1 \quad x = 5$$

$$16. \quad 2x^2 - 11x - 21 = 0$$
$$(2x+3)(x-7) = 0$$
$$\begin{array}{r} 3x \\ -14x \\ \hline -11x \end{array}$$
$$x = -3/2 \quad x = 7$$

$$17. \quad 6x^2 + 5x = 6$$
$$6x^2 + 5x - 6 = 0$$
$$(2x+3)(3x-2) = 0$$
$$\begin{array}{r} 9x \\ -4x \\ \hline 5x \end{array}$$

$$18. \quad x^2 - 3x - 28 = 0$$
$$(x-7)(x+4) = 0$$
$$x = 7 \quad x = -4$$

$$x = -3/2 \quad x = 2/3$$

$$19. \quad 25x^2 - 4 = 0$$
$$(5x+2)(5x-2) = 0$$
$$5x = -2$$
$$x = -2/5 \quad x = 2/5$$

$$20. \quad x^2 - 2x + 1 = 0$$
$$(x-1)(x-1) = 0$$
$$x = 1 \quad x = 1$$

$$21. \quad \frac{18x^3}{2x} + \frac{24x^2}{2x} + \frac{8x}{2x} = 0$$
$$2x(9x^2 + 12x + 4) = 0$$
$$2x(3x+2)(3x+2) = 0$$
$$x = 0 \quad x = -2/3 \quad x = -2/3$$

$$22. \quad \frac{8x^2}{2} - \frac{18}{2} = 0$$
$$2(4x^2 - 9) = 0$$
$$2(2x+3)(2x-3) = 0$$
$$x = -3/2 \quad x = 3/2$$