Algebra – Ch. 10 – TEST REVIEW **Name**_____**hr**___

(Chapter 10: Solving Quadratic Equations)

Solve the equation using the zero-product property. Circle the solutions.

1. $(c - 13)(4c + 9) = 0$

2. $5y(y + 6) = 0$

Solve the quadratic equation by factoring (GCF and Trinomials). Circle the solutions.

3. $x^2 - 23x + 22 = 0$

4. $2v^2 - 4v = 0$

5. $y^2 - 2y - 8 = 0$

Solve the quadratic equation using the square root method. Circle the solutions.

6. $3x^2 = 108$

7. $2x^2 - 10 = 6$

8. $-2x^2 - 9 = 15$

Identify which method, square roots or factoring (GCF or trinomial), you would use to solve each quadratic equation. Write a sentence to explain your reasoning. DO NOT SOLVE.

9. $4x^2 - 36x = 0$

Method _____

Sentence:

10. $x^2 + 9x = -20$

Method _____

Sentence:

Use the quadratic formula to solve each equation. Round to the nearest hundredth.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

11. $x^2 + 4x - 45 = 0$ a=____ b=____ c=____

12. $2x^2 - 5x - 4 = 0$ a=____ b=____ c=____

For each quadratic equation below:

i) Identify a, b, c.

ii) Find the value of the discriminant. $b^2 - 4ac$

iii) State the number of solutions.

13. $x^2 + 3x + 12 = 0$

i) _____

ii) _____

iii) _____

14. $x^2 + 6x - 8 = 0$

i) _____

ii) _____

iii) _____

15. $4x^2 - 4x + 1 = 0$

i) _____

ii) _____

iii) _____

Solve.

16. A rubik's cube has a surface area of 73.5 in^2. If the formula for surface area is $A = 6s^2$, where A is the surface area and s is the edge length, find the edge length of a rubik's cube.

Algebra – Ch. 10 – TEST REVIEW **Name** Key **hr**___
(Chapter 10: Solving Quadratic Equations)

Solve the equation using the zero-product property. Circle the solutions.

1. $(c - 13)(4c + 9) = 0$

$C - 13 = 0$ $+13 \quad +13$ → $C = 13$

$4c + 9 = 0$ $-9 \quad -9$ → $\frac{4c}{4} = \frac{-9}{4}$ → $C = -2.25$

2. $5y(y + 6) = 0$

$\frac{5y}{5} = \frac{0}{5}$ → $y = 0$

$y + 6 = 0$ $-6 \quad -6$ → $y = -6$

Solve the quadratic equation by factoring (GCF and Trinomials). Circle the solutions.

3. $x^2 - 23x + 22 = 0$ (Trinomial)

$(x - 22)(x - 1) = 0$

-22×-1, -23

$x - 22 = 0$ $+22 \quad +22$ → $x = 22$

$x - 1 = 0$ $+1 \quad +1$ → $x = 1$

4. $\frac{2v^2}{2v} - \frac{4v}{2v} = 0$ (GCF)

$2v(v - 2) = 0$

$\frac{2v}{2} = \frac{0}{2}$ → $v = 0$

$v - 2 = 0$ $+2 \quad +2$ → $v = 2$

5. $y^2 - 2y - 8 = 0$ (Trinomial)

$(y - 4)(y + 2) = 0$

-8: -4×2, -4

$y - 4 = 0$ $+4 \quad +4$ → $y = 4$

$y + 2 = 0$ $-2 \quad -2$ → $y = -2$

Solve the quadratic equation using the square root method. Circle the solutions.

6. $3x^2 = 108$

$\frac{3x^2}{3} = \frac{108}{3}$ → $\sqrt{x^2} = \sqrt{36}$ → $x = \pm 6$

7. $2x^2 - 10 = 6$

$+10 \quad +10$ → $\frac{2x^2}{2} = \frac{16}{2}$ → $\sqrt{x^2} = \sqrt{8}$ → $x = \pm 2.83$

8. $-2x^2 - 9 = 15$

$+9 \quad +9$ → $\frac{-2x^2}{-2} = \frac{24}{-2}$ → $\sqrt{x^2} = -12$ → No solution

Identify which method, square roots or factoring (GCF or trinomial), you would use to solve each quadratic equation. Write a sentence to explain your reasoning. DO NOT SOLVE.

9. $4x^2 - 36x = 0$ $ax^2 + bx + c = 0$

Method GCF

Sentence: This equation has an ax^2 and a bx term. The "c" term is missing

10. $x^2 + 9x = -20$ → $x^2 + 9x + 20 = 0$

Method Trinomial

Sentence: This equation has 3 distinct terms, an ax^2, bx, and a c term. No terms, a, b, or c, are missing.

Use the quadratic formula to solve each equation. Round to the nearest hundredth.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

11. $x^2 + 4x - 45 = 0$ a= 1 b= 4 c= -45

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{-(4) \pm \sqrt{(4)^2-4(1)(-45)}}{2(1)}$

$x = \frac{-4 \pm \sqrt{16+180}}{2}$

$x = \frac{-4 \pm \sqrt{196}}{2}$

$x = \frac{-4 \pm 14}{2}$

$\frac{-4+14}{2}$ $\quad$ $\frac{-4-14}{2}$

$\frac{10}{2}$ $\quad$ $\frac{-18}{2}$

$x = 5$ $\quad$ $x = -9$

12. $2x^2 - 5x - 4 = 0$ a= 2 b= -5 c= -4

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{-(-5) \pm \sqrt{(-5)^2-4(2)(-4)}}{2(2)}$

$x = \frac{5 \pm \sqrt{25+32}}{4}$

$x = \frac{5 \pm \sqrt{57}}{4}$

$x = \frac{5 \pm 7.55}{4}$

$\frac{5+7.55}{4}$ $\quad$ $\frac{5-7.55}{4}$

$\frac{12.55}{4}$ $\quad$ $\frac{-2.55}{4}$

$x \approx 3.14$ $\quad$ $x \approx -0.64$

For each quadratic equation below:

- **i) Identify a, b, c.**
- **ii) Find the value of the discriminant.** $b^2 - 4ac$
- **iii) State the number of solutions.**

13. $x^2 + 3x + 12 = 0$

i) a=1 b=3 c=12

ii) -39 $\quad$ b^2-4ac $(3)^2-4(1)(12)$ $9-48$ -39

iii) no solution

14. $x^2 + 6x - 8 = 0$

i) a=1 b=6 c=-8

ii) 4 $\quad$ b^2-4ac $(6)^2-4(1)(8)$ $36-32$ 4

iii) 2 solutions

15. $4x^2 - 4x + 1 = 0$

i) a=4 b=-4 c=1

ii) 0 $\quad$ b^2-4ac $(-4)^2-4(4)(1)$ $16-16$ 0

iii) 1 solution

Solve.

16. A rubik's cube has a surface area of 73.5 in^2. If the formula for surface area is $A = 6s^2$, where A is the surface area and s is the edge length, find the edge length of a rubik's cube.

$A = 73.5\ in^2$

$S = ?$

$A = 6s^2$

$\frac{73.5}{6} = \frac{6}{6}s^2$

$\sqrt{12.25} = s^2$

$\pm 3.5 = s$

The side length is 3.5 inches