

Algebra Review for FM Geometry Name: _____

Show all work. Circle your solution. Date: _____ Pd: _____

A. **Solving Linear Equations** (1st degree)
Use inverse operations to isolate the variable.

1. $-3 - y = -8$

2. $d + 4 - 8d - 11 = -5d - 4 - 21$

3. $\frac{1}{3}a = 27$

4. $3(2x + 4) - (x + 15) = 4x - 3$

5. $14y - 1 = 6$

B. **Solving Systems of Linear Equations**
Use substitution or linear combination.

6.
$$\begin{cases} 2x + y = 3 \\ x + y = -2 \end{cases}$$

7.
$$\begin{cases} a + b = 7 \\ a - b = -1 \end{cases}$$

8.
$$\begin{cases} 3x + y = -10 \\ y = 2x \end{cases}$$

9.
$$\begin{cases} 5c - 2d = 8 \\ 2c + 7d = 11 \end{cases}$$

C. **Factoring Polynomials**

Factor by using (1) GCF, (2) Grouping, or (3) the Trinomial method.

10. $20x^5 - 8x^4 + 4x^3$

11. $x^2 + xz + 2xy + 2yz$

12. $x^2 + 6x + 5$

13. $x^2 - x - 12$

14. $3x^2 - 8x - 3$

15. $6x^2 + 8x + 2$

16. $x^2 - 1$

17. $x^2 - 25$

18. $4x^2 - 9$

19. $3(x-3)^2 - 12$

D. **Simplifying Radicals**

Radicals are simplified (in simplest radical form/SRF) if

- (1) no perfect square factors are under the radical symbol.
- (2) no fractions are inside the radical symbol.
- (3) no radical expressions are in the denominator.

20. $\sqrt{24}$

21. $\sqrt{80}$

22. $\sqrt{27}$

23. $\sqrt{150}$

24. $\sqrt{\frac{20}{12}}$

25. $\sqrt{\frac{1}{18}}$

26. $\sqrt{5} \cdot \sqrt{15}$

27. $\sqrt{2} \cdot \sqrt{6} \cdot \sqrt{3}$

28. $\frac{-6 \pm \sqrt{20}}{2}$

29. $\frac{3 \pm \sqrt{45}}{6}$

E. **Solving Quadratic Equations** (2nd degree)

Solve by finding square roots, factoring, or the quadratic formula.

30. $x^2 - 11x + 10 = 0$

31. $49x^2 = 64$

32. $2y^2 - 1 = 0$

33. $d^2 + 3d = 0$

34. $3x^2 + x = 10$

35. $x^2 = 6 - 4x$

36. $5(x-3)^2 = x-3$

F. Solving Nth Degree Equations

Set the equation equal to zero and factor the resulting polynomial.

37. $x^3 - 25x = 0$

38. $x^3 + 3x^2 - 4x - 12 = 0$

39. $y^4 = 13y^2 - 36$

40. $b^5 - 29b^3 + 100b = 0$