Radicals and Factoring **NAME:**

Evaluate each of the following without a calculator.

A. $9^2 =$ B. $\sqrt{9} =$ C. $4^2 =$ D. $\sqrt{16} =$ E. $4^3 =$ F. $\sqrt[3]{64} =$

G. $\sqrt[3]{27} =$ H. $\sqrt[4]{16} =$ I. $2^3 =$ J. $\sqrt[3]{8} =$ K. $3\sqrt{8} =$ L. $\sqrt[3]{125} =$

Check A – L and #1 – 12:
2 2
3 3
4 4
5 8
16 64
81
$6\sqrt{2}$
$10\sqrt{2}$
$15\sqrt{5}$
$2\sqrt{15}$
$3\sqrt{2}$
$20\sqrt{6}$
$4\sqrt{5}$
$10\sqrt{3}$
$4\sqrt{2}$
$3\sqrt{5}$
$6\sqrt{14}$
$15\sqrt{11}$
$6\sqrt{2}$

Write each of the following in simple radical form. *Clearly show all steps similar to #1 and #2.*

1. $\sqrt{18} = \sqrt{\ } \cdot \sqrt{\ } = \sqrt{\ }$

2. $2\sqrt{75} = 2\sqrt{\ }\sqrt{\ }$
$= 2 \cdot \sqrt{\ } = \sqrt{\ }$

3. $\sqrt{200}$

4. $3\sqrt{56}$

5. $10\sqrt{24}$

6. $\sqrt{32}$

7. $\sqrt{45}$

8. $3\sqrt{125}$

9. $\sqrt{72}$

10. $\sqrt{80}$

11. $\sqrt{60}$

12. $5\sqrt{99}$

Factor using the GCF.

13. $3x^3 + 6x =$ ( )

14. $15x^2 + 10$

15. $8x^3 - 6x^2 + 28x$

16. $10x^2 - 4x - 2$

Factor using a diamond problem and generic rectangle OR use the FOIL method. *Clearly show all steps on the back of this paper if necessary.*

17. $2x^2 + 5x - 7$

18. $x^2 - 11x + 10$

19. $3x^2 - 10x + 7$

20. $x^2 + 13x + 36$

21. $2x^2 + 7x + 3$

22. $x^2 - x - 56$

23. $5x^2 - 13x + 6$

24. $4x^2 - 13x + 3$

Factor, then solve for x using zero product property. Show all steps.

25. $3x^2 - 13x + 4 = 0$

26. $x^2 + 7x - 18 = 0$

27. $2x^2 + 9x + 10 = 0$

28. $4x^2 + 12x + 5 = 0$

CHECK #13-24: *2 2x 3x 5 $(4x^2 - 3x + 14)$ $(3x^2 + 2)$ $(5x^2 - 2x - 1)$ $(x^2 + 2)$ $(3x - 7)$ $(4x - 1)$ $(5x - 3)$ $(x - 1)$ $(x - 1)$ $(x - 1)$ $(x - 2)$ $(x - 3)$ $(x - 8)$ $(x - 10)$ $(x + 3)$ $(x + 4)$ $(x + 7)$ $(x + 9)$ $(2x + 1)$ $(2x + 7)$*

CHECK#25-28 (first check factors, then check solutions for x) $-\frac{5}{2}$ $-\frac{5}{2}$ $-\frac{1}{2}$ $\frac{1}{3}$

$(x - 4)$ $(x - 2)$ $(x + 2)$ $(x + 9)$ $(2x + 1)$ $(2x + 5)$ $(2x + 5)$ $(3x - 1)$ -9 -2 2 4