

Name: _____

Factoring

The first step is *always* to “pull out” as much as you can

1. Multiply the following, using the distributive property:

$$3x(4x^2 + 5x + 2) = \underline{\hspace{4cm}}$$

2. Now, you’re going to do the same thing *backward*.

- a. “Pull out” the common term of $4y$ from the following expression.

$$16y^3 + 4y^2 + 8y = 4y(\underline{\hspace{4cm}})$$

- b. Check yourself, by multiplying $4y$ by the term you put in parentheses.

- c. Did it work? _____

For each of the following expressions, pull out the highest common factor you can find.

3. $9xy + 12x = \underline{\hspace{4cm}}$

4. $12xy + 9y^2 = \underline{\hspace{4cm}}$

5. $100x^3 + 25x^2 = \underline{\hspace{4cm}}$

6. $4x^2y + 3y^2x = \underline{\hspace{4cm}}$

Next, look to apply a three formula

Factor the following by using one of the three special formulas:

7. $x^2 - 9 = \underline{\hspace{4cm}}$

8. $x^2 - 10x + 25 = \underline{\hspace{4cm}}$

9. $x^2 + 8x + 16 = \underline{\hspace{4cm}}$

10. $2x^2 - 8x + 8 = \underline{\hspace{4cm}}$

11. $3x^2 - 12 = \underline{\hspace{4cm}}$

Or, factor the “old-fashioned way”

12. $x^2 + 7x + 10 = \underline{\hspace{4cm}}$

Check your answer by multiplying back:

13. $x^2 - 5x + 6 = \underline{\hspace{4cm}}$

Check your answer by plugging a number into the original expression, and into your modified expression:

14. $x^2 - 6x + 5 =$ _____

15. $x^2 - 6x + 8 =$ _____

16. $x^2 - x - 12 =$ _____

17. $x^2 + x - 12 =$ _____

18. $x^2 + 4x - 12 =$ _____

19. $2x^2 + 7x + 12 =$ _____

20. $2x^2 - 22x + 60 =$ _____