

Polynomials Review

| Degree | Name |
|-----------|--|
| 0 | Constant |
| 1 | Linear |
| 2 | Quadratic |
| 3 | Cubic |
| 4 | Quartic |
| 5 | Quintic |
| 6 or more | 6 th , 7 th , degree and so on |

| Terms | Name |
|-----------|------------|
| 1 | Monomial |
| 2 | Binomial |
| 3 | Trinomial |
| 4 or more | Polynomial |

Key

1. Give an example of:

a. a quintic polynomial: $x^5 + x^4 + x^3 + x^2 + x$

b. a quartic monomial: $3x^4$

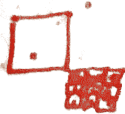
c. a 10th degree binomial: $5x^3y^7 + 2x$

2. Create a cubic trinomial and a quadratic binomial whose sum is a cubic binomial.

$$\underline{x^3 + x^2 + x} + \underline{-x^2 + 2x} = \underline{x^3 + 3x}$$

3. Draw algebra Tiles for the following:

a. $(x + 3)(x - 3)$ Why is this called "difference of squares"?



After the x's cancel out, you are left with 2 squares, one of which is negative.

b. $(x + 3)^2$ Why is the result of this a "perfect square trinomial"?



When represented visually, the result is a "perfect" square

Simplify:

4. $10(2x + 5)(2x - 5)$

$$10[4x^2 - 25]$$

$$40x^2 - 250$$

5. $(6x - 2)^2$

$$(6x - 2)(6x - 2)$$

$$36x^2 - 24x + 4$$

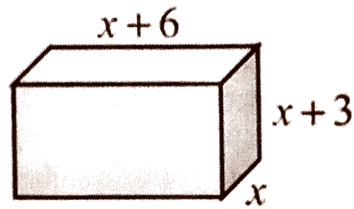
6. $(3x + 1)(3x - 1)(x + 2)^2$

$$(9x^2 - 1)(x^2 + 4x + 4)$$

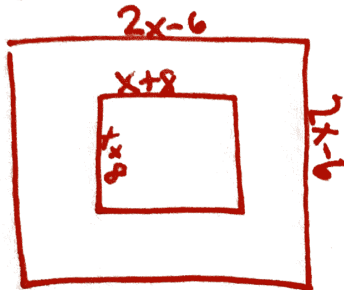
$$9x^4 + 36x^3 + 35x^2 - 4x - 4$$

7. Write an expression for the volume of the rectangular box.

$$\begin{aligned}
 & x(x+3)(x+6) \\
 & (x^2+3x)(x+6) \\
 & x^3+6x^2+3x^2+18x \\
 & \boxed{x^3+9x^2+18x}
 \end{aligned}$$



8. Kyra is framing a square painting with side lengths of $(x + 8)$ inches. The total area of the painting and the frame has a side length of $(2x - 6)$ inches. The material for the frame will cost $\$0.08$ per square inch. Write an expression for the area of the frame. Then find the cost of the material for the frame if $x = 16$.

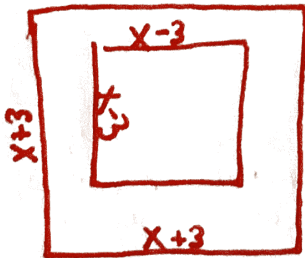


$$\begin{aligned}
 & (2x-6)^2 - (x+8)^2 \\
 & [4x^2 - 24x + 36] - [x^2 + 16x + 64]
 \end{aligned}$$

$$\boxed{3x^2 - 40x - 28}$$

$$100 \text{ in}^2 = \text{area of the frame} \times .08 = \boxed{88}$$

9. A square patio has a side length of $(x - 3)$ feet. It is surrounded by a flower garden with a uniform width. The side length of the entire square area including the patio and the flower garden is $(x + 3)$ feet. Write an expression for the area of the flower garden. Draw a picture!



$$\begin{aligned}
 & (x+3)^2 - (x-3)^2 \\
 & (x^2+6x+9) - (x^2-6x+9)
 \end{aligned}$$

$$\boxed{12x}$$

10. Which of the following is equivalent to $\boxed{14q^2} + 8pq - 9p^2 + 40pq - \boxed{70q^2} + 17p^2$?

~~A.~~ $-40p^2q^2 + 48pq$

~~B.~~ $110p^2q^2 + 48pq$

C. $8(p+7q)(p-q)$

~~D.~~ $8(p^2 + 48pq - 56q^2)$

$$8p^2 + 384pq - 448q^2$$

$$\rightarrow -56q^2 + 8p^2 + 48pq$$

$$8[p^2 - pq + 7pq - 7q^2]$$

$$8[p^2 + 6pq - 7q^2]$$

$$8p^2 + 48pq - 56q^2$$