

MAT 0020 Basic Algebra II

KEY CONCEPT REVIEW

CHAPTER 3, SECTIONS 3.5 – 3.7

TO RECEIVE CREDIT, DO ALL PROBLEMS, MAKE CORRECTIONS, AND SHOW YOUR WORK.

Select the correct words or phrases that complete each statement.

- 1) To multiply two or more polynomials, use the _____ rule: _____ the coefficients; _____ the variable powers.
 - A) power; add; multiply
 - B) product; multiply; add
 - C) power; multiply; multiply
 - D) product; add; multiply

- 2) The product of two or more monomials is a _____.
 - A) binomial
 - B) trinomial
 - C) monomial

- 3) To multiply two polynomials, use the _____ to distribute the multiplication term-to-term.
 - A) commutative law
 - B) multiplication property
 - C) associative law
 - D) distributive law

Multiply.

- 4) $(5x^8)(-3x)(4x^3)$

- 5) $\left(-\frac{2}{3}x^5\right)\left(\frac{4}{5}x^2\right)$

- 6) $-7h^7(-6h^5 + 5h^3 + 2)$

- 7) $8x^4y^2(4x^3 - 2x^2y^3 + 5xy^2 - y)$

Find each product.

- 8) $(x + 6)(x - 12)$

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

- 10) $(y - 8)(y^2 - 5y + 4)$

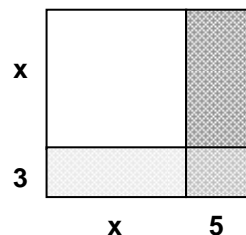
- 11) $\left(x + \frac{3}{4}\right)\left(x - \frac{1}{4}\right)$
 - A) $x^2 + \frac{1}{2}x - \frac{3}{16}$
 - B) $x^2 + \frac{3}{16}$
 - C) $x^2 + x - \frac{3}{16}$
 - D) $x^2 - \frac{3}{16}$

- 12) $(1 - 3a)(1 - 7a)$

- 13) $(2y^2 - 3)(5y^2 + 4)$

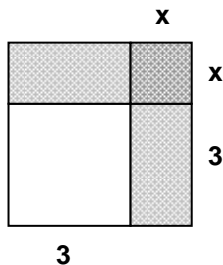
- 14) $(3x - 1)(x^2 - 6x - 8)$
 - A) $3x^3 - 18x^2 - 24x$
 - B) $3x^3 - x^2 - 24x + 8$
 - C) $3x^3 + 19x^2 - 30x + 8$
 - D) $3x^3 - 19x^2 - 18x + 8$

- 15) Find the total area of the rectangles shown below.



Multiply using the FOIL method.

- 16) $(a + 6)(a + 10)$
- 17) $(3y - 2)(2y - 5)$
- 18) $(4x - 1)(5x + 8)$
- A) $47x - 8$
 B) $20x^2 + 27x - 8$
 C) $20x^2 - 8$
 D) $20x^2 - 27x + 8$
- 19) $(x - 3y)(x + 9y)$
- 20) Use the drawing below to show that $(x+3)^2 \neq x^2 + 9$. (Hint: find the total area of the rectangles and squares.)



- 21) When is the product of two binomials a binomial? Give an example.

Multiply.

- 22) $(2x + 3y)^2$
- 23) $(8x + 7)(8x - 7)$
- 24) $(3pq - 1)^2$
- 25) $\left(2m + \frac{1}{2}\right)\left(2m - \frac{1}{2}\right)$
- 26) $(5y^2 + x)^2$

- 27) How is the quotient rule used to divide a polynomial by a monomial? Explain

Divide.

- 28)
$$\frac{-15x^{10} + 25x^7}{-5x^4}$$
- 29) $(42x^6 + 56x^5 + 21x^4) \div (7x^5)$
- 30)
$$\frac{3x^3y^2 + 12x^9y^8 - 18x^6y^4}{3x^3y^2}$$
- A) $xy + 4x^3y^4 - 6x^2y^2$
 B) $4x^6y^6 - 6x^3y^2$
 C) $4x^3y^4 - 6x^2y^2$
 D) $1 + 4x^6y^6 - 6x^3y^2$

- 31) To divide $(x^2 + 9x + 18)$ by $(x + 6)$, what is the first step?

- 32) Divide $(x^2 + 9x + 18)$ by $(x + 6)$

- A) $x^2 + 3$ B) $x^3 - 12$
 C) $x + 3$ D) $x - 12$

Find each quotient.

- 33)
$$\frac{y^2 + 4y - 14}{y + 7}$$
- 34) $(6x^3 + 10x^2 + 7x + 2) \div (3x + 2)$
- A) $x^2 - 2x - 1$
 B) $2x^2 + 2x + 1$
 C) $x^2 + 2x + 1$
 D) $2x^2 + 1$

- 35) When you divide a polynomial by a binomial, how do you check the result? Explain.