

answers HW page 69

Multiplying Bases with Exponents

$$1. 2^2 \cdot 2^3 = 2^5$$

$$2. (3^2)(3^4) = 3^6$$

$$3. a^5 \cdot a^2 \cdot a^1 \cdot a^3 = a^{11}$$

$$4. (a^2)(a^3)(a^7) = a^{12}$$

$$5. m^2 \cdot p^3 \cdot m^1 \cdot p^4 \cdot m^3 = m^6 p^7$$

$$6. m^2 p^1 \cdot m^4 p^3 = m^6 p^4$$

Dividing Bases with Exponents

$$11. \frac{2^5}{2^3} = 2^2$$

$$12. \frac{3^7}{3^3} = 3^4$$

$$13. \frac{a^9}{a^2} = a^7$$

$$14. \frac{m^3 n^5}{m^2 n} = mn^4$$

$$15. \frac{m^4 p^8 x^6 a^9}{m^3 p^2 a^4} = mp^6 x^6 a^5$$

$$16. \frac{9a^4 b^5 c^6}{3a^3 bc^4} = 3ab^4 c^2$$

$$7. (m^5 p^4 x^3)(m^3 p^1 x^6) = m^8 p^5 x^9$$

$$8. 5x^3 \cdot 2x^2 = 10x^5$$

$$9. 3x^2 p^3 \cdot 4x^2 p = 12x^4 p^4$$

$$10. (4ab^3)(2a^2b^3) = 8a^3b^6$$

$$17. \frac{8x^5 p^6}{2x^2 p^4} = 4x^3 p^2$$

$$18. \frac{12x^8 m^5 k^3}{-4x^3 m^5 k} = -3x^5 k^2$$

$$19. -\frac{2a^6 b^3}{10ab^7} = -\frac{1}{5}a^5 b^{-4} = \frac{-a^5}{5b^4}$$

$$11. (-5x^3 m^2 p^4)(3xm^4 p^2) = -15x^4 m^6 p^6$$

$$12. (\cancel{n^3 p^6 k^3})(\cancel{-2n^2 p^2 m})(\cancel{3nk^4})(\cancel{-4pm^3 k}) = 24k^8 m^4 n^6 p^8$$

Challenge: (Yes, you need to try it!)

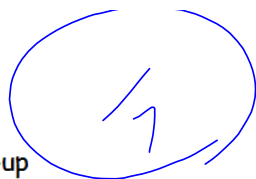
$$20. \frac{6xm^3 p^4}{2xmp} \cdot \frac{4x^3 m^4 p^5}{-2xmp^2} = \frac{24x^4 m^7 p^9}{-4x^2 m^2 p^3} = -6x^2 m^5 p^6$$

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warm up:

Algebra 1

Mult. & Div. Exponents Warm-up



Name _____

Date _____ Pd _____

Simplify each expression

$$1. \quad (3x^2)(x) = \underline{3x^3}$$

$(3x^2)(1x^1)$

$$2. \quad (3x^3)(5x^5) = \underline{15x^8}$$

$$3x \cdot 3x \cdot 3x \cdot 5x \cdot 5x \cdot 5x \cdot 5x \cdot 5x$$

$$3. \quad (3x^2)(2x^{-3}y^6)(-5x^6y^{-2}) = \underline{-30x^5y^4}$$

$$4. \quad b^2(b^m) = \underline{b^{2+m}} = \underline{b^{m+2}}$$

$$5. \quad \frac{c^{15}}{c^{12}} = \underline{c^3}$$

$$6. \quad \frac{a^7b^6}{a^5b} = \underline{a^2b^5}$$

$$8. \quad \frac{n^9}{n^{13}} = \underline{n^{-4}} = \underline{\frac{1}{n^4}}$$

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Exponent Rule #3:

Simplify using positive exponents.

Simplify by subtracting:

$$1. \frac{7^5}{7^5} = 7^0 = 1$$

$$2. \frac{a^3}{a^3} = a^0 = 1$$

$$3. \frac{m^2 p^3}{m^2 p^3} = m^0 p^0 = 1$$

Simplify by expanding out the fraction:

$$\frac{7^5}{7^5} = \frac{\overbrace{7 \cdot 7 \cdot 7 \cdot 7 \cdot 7}^{\text{5 factors of 7}}}{\underbrace{7 \cdot 7 \cdot 7 \cdot 7 \cdot 7}_{\text{5 factors of 7}}} = 1$$

$$\frac{a^3}{a^3} = \frac{a \cdot a \cdot a}{a \cdot a \cdot a} = 1$$

$$\frac{m^2 p^3}{m^2 p^3} = \frac{\overbrace{m \cdot m}^{\text{2 factors of } m} \cdot \overbrace{p \cdot p \cdot p}^{\text{3 factors of } p}}{\underbrace{m \cdot m}_{\text{2 factors of } m} \cdot \underbrace{p \cdot p \cdot p}_{\text{3 factors of } p}} = 1$$

Any number raised to the power of zero is one.

Rule:

$$a^0 = 1$$

Examples:

1. $5^0 = 1$

2. $p^0 = 1$

3. $2m^0 = 2$

4. $4p^2m^0g^3 = 4p^2g^3$

✓ Understanding Check:

a. $7^0 = 1$

c. $2m^3n^4x^0w = 2m^3n^4w$

b. $p^0 = 1$

d. $4x^6m^0x^3p^4y^0 = 4x^9p^4$

e. $\frac{10x^4p^3}{5x^4p} = 2x^0p^2 = 2p^2$

f. $m^4 \cdot m^3 \cdot m^{-7} = m^0 = 1$

✓ Understanding Check:

$2 \div 1$

$4 \cdot p^2 \cdot 1 \cdot g$

a. $7^0 = \underline{1}$

c. $2m^3n^4\cancel{x^0}w = \underline{2m^3n^4w}$

b. $p^0 = \underline{1}$

d. $4x^6\cancel{m^0}x^3p^4\cancel{y^0} = \underline{4x^9p^4}$

e. $\frac{10\cancel{x^4}p^3}{5\cancel{x^4}p} = \underline{2p^2}$

f. $m^4 \cdot m^3 \cdot m^{-7} = \underline{m^0} = \underline{1}$

Song to help you remember the rule:

Any base to the zero power equals one,

Any base to the zero power equals one,

Any base to the zero power, doesn't have to take an hour,

Any base to the zero power equals one.

MyExponentSongMusicOnly

