

HW Page 68 (you will have a mini quiz on this today)

$$1. (7x^2 + 3x + 9) + (2x^2 + 5x - 2) = \boxed{9x^2 + 8x + 7}$$

$$2. (-3x^2 + x - 7) + (8x^2 - 4x - 4) = \boxed{5x^2 - 3x - 11}$$

$$3. (6x^3 + 2x^2 - 3x) + (3x^3 - 10x^2 - x) = \boxed{9x^3 - 8x^2 - 4x}$$

$$4. (9x^3 - x^2 + 8) + (-9x^3 + 2x^2 + 3x) = \boxed{x^2 + 3x + 8}$$

$$5. (-4x^4 + 3x^3 - 7x^2 - x) + (-9x^3 + 7x^2 - 5x - 1) = \boxed{-4x^4 - 6x^3 - 6x - 1}$$

$$6. (2x^2 + 3x + 8) - (x^2 + 5x - 1) = \boxed{x^2 - 2x + 9}$$

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$$7. (4x^3 + 6x^2 - 8x) - (x^3 - 2x^2 + 12x) = \boxed{3x^3 + 8x^2 - 20x}$$

$-x^3 + 2x^2 - 12x$

$$8. (x^4 + 3x^3 + 8x - 1) - (x^4 + 2x^3 + 10x^2 - 5) = \boxed{x^3 - 10x^2 + 8x + 4}$$

$$9. (4x^3 - 2x^2 + x - 6) - (2x^3 + 5x^2 - 8x + 8) = \boxed{2x^3 - 7x^2 + 9x - 14}$$

$$10. (10x^5y + 6x^3y^2 - x^2y + 5x) + (2x^5y - 3x^3y^2 + x - 6) = \boxed{12x^5y + 3x^3y^2 - x^2y + 6x - 6}$$

Warm-up**Name:** _____

Combine like terms by adding or subtracting.

$$1) (7x^3y^2 + 3x^4) + (5x^3y^2 - 2x) = 12x^3y^2 + 3x^4 - 2x$$

$$2) (15m^2n^3 - 3x^2y) + (12m^2n^3 - 2) = 27m^2n^3 - 3x^2y - 2$$

$$3) (6b^2 + 4b + 1) - (8 - b^2 + 2b) = 7b^2 + 2b - 7$$

$$4) (8x^3y^2 - 5x^2) - (-3x^3y^2 + 7x) = 11x^3y^2 - 5x^2 - 7x$$

5) Circle the like terms:

$$7x \quad 8x^2y^3z \quad y^3zx^2 \quad 5x^2z \quad 2zx^2y^3 \quad 6xyz$$

Unit 6 Notebook quiz

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Exponent Rules**Vocabulary**

In this unit the words

exponent and power n^3

will have the same meaning.

Exponent Rule #1:

Simplify using positive exponents,

$6^3 \cdot 6^4$

means:

 $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6$

or

 6^7

$x^2 \cdot x^7$

means:

 $x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$

or

 x^9

$m^3 \cdot m \cdot m^2$

means:

 $m \cdot m \cdot m \cdot m \cdot m \cdot m$

or

 m^6

$(a^3 p^2)(a p^4)$

means:

 $(a \cdot a \cdot a \cdot p \cdot p)(a \cdot p \cdot p \cdot p \cdot p)$

or

 $a^4 p^6$

$(m^2 x y^3)(m x^3 y)$

means:

 $m \cdot m \cdot x \cdot y \cdot y \cdot y \cdot m \cdot x \cdot x \cdot x \cdot y$

or

 $m^3 x^4 y^4$

Can you think of a shortcut?

When multiplying same bases, add the exponents.

Rule:

$$a^m \cdot a^n = a^{m+n}$$

Handwritten annotations: "base" with arrows pointing to the 'a's, and "exponents" with arrows pointing to the 'm' and 'n'.

✓ Understanding Check:

Simplify using Exponent Rule #1

a. $4^3 \cdot 4^5 = 4^8$

c. $(m^5 n^3)(m^2 n^4) = m^7 n^7$

b. $a \cdot a^4 \cdot a^6 = a^{11}$

d. $(g^4 p^3 x)(g p^7 x^8) = g^5 p^{10} x^9$

✓ Understanding Check:

Simplify using Exponent Rule #1

a. $4^3 \cdot 4^5 = 4^8$

c. $(m^5 n^3)(m^2 n^4) = m^7 n^7$

b. $a \cdot a^4 \cdot a^6 = a^{11}$

d. $(g^4 p^3 x)(g p^7 x^8) = g^5 p^{10} x^9$

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Warning!!! Do not apply exponent rules to coefficients:**Examples:**

1. $3x^4 \cdot 2x^5 = 6x^9$

2. $-5n^4p^6 \cdot 6n^2p^3 =$

$-30n^6p^9$

Understanding Check:

a. $4p^3 \cdot 7p^5 =$

b. $(2a)(3a^4)(-4a^6) =$

Song to help you remember the rule:

To multiply same bases, you just add...(exponents)

To multiply same bases, you just add...(exponents)

To multiply same bases, you don't have to make those faces

To multiply same bases, you just add...(exponents)

Exponent Rule #2:

Simplify using positive exponents,

$$\frac{7^8}{7^2} \text{ means } \frac{\cancel{7} \cdot \cancel{7} \cdot 7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 \cdot 7}{\cancel{7} \cdot \cancel{7}} = 7^6$$

$$\frac{a^5}{a^3} \text{ means } \frac{\cancel{a} \cdot \cancel{a} \cdot \cancel{a} \cdot a \cdot a}{\cancel{a} \cdot \cancel{a} \cdot \cancel{a}} = a^2$$

$$\frac{m^7 p^5}{m^5 p^2} \text{ means } \frac{\cancel{m} \cdot \cancel{m} \cdot \cancel{m} \cdot \cancel{m} \cdot \cancel{m} \cdot m \cdot m \cdot \cancel{p} \cdot \cancel{p} \cdot \cancel{p} \cdot p \cdot p \cdot p}{\cancel{m} \cdot \cancel{m} \cdot \cancel{m} \cdot \cancel{m} \cdot \cancel{m} \cdot \cancel{p} \cdot \cancel{p} \cdot \cancel{p}} = m^2 p^3$$

Can you think of a shortcut?When dividing same bases, subtract the exponents.

Rule: $\frac{a^m}{a^n} = a^{m-n}$

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✓ Understanding Check:

Simplify using Exponent Rule #2

a. $\frac{6^9}{6^4} = 6^5$

b. $\frac{p^7}{p^5} = p^2$

c. $\frac{x^6 p^7}{x^4 p} = x^2 p^6$

Warning!!! Do not apply exponent rules to coefficients:✓ Understanding Check:

Simplify using Exponent Rule #2

a. $\frac{6^9}{6^4} = 6^5$

b. $\frac{p^7}{p^5} = p^2$

c. $\frac{x^6 p^7}{x^4 p} = x^2 p^6$

Examples: 1. $\frac{6p^8}{2p^3} = 3p^5$ 2. $-\frac{10x^7p^6}{2xp^2} = -5x^6p^4$ 3. $\frac{2m^9}{16m^2} = \frac{1m^7}{8}$

✓ Understanding Check:

a. $\frac{15g^9}{5g^3} =$

b. $-\frac{12x^{10}p^8}{2x^5p^2} =$

c. $\frac{3w^7m^9}{12w^4m^7} =$

a. $\frac{15g^9}{5g^3} = 3g^6$

b. $-\frac{12x^{10}p^8}{2x^5p^2} = -6x^5p^6$

c. $\frac{3w^7m^9}{12w^4m^7} = \frac{1}{4} w^3m^2$

Song to help you remember the rule:

When dividing same bases, just subtract...(exponents)

When dividing same bases, just subtract...(exponents)

When dividing same bases, beware of special cases

When dividing same bases, just subtract...(exponents)

$\frac{w^3m^2}{4}$

What Special Cases?

Examples:

$$1. \frac{6m^5}{2m^9} = 3m^{-4}$$

$$2. \frac{5p^3}{20p^5} = \frac{1p^{-2}}{4} = \frac{1}{4}p^{-2}$$

$$3. \frac{50p^3m^8}{25p^5m^2} = 2p^{-2}m^6$$

✓ Understanding Check:

$$a. \frac{22w^6}{11w^{10}} = 2w^{-4}$$

$$b. \frac{6g^2}{15g^8} = \frac{2g^{-6}}{5}$$

$$c. \frac{7w^3m^9}{35w^4m^7} = \frac{1w^{-1}m^2}{5}$$

✓ Understanding Check:

$$a. \frac{22w^6}{11w^{10}} = 2w^{-4} = \frac{2}{w^4}$$

$$b. \frac{6g^2}{15g^8} = \frac{2}{5}g^{-6} = \frac{2}{5g^6}$$

$$c. \frac{7w^3m^9}{35w^4m^7} = \frac{1}{5}w^{-1}m^2 = \frac{m^2}{5w}$$

✓ Understanding Check:

a. $\frac{22w^6}{11w^{10}} = 2w^{-4}$ b. $\frac{6g^2}{15g^8} = \frac{2g^{-6}}{5}$ c. $\frac{7w^3m^9}{35w^4m^7} = \frac{1w^{-1}m^2}{5}$

$\frac{22w^6}{11w^{10}} = \frac{2\cancel{2} \cancel{w} \cancel{w} \cancel{w} \cancel{w} \cancel{w}}{\cancel{11} \cancel{w} \cancel{w} \cancel{w} \cancel{w} \cancel{w} \cancel{w} \cancel{w} \cancel{w} \cancel{w}} = \frac{2}{w^4}$

Homework:

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