

Name: Key
DISCRETE

Date: 4/30/18
TROICI/GOSSE

LESSON #1: EXPONENT RULES

All variables have exponents.....

- If the exponent is 1, x^1 , we simply write: x

Product Rule:

$$x^a \cdot x^b = x^{a+b}$$

$$x^3 \cdot x^5 = \boxed{x^8}$$

$$(2x^6)(3x^7) = \boxed{6x^{13}}$$

ADD exponents!

$$y^4 \cdot y^1 = \boxed{y^5}$$

$$(-5y^2)(3y^9) = \boxed{-15y^{11}}$$

Quotient Rule:

$$x^a \div x^b = x^{a-b}$$

$$\frac{x^3}{x^2} = x^1 = \boxed{x}$$

$$\frac{8x^{10}}{4x^6} = \boxed{2x^4}$$

SUBTRACT exponents!

$$\frac{y^8}{y^7} = y^1 = \boxed{y}$$

$$\frac{9y^4}{3y^1} = \boxed{3y^3}$$

Power Rule:

$$(x^a)^b = x^{ab}$$

$$(xy^2)^3 = x^3 y^{2 \cdot 3} = \boxed{x^3 y^6}$$

$$(z^3 y^4)^5 = z^{3 \cdot 5} y^{4 \cdot 5} = \boxed{z^{15} y^{20}}$$

$$(a^4 b^2)^{\frac{1}{2}} = a^{4 \cdot \frac{1}{2}} b^{2 \cdot \frac{1}{2}} = \boxed{a^2 b}$$

$$(3x^3)^2 = 3^2 \cdot x^{3 \cdot 2} = \boxed{9x^6}$$

Practice with Exponents: Using the laws and properties defined above, use your knowledge of exponents to perform the indicated operations or simplifications.

1. $3x^7 \cdot 7x^4 = \boxed{21x^{11}}$

2. $\frac{15x^4y^7}{5x^3y^2} = \boxed{3xy^5}$

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

4. $3ab^5x^3 \cdot bx^5 = \boxed{3ab^6x^8}$

5. $\frac{18abc}{2ab} = \boxed{9c}$

6. $-9y^{11}x^3 \cdot 2y^3x^5 = \boxed{-18y^{14}x^8}$

7. $(3abc)^3 = 3^3 a^3 b^3 c^3 = \boxed{27a^3b^3c^3}$

8. $\frac{100x^9y^4z}{25xy^4z} = \boxed{4x^8}$

9. $42a^4b^3c \cdot 2a^2b^7c = \boxed{84a^6b^{10}c^2}$

10. $(2a^3b^4)^2 = 2^2 a^{3 \cdot 2} b^{4 \cdot 2} = \boxed{4a^6b^8}$

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LESSON #1: EXIT TICKET

Simplify the following:

1.

$$2x^5 \cdot 8x^7 = \boxed{16x^{12}}$$

2.

$$\frac{25x^3y^5}{5x^3y} = \boxed{5y^4}$$

3.

$$(x^5y^2)^3 = x^{5 \cdot 3} y^{2 \cdot 3}$$
$$\boxed{x^{15}y^6}$$

4.

$$6b^7x^4 \cdot bx^5 = \boxed{6b^8x^9}$$

5.

$$\frac{15ab}{3ab} = \boxed{5}$$

6.

$$-7y^8x^7 \cdot 4y^6x^3 = \boxed{-28y^{14}x^{10}}$$

7.

$$(4abc)^3 = 4^3 a^3 b^3 c^3$$
$$\boxed{64a^3b^3c^3}$$

8.

$$\frac{10x^8y^4z}{2xy^2z} = \boxed{5x^7y^2}$$

9.

$$12a^5b^4c \cdot 3a^2b^6c$$
$$\boxed{36a^7b^{10}c^2}$$

10.

$$(12a^6b^8)^2 = \boxed{144a^{12}b^{16}}$$

