

## Do Now:

1) Consider the following arithmetic sequence:

3, 6, 9, 12, ...

a) What is  $d$ ?

b) Find the explicit formula for the arithmetic sequence above:

c) Find the 30th term of the arithmetic sequence above:

2) Consider the following geometric sequence:

3, 9, 27, 81, ...

a) What is  $r$ ?

b) Find the explicit formula for the geometric sequence above:

c) Find the 30th term of the geometric sequence above:

3) What are the two **arithmetic** means between 4 and 32?

4) What are the two **geometric** means between 4 and 32?

Do Now:

- Write out all the factors of  $a$
- Count the  $a$ 's and write with a single exponent.
- What operation is used to express each example with a single exponent?

1)  $a^3 \cdot a^5$

2)  $(a^3)^5$

- Explain how to simplify  $(a^7 \cdot a^3)^2$  by using addition and multiplication.

## Properties of Exponents

$$(a)^m (a)^n =$$

$$\frac{a^m}{a^n} =$$

$$(a^m)^n =$$

$$(ab)^n =$$

$$\left(\frac{a}{b}\right)^n =$$

## Practice

1) Simplify:  $3x^2y^2(-2x^3y)$

2) Simplify (Final answers will have **positive exponents** only)

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

3) Simplify (Final answers will have **positive exponents** only):

$$10x^2y^{-2}(-2x^3y^{-4})$$

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**EXPONENTS PRACTICE**

Try the following without a calculator

1.  $3 \cdot 4^3$

2.  $4x^3 \cdot 2x^3$

3.  $x^5 \cdot x^3$

4.  $2x^3 \cdot 2x^2$

5.  $\frac{6^5}{6^3}$

6.  $\frac{x^4}{x^7}$

7.  $8^0$

8.  $-(9x)^0$

9.  $(y^4)^3$

10.  $(x^2y)^4$

19.  $y^{-7}$

20.  $7^{-2}$

21.  $\frac{1}{x^{-5}}$

22.  $\frac{1}{2^{-4}}$

23.  $x^5 \cdot x^{-1}$

24.  $x^{-6}$

25.  $x^9 \cdot x^{-7}$

26.  $(j^{-13})(j^4)(j^6)$

**Homework: p. 99 #40, 41, 42, 44, 45, 49**  
**p. 717-718 #18, 29, 41, 53, 57**