

# Test Outline

## Unit 2: Powers and the Exponent Laws

### Powers

- Base
- Exponent
- Repeated Multiplication
- The Zero Exponent
- Powers of ten
- Expanded form to Standard form and vice versa

$$9^2 = 9 \times 9$$



Page 86  
Study Guide

### Order of Operations

BEDMAS

### Exponent Laws

- Product of Powers
- Quotient of Powers
- Power of a Power
- Power of a Product
- Power of a Quotient

## Exponent Laws

1) Zero Rule  $(-1)^0 = 1$

$$1^0 = 1 \quad -1^0 = -1$$

$$-(-1)^0 = -1 \quad (6535)^0 = 1$$

2) Product of Powers Rule

$$2^3 \times 2^4 = 2^{(3+4)} = 2^7$$

3) Quotient Rule

$$\frac{2^4}{2^3} = 2^{(4-3)} = 2^1$$

4) Power to a Power Rule

$$(2^3)^4 = 2^{(3 \times 4)} = 2^{12}$$

5) Power of Product Rule

$$(2^3 \times 3^2)^2 = 2^{(3 \times 2)} \times 3^{(2 \times 2)}$$

$$2^6 \times 3^4$$

6) Power of Quotient Rule

$$\left(\frac{2^4}{3^2}\right)^2 = \frac{2^{(4 \times 2)}}{3^{(2 \times 2)}} = \frac{2^8}{3^4}$$



# Unit 2 Test Review



1)

Write the BASE and the EXPONENT of these powers:

a)  $3^5$

Base: 3  
Exponent: 5

b)  $(-2)^8$

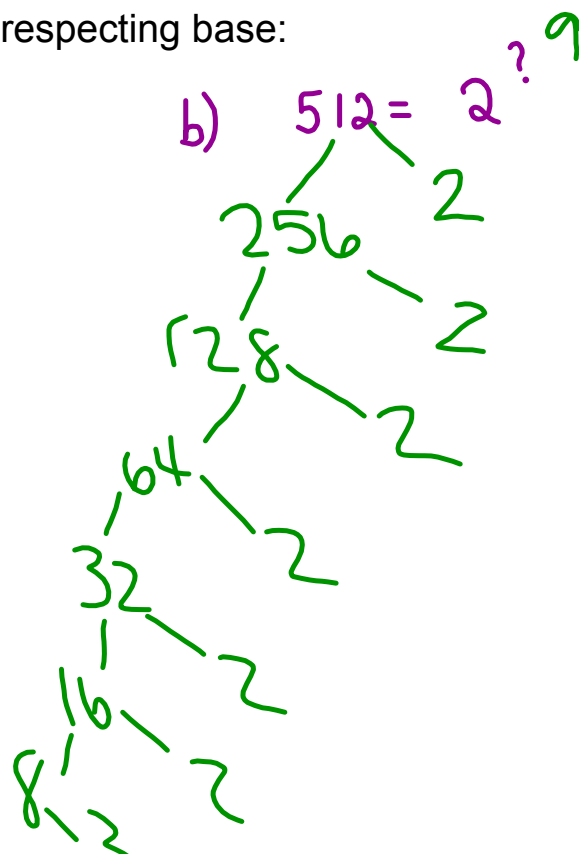
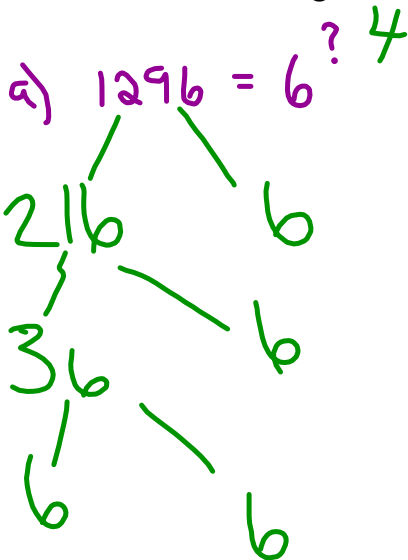
Base: -2  
Exponent: 8

c)  $-6^7$

Base: 6  
Exponent: 7

2)

Write the following as the respecting base:



3) Write the following in standard form

$$(6 \times 10^4) + (7 \times 10^2) + (9 \times 10^5) + (4 \times 10^0)$$

60000 + 700 + 900000 + 4

960704

4) Write the following numbers using powers of 10

$$530281$$

$$(5 \times 10^5) + (3 \times 10^4) + (2 \times 10^2) +$$

$$(8 \times 10^1) + (1 \times 10^0)$$

5) Simplify then evaluate

$$\begin{aligned} \text{a) } & [- (3^2)^5] \\ & - (3)^{10} \\ & - 59049 \end{aligned}$$

$$\begin{aligned} \text{b) } & 5^7 \div 5^3 - 2^4 \times 2^3 \\ & 5^4 - 2^7 \\ & 625 - 128 \\ & 497 \end{aligned}$$

$$\begin{aligned} \text{c) } & (-3)^1 \times (-3)^2 + (-3)^5 \div (-3)^0 \\ & (-3)^3 + (-3)^5 \\ & -27 + -243 \\ & -270 \end{aligned}$$

$$d) \left[ \frac{(-2)^7 \times (-2)^8}{(-2)^6 \times (-2)^5} \right]^2 \quad \left[ \frac{(-2)^{13}}{(-2)^{11}} \right]^2$$

$$\left. \frac{(-2)^{30}}{(-2)^{22}} \right\} - (-2)^8 = 256$$

# Simplify

$$\frac{(7^2)^3 \times (5^3)^4 \times (7^5)^3 \times (5^4)^3}{(5^4)^2 \times (7^3)^2 \times (5^2)^4 \times (7^2)^2}$$

$$\frac{7^6 \times 5^{12} \times 7^{15} \times 5^{12}}{5^8 \times 7^6 \times 5^8 \times 7^{12}}$$

$$\frac{7^6 \times 5^{12} \times 7^{15} \times 5^{12}}{5^8 \times 7^6 \times 5^8 \times 7^{12}}$$

$$\frac{7^{21} \times 5^{24}}{7^6 \times 5^8}$$

$$7^{18} \times 5^{16}$$

$$7^3 \times 5^8$$

show your work

$$\frac{[3 \times 5]^2 - 7^2 + 3 \times 8 \div 2}{-(20)^0 - 1}$$

$$\frac{(15)^2 - 7^2 + 3 \times 8 \div 2}{-(20)^0 - 1}$$

$$\frac{225 - 49 + 12}{-(1) - 1}$$
$$\div 2$$
$$= -94$$



## Extra Practice Review W.S.

Test Thursday