Curriculum Outcome

(N1) Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by: representing repeated multiplication using powers; using patterns to show that a power with an exponent of zero is equal to one; solving problems involving powers.

(N2) Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents.

Student Friendly:
“What does an exponent do to a number"

Warm Up
Grade 9

Write the following as a repeated multiple and evaluate

1) $(-5)^4$

$(-5)(-5)(-5)(-5)$

$= 625$

exponent: 4
Base (-5)

2) -2^5

$-(2)(2)(2)(2)(2)$

$= -32$

exponent: 5
Base 2

3) $-(7)^3$

$-(7)(7)(7)$

$= -343$

exponent: 3
Base 7

Write as a power then evaluate

1) $(5)(5)(5)(5)(5)(5)$

$= (5)^6$

$= 15625$

2) $-(-2)(-2)(-3)(-3)(-3)$

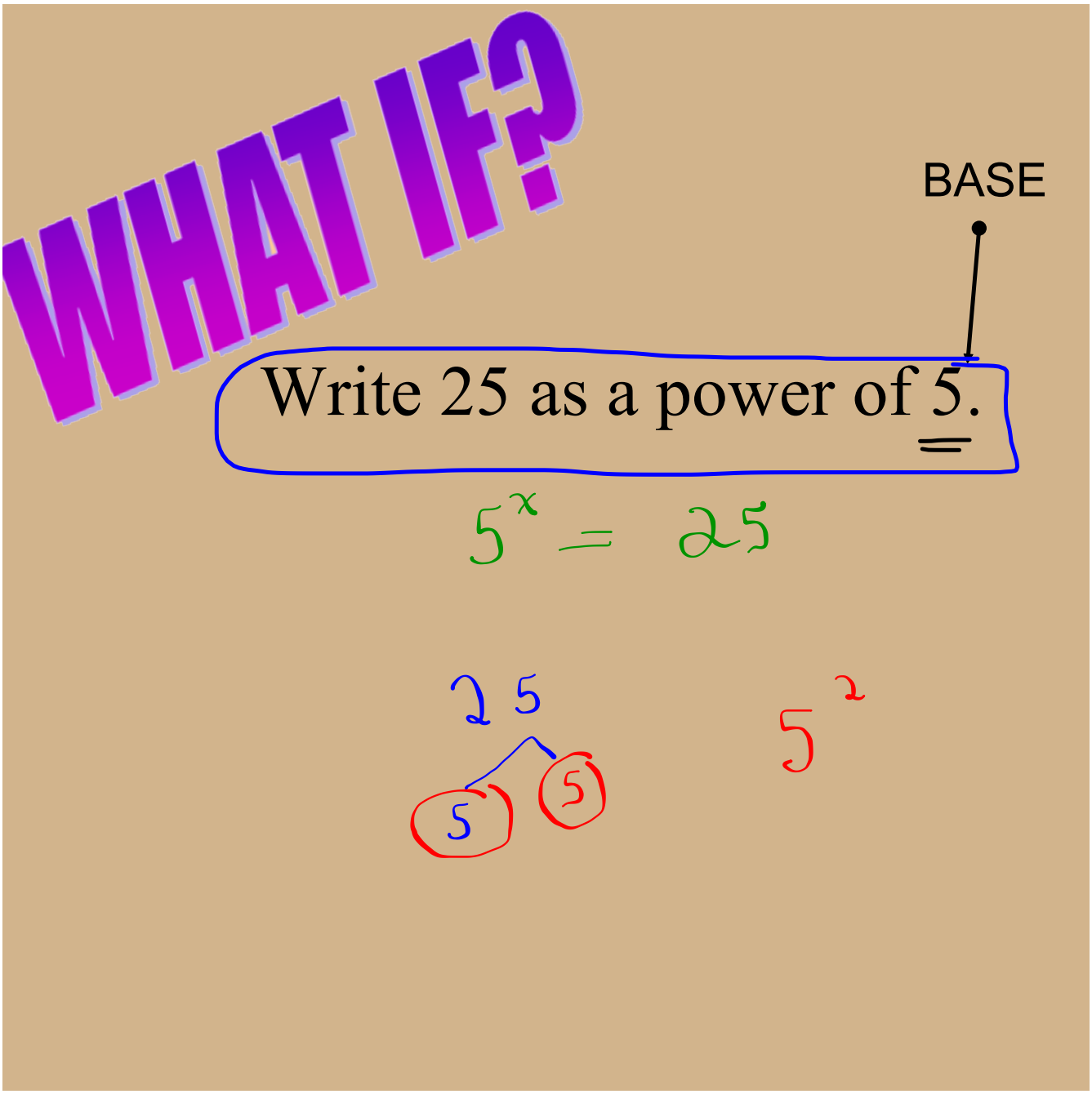
$= -(-2)^2(-3)^3$

$= -(4)(-27)$

$= 108$

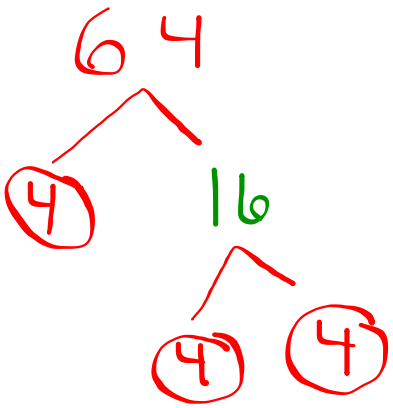
$-(x)(x)(x)(y)(y)(y)(y)(y)$

$-(x)^3(y)^5$


WHAT IF?
BASE
Write 25 as a power of 5.
$5^x = 25$
25
5 5
5^2

$4^x = 64$

Write 64 as a power of 4

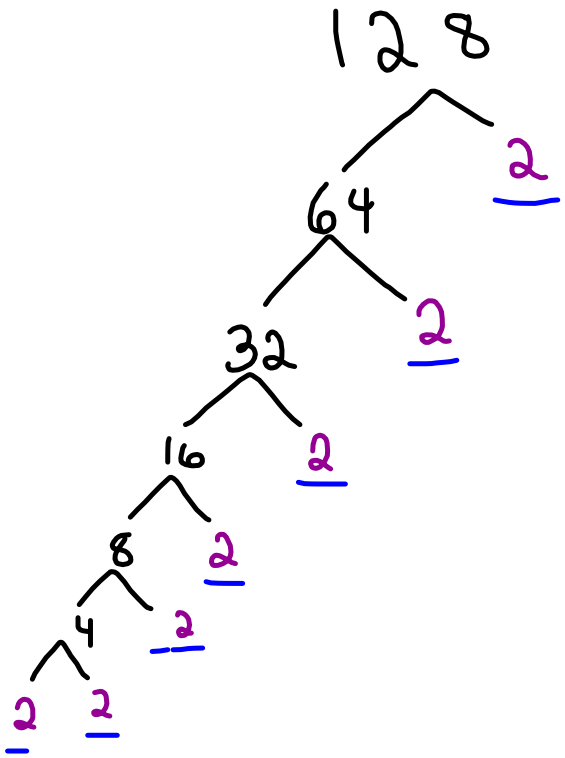


$4^3 = 64$

a) 4^1 b) 4^3 c) 4^4 d) 4^{-3}

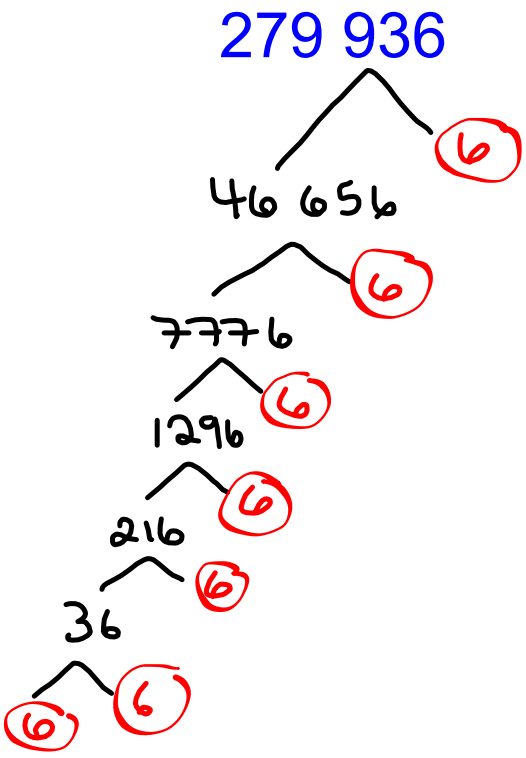
128

$2^x = 128$



$2^7 = 128$

Write 279 936 as a power of 6



6^7

Write 16 as a power: B^x

$4^2 = 16$

$2^4 = 16$

$(-4)^2 = 16$

$(-2)^4 = 16$

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15,16,17ac,18,20de,21a

Worksheet
All questions

Name _____ Date _____

Master 2.17

Extra Practice 1

Lesson 2.1: What Is a Power?

1. Identify the base of each power.
a) 6^3 **b)** 2^7 **c)** $(-5)^4$ **d)** -7^0

2. Use repeated multiplication to show why 3^5 is not the same as 5^3.

3. Complete this table.

Power	Base	Exponent	Repeated Multiplication	Standard Form
4^4				
$(-10)^3$				
	-6	2		
			$1 \times 1 \times 1 \times 1 \times 1$	

4. Write each product as a power, then evaluate.
a) 6×6 **b)** $3 \times 3 \times 3 \times 3 \times 3 \times 3$
c) $10 \times 10 \times 10 \times 10$ **d)** $-(8 \times 8 \times 8)$
e) $(-8)(-8)(-8)$ **f)** $-(-8)(-8)(-8)$

5. Write each power as repeated multiplication, then evaluate.
a) 7^5 **b)** 4^6 **c)** -9^3 **d)** $(-5)^5$

6. Evaluate each power. For each power:
- Are the brackets needed?
- If your answer is yes, what purpose do the brackets serve?

a) $(-6)^5$ **b)** $-(6)^5$ **c)** $-(-6)^5$ **d)** (-6^5)

7. Predict whether each answer is positive or negative, then evaluate.
a) $(-3)^2$ **b)** $(-3)^3$ **c)** -3^2 **d)** $-(-3)^3$

8. Is the value of -2^4 different from the value of $(-2)^4$? Explain.

9. Stamps are sold in a 10 by 10 sheet. The total value of a sheet of stamps is $60.00.
a) Express the number of stamps as a power and in standard form.
b) Use grid paper. Draw a picture to represent this power.
c) What is the value of one stamp?