Warm Up
Grade 9

Write the following as a repeated multiple and evaluate

1) $-(-7)^5$ 2) (-3^5) 3) -2^6 4) $-(-4)^2(6)^3$

Write as a power then evaluate

1) $(-4)(-4)(4)(4)(-5)(-5)$ 2) $-(3)(3)(-7)(-7)(-7)$

Warm Up
Grade 9

Write the following as a repeated multiple and evaluate

1) $-(-7)^5$

$-(-16807)$

16807

2) (-3^5)

-243

3) -2^6

-64

4) $-(-4)^2(6)^3$

$-(16)(216)$

-3456

Write as a [illegible] and eva[illegible]

1) $(-4)(-4)(4)(4)(-5)(-5)$

$(-4)^2(4)^2(-5)^2$

$(16)(16)(25)$

6400

2) $-(3)(3)(-7)(-7)(-7)$

$-(3)^2(-7)^3$

$-(9)(-343)$

$-(-3087)$

3087

Me again... Try these!

Page 56
#17ac,18,19,20,21,23

Worksheet (on next slide)

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?

10^{21} 10^{3} 10^{5}

Section 2.2

35^{0} 10^{0} 700^{0}

Powers of Ten and the Zero Exponent

Avogadro's number = 6.0221415×10^{23}

The speed of light = $2.99\ 792\ 458 \times 10^{8}$ m / s

Temperature of the Sun's Core = 1.5 x 10^{7}°C

since 15000000 kelvin = 14999726.85 degree Celsius

Light years= 4.96×10^{12} km

Distance related to Powers of 10
http://vimeo.com/819138

Any number (except 0) with an exponent 0 will equal 1

$2^0 = 1$

$13^0 = 1$

$199^0 = 1$

$(-6)^0 = 1$

Why???

Zero Exponent LAW

A power with a base not equal to zero, and an exponent of 0 is equal to 1

Any number raised to the power of ZERO is equal to 1

$$x^0 = 1$$

4 2 6

Powers of 10

page 59

Number in Words	Standard Form	Power
One billion	1 000 000 000	10^9
One hundred million	100 000 000	10^8
Ten million	10 000 000	10^7
One million	1 000 000	10^6
One hundred thousand	100 000	10^5
Ten thousand	10 000	10^4
One thousand	1 000	10^3
One hundred	100	10^2
Ten	10	10^1
One	1	10^0

*Image taken from "Math Makes Sense 9 page 59, copyright to pearson education Canada

Writing Numbers Using Powers of Ten

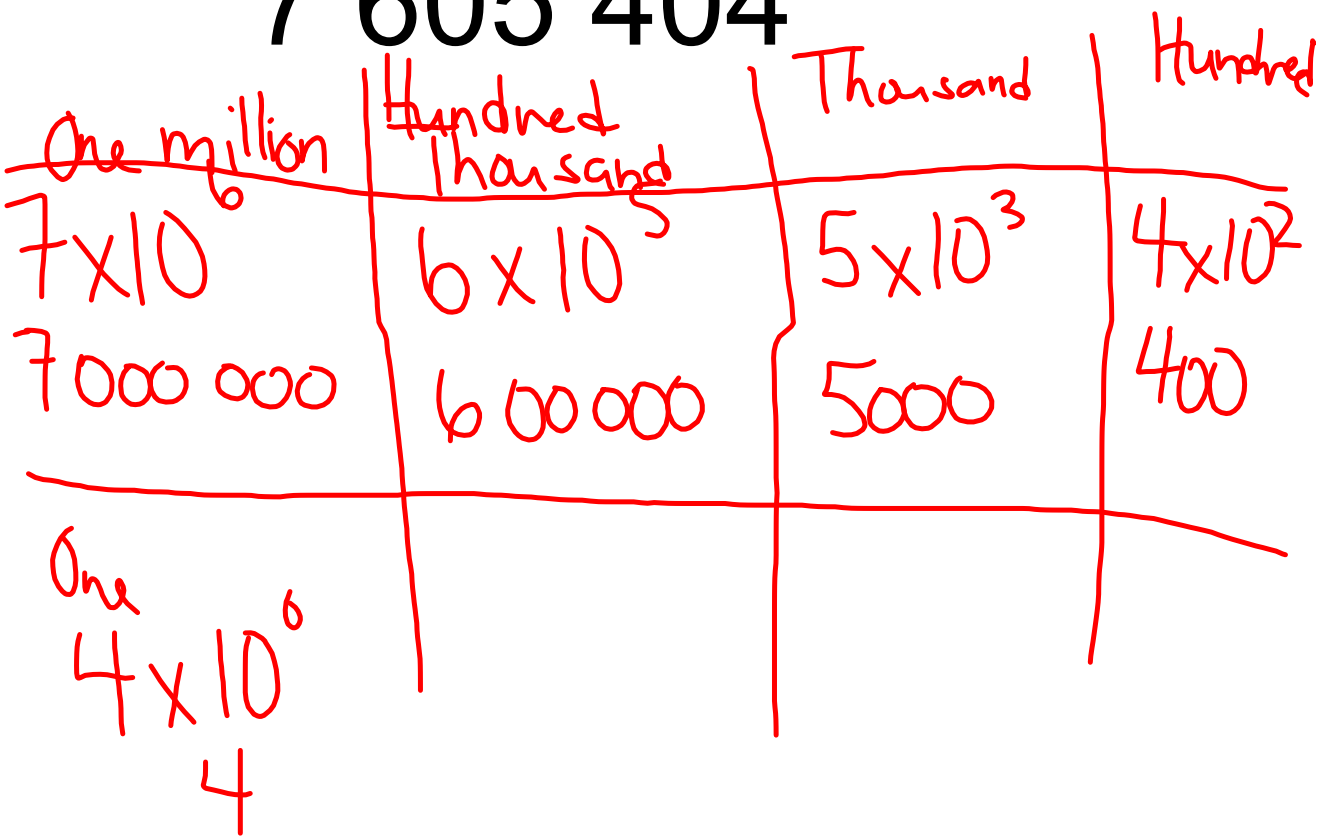
Write 96 .713 as a power of 10

Ten Thousands	Thousands	Hundreds	Tens	Ones

$(9 \times 10^4) + (6 \times 10^3) + (7 \times 10^2) + (1 \times 10^1) + (3 \times 10^0)$

$90000 + 6000 + 700 + 10 + 3$

7 605 404


One million
Hundred Thousand
Thousand
Hundred
7×10^6
6×10^5
5×10^3
4×10^2
7 000 000
600 000
5000
400
One
4×10^0
4

$(5 \times 10^4) + (3 \times 10^2) + (4 \times 10^0)$

$50000 + 300 + 4$

50304

PRACTICE TIME

Page 61- 62

4(a, b)
5(a, b, c, d)
#6(a, c, e)
#8(a, c, e)
#9(a, c, e)
#10 all
#11
#13

Multiple Choice

Test Corrections

1. C
2. B
3. B
4. $40.25 + 15.75 - 20.75$
   D
5. C
6. $-\frac{6}{8} - \frac{7}{8}$ A
7. $\frac{4}{9} \times -\frac{16}{1} = -\frac{8}{3}$
   A ~~9~~ 3

8. B
9. C
10. B
11. A
12. C
13. C
14. A
15. C
16. B
17. B

a) $P = -4\frac{1}{10}$

-4.1

$Q = -0.16$ -0.10

$R = -0.19$

2. $>$ a) -3.6000

$\rightarrow -3.666666$ $>$

b) $<$

c) $=$

3. $-2.1, -\frac{5}{6}, -\frac{1}{2}, 0.5, \frac{7}{5}, 1\frac{3}{4}$