What should be in each blank?

$4^3 =$	64
$4^2 =$	16
$4^1 =$	4
$4^0 =$	1

$\longrightarrow$

$4^3 =$	64
$4^2 =$	16
$4^1 =$	4
$4^? =$	?
$4^0 =$	1

$\longrightarrow$

$4^3 =$	64
$4^2 =$	16
$4^1 =$	4
$4^{\frac{1}{2}} =$	2
$4^0 =$	1

Using a graphing calculator do the following:

1. Enter the following into Y_1: $Y_1 = x\text{^}(1/2)$

2. Press 2ND WINDOW set it up so that you see the following:
   TblStart = 0
   $\triangle$Tbl = 1
   Indpnt: **Auto** Ask
   Depend: **Auto** Ask

3. Press 2ND GRAPH to get to the table.

4. Scroll up and down. Notice when Y_1 is an integer value.

Raising a number to the $\frac{1}{2}$ power is the same as doing what?

anything to the half power is the same as taking the square root of the base.

Why does the calculator give an ERROR message when x is negative?

Because the square root of a negative number is imaginary and the calculator is set to give only real number answers.

X	Y1
-1	ERROR
0	0
1	1
2	1.414
3	1.732
4	2
5	2.236
6	2.45
7	2.646
8	2.828
9	3
:	:
16	4
:	:
25	5

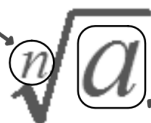$$a^{\frac{1}{n}} = \sqrt[n]{a}$$ "the nth root of a"

This symbol is called a radical it indicates finding a root.

The number in this spot is called the Index.

It tells what root you are to find.

If there is no index it means Square Root.

$\sqrt[n]{a}$

This quantity is called the Radicand

Rational Exponents represent radicals (roots)

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} \ \text{ or } \ \left(\sqrt[n]{a}\right)^m$$

Get a small white board, rag, and dry erase marker.

Write in radical form.   This is Radical Form: $\sqrt[8]{g^5}$

1. $W^{\frac{1}{5}}$

$\sqrt[5]{W}$ most common answer

or

$\sqrt[5]{W^1}$

or

$\left(\sqrt[5]{W}\right)^1$

2. $B^{-\frac{4}{3}}$

$\dfrac{1}{B^{4/3}}$ or $\left(\dfrac{1}{B}\right)^{4/3}$

$= \dfrac{1}{\sqrt[3]{B^4}}$ $= \sqrt[3]{\left(\dfrac{1}{B}\right)^4}$

or

$\dfrac{1}{\left(\sqrt[3]{B}\right)^4}$ $\left(\sqrt[3]{\dfrac{1}{B}}\right)^4$

3. $C^{\frac{2}{9}}$

$\sqrt[9]{C^2}$

or

$\left(\sqrt[9]{C}\right)^2$

4. $P^{2.8}$

$2.8 = \frac{28}{10} = \frac{14}{5}$

$= P^{14/5}$

$= \sqrt[5]{P^{14}}$

or

$\left(\sqrt[5]{P}\right)^{14}$

Write in exponential form:

This is Exponential Form: $a^{\frac{6}{7}}$

a. $\sqrt[3]{G^5}$

$= G^{5/3}$

b. $\sqrt[6]{R}$

$= R^{\frac{1}{6}}$

c. $\sqrt{B^7}$

$= B^{7/2}$

Write in exponential form:

d. $5\sqrt[3]{G}$

$= \boxed{5G^{\frac{1}{3}}}$

e. $\sqrt[4]{3K}$

$= \boxed{(3K)^{\frac{1}{4}}}$

Write in exponential form:

f. $\sqrt[4]{(2a^3b^5)^8}$

$(2a^3b^5)^{8/4}$

$= (2a^3b^5)^2$

$= \boxed{4a^6b^{10}}$

g. $\sqrt[12]{m^3}$

$= m^{3/12}$

$= \boxed{m^{1/4}}$

You can now finish Hwk #1:   Sec 7-4

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Problems 11, 12, 14, 16, 17, 19, 20, 22, 24, 25

Due Tomorrow