Math 9 Section 1.4 – Defining Powers

Exponential Form: ___ x ___ x ___ x ___ = _____

The _____ tells us what number is being multiplied.

The _____ or _____ tells us how many times we multiply that number by itself.

Write in exponential form, then evaluate

2 x 2 x 2 =   7 x 7 x 7 x 7 x 7 =

Write in repeated factor form

$4^6 =$ $a^4 =$

NOTE: be careful with powers when negatives and brackets are involved. For example:

$(-2)^4 =$ $-2^4 =$ $-(-2)^4 =$

In general, if *a* is positive (a > 0), then:

$(-a)^{even}$ will be _____   AND $(-a)^{odd}$ will be _____

To complete 1.4 in the workbook, you will need to know two rules that we will prove later…

…except:

For example:

$7^1 =$ $(-7)^1 =$ $7^0 =$ $(-7)^0 =$

What happens when we make exponents bigger?

$2^1 =$ $\qquad$ $2^2 =$ $\qquad$ $2^3 =$ $\qquad$ $2^4 =$

$\left(\frac{1}{2}\right)^1 =$ $\qquad$ $\left(\frac{1}{2}\right)^2 =$ $\qquad$ $\left(\frac{1}{2}\right)^3 =$ $\qquad$ $\left(\frac{1}{2}\right)^4 =$

$\left(\frac{3}{2}\right)^1 =$ $\qquad$ $\left(\frac{3}{2}\right)^2 =$ $\qquad$ $\left(\frac{3}{2}\right)^3 =$ $\qquad$ $\left(\frac{3}{2}\right)^4 =$

$1^1 =$ $\qquad$ $1^2 =$ $\qquad$ $1^3 =$ $\qquad$ $1^4 =$

What did we notice?

When the base is _____, bigger powers give us bigger answers

When the base is _____, bigger powers give us smaller answers

When the base is _____, bigger powers give us the same answers

Use >, < or = to complete a true statement

$(4)^3$ ____ $(4)^5$ $\qquad$ $\left(\frac{3}{5}\right)^3$ ____ $\left(\frac{3}{5}\right)^4$ $\qquad$ $(-1)^8$ ____ $(-1)^{11}$

$\left(-\frac{5}{2}\right)^3$ ____ $\left(-\frac{5}{2}\right)^2$ $\qquad$ $\left(-\frac{2}{7}\right)^6$ ____ $-\left(\frac{2}{7}\right)^5$ $\qquad$ $\left(\frac{8}{9}\right)^0$ ____ $\left(-\frac{8}{9}\right)^0$

Be careful with negatives!
Remember, a negative number is always _____ than a positive number.