Section 3.2 – Work With Exponents

MPM1D

Part 1: Exponents Investigation

One day Sammy decided to try a new place for lunch. He went to a new restaurant called Barney's Burgers. He loved the food so much that when he got back to school he told two of his friends. Suppose that this trend continues and every day each new customer tells two new friends at school about Barney's Burgers. How many new customers will Barney get each day?

a) Complete the chart using your knowledge of exponents

Day	New Customers	Expanded Form	Power
1	2	2	2^1
2	4	2 x 2	2^2
3			
4			

b) Use this model to determine how many new customers Barney should expect on Day 7. Show your work.

c) Use this model to determine how many new customers Barney should expect on Day 14. Is this answer realistic? Why or why not?

d) Suppose that each new customer told three friends instead of two, and that this trend continued

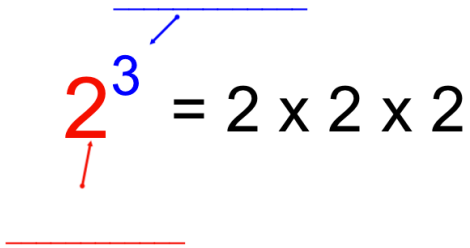
i) How many new customer should Barney expect after 2 days?

ii) How many new customer should Barney expect after 4 days?

Brain Teaser: A rectangular sheet of paper measures 25 cm by 9 cm. The dimensions of a square sheet of paper with the same area are...

Part 2: Exponents

Repeated multiplication of the same number by itself can be expressed as a power. The number is said to be in exponential form.



Express each of the following in exponential form:

1) 3×3

2) $5\times5\times5\times5$

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

4) $h \times h \times h$

Write each expression in expanded form and then evaluate:

5) 2^3

6) $(-3)^4$

7) -3^4

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

Note: $\left(\frac{a}{b}\right)^x = \frac{a^x}{b^x}$

Therefore:

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

Find the Trend

Evaluate each of the following:

$(-2)^2$ $(-2)^3$ $(-2)^4$ $(-2)^5$

If the base of the power is negative:

- and the exponent is an even # , the answer will be_____.

- and the exponent is an odd # , the answer will be_____.

Part 3: Substitute and Evaluate

Evaluate the expression for the given values of the variables:

9) $6x^2$ for $x = 5$

10) $6x^2 - 2x - 24$ for $x = -6$