Activator

What are the next numbers in the sequence?

800, 400, 200, __100__, __50__, __25__

Pattern? *Divide by 2*

6, 18, 54, __162__, __486__, __1458__

Pattern? Multiply *by* (3)

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Today's Objective

Students will be able to write exponential sequences and equations.

Announcements

Definition

The beginning number is multiplied by the common multiplier.

Facts

$$Y = B(C)^x$$

B = Beginning

C = Common Multiplier

Exponential Formula

Example(s)

$$Y = 6(3)^2$$

$$Y = 6(3)(3)$$

B = 6

C = 3

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6, 18, 54

B, B(3), B(3)(3)

How do you calculate the Common (C) Multiplier?

3, 6, 12, 24
$$\frac{a_2}{a_1} = \frac{12}{6} = 2$$

Multiply by 2

900, 300, 100, 33.3
$$\frac{a_2}{a_1} = \frac{100}{300} = \frac{1}{3}$$

Divide by 3

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Make a table
for this pattern.

$$Y = 3\,(2)^{x}$$

B = 3

C = 2

The Work

$3(2) = 6$

$3(2)(2) = 12$

$3(2)(2)(2) = 24$

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x	a(x)
0	3
1	6
2	12
3	24

(2)

(2)

(2)

Today's New Vocab (4 of 4)

Calculate the 8th number after the beginning.

$3, 6, 12,...$

$y = B\,(C)^x$

x	a(x)
0	3
1	6
2	12
8	768

B
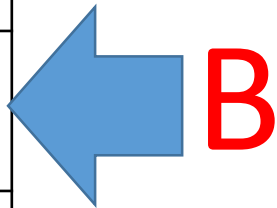
$C = \dfrac{a_2}{a_1} = \dfrac{12}{6} = 2$

$a_x = 3\,(2)^x$

$a_8 = 3\,(2)^8$

$a_8 = (3)(2)(2)(2)(2)(2)(2)(2)(2)$

$a_8 = 768$

Group Work Questions

Directions: All groups, please do all of the questions. Use your notes to help you. [Ask 2 people before you ask me.]

Stop at 9:26 or 10:56 or 12:50 or 2:15

Do a few questions on the study guide if you finish early.

*One person from each group will present one question.

Work Period

In a sequence, the beginning term is 2 and the common ratio is 3. What is the 7th term ?

x	a(x)
0	2
1	6
2	18
7	4374

The function

(3)

(3)

$$\frac{a_2}{a_1} = \frac{18}{6} = 3$$

$$y = B\,(C)^x$$

$$\Rightarrow \quad a_x = 2\,(3)^x$$

$$a_7 = 2\,(3)^7$$

$$a_7 = 4374$$

Exit Ticket

In the sequence, the a_2 term is 54 and the $a_1\ is$ 18. What is the beginning? The 5th term after the beginning? Write the equation.

$$\overline{}_{a_0}, \overline{}_{a_1}, \overline{}_{a_2}, \frac{162}{a_3}, \frac{486}{a_4}, \frac{1458}{a_5}$$

$$a_x = 6(3)^x$$

$$a_5 = 6(3)^5$$

$$a_5 = 6(3)(3)(3)(3)(3)$$

$$a_5 = 1458$$

$$\frac{a_2}{a_1} = \frac{54}{18} = 3$$