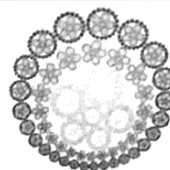


## Ready, Set, Go!



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## Ready

Topic: The Meaning of an Exponent

Write each expression using an exponent.

1.  $6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6$

$6^7$

2.  $4 \times 4 \times 4$

$4^3$

3.  $15 \times 15 \times 15 \times 15$

$15^4$

4.  $\frac{1}{3} \times \frac{1}{3}$

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

A) Write each expression in expanded form. B) Then calculate the value of the expression.

5.  $7^1$

A) 7

B) 7

6.  $3^2$

A)  $3 \times 3$

B) 9

7.  $5^3$

A)  $5 \times 5 \times 5$

B) 125

8.  $10^4$

A)  $10 \times 10 \times 10 \times 10$

B) 10,000

9.  $7(2)^3$

A)  $7 \times 2 \times 2$

B) 28

10.  $10(8^2)$

A)  $10 \times 8 \times 8$

B) 640

11.  $3(5)^4$

A)  $3 \times 5 \times 5 \times 5 \times 5$

B) 1875

12.  $16\left(\frac{1}{2}\right)^3$

A)  $16 \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$

B) 2

$$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$$

Topic: Looking for patterns of change

Complete each table by looking for the pattern.

13.

Term	1st	2nd	3rd	4th	5th	6th	7th	8th
Value	2	4	8	16	32	64	128	256

 $\checkmark \times 2$ 

multiplying by 2

14.

Term	1st	2nd	3rd	4th	5th	6th	7th	8th
Value	66	50	34	18	2	-14	-30	-46

 $\checkmark -16$ 

subtracting 16

15.

Term	1st	2nd	3rd	4th	5th	6th	7th	8th
Value	160	80	40	20	10	5	2.5	1.25

dividing by 2

$\checkmark \times \frac{1}{2}$     $\checkmark \times \frac{1}{2}$

16.

Term	1st	2nd	3rd	4th	5th	6th	7th	8th
Value	-9	-2	5	12	19	26	33	40

$\checkmark +7$     $\checkmark +7$    adding 7

**Set**

Topic: Using a constant rate of change to complete a table of values

**Fill in the table. Then write a sentence explaining how you figured out the values to put in each cell.**

17. You run a business making birdhouses. You spend \$600 to start your business, and it costs you \$5.00 to make each birdhouse.

# of birdhouses	1	2	3	4	5	6	7
Total cost to build	605	610	615	620	625	630	635

Explanation: It cost \$605 to make my first birdhouse (start up costs plus cost to build). I then add \$5 each birdhouse I build after.

18. You make a \$15 payment on your loan of \$500 at the end of each month.

# of months	1	2	3	4	5	6	7
Amount of money owed	485	470	455	440	425	410	395

Explanation: I owe the bank \$500. At the end of the first month my balance is \$485. I continue to subtract \$15 every month

19. You deposit \$10 in a savings account at the end of each week.

# of weeks	1	2	3	4	5	6	7
Amount of money saved	10	20	30	40	50	60	70

Explanation: I deposit \$10 the first week and continue to add \$10 every week.

20. You are saving for a bike and can save \$10 per week. You have \$25 when you begin saving.

# of weeks	1	2	3	4	5	6	7
Amount of money saved	35	45	55	65	75	85	95

Explanation: I start with \$25<sup>00</sup> and add \$10 after every week.

Go

Topic: Using function notation

Recall that an expression such as  $f(2) = 11$  is saying that when the input number is 2, the output number is 11. The expression  $f(n)$  is called function notation. In an equation such as  $y = 5x + 1$ , when the variable  $x$  is replaced with the number 2 (input value), the value of  $y$  becomes 11 (output value) because  $5(2) + 1 = 11$ . Instead of using  $x$  and  $y$  in an equation, mathematicians often write  $f(n) = 5n + 1$  because it can give more information. With this notation, the direction to find  $f(2)$ , means to replace the value of  $n$  with 2 and work the problem. The numbers 2 and 11 also represent the point  $(2, 11)$  or  $(x, y)$  in the  $x$ - $y$  plane, while the point  $(2, 11)$  or  $(n, f(n))$  is a point in the same location where  $n$  describes the location along the  $x$ -axis, and  $f(n)$  is the height of the graph.

Given that  $f(n) = 8n - 3$  and  $g(n) = 3n - 10$ , find the following function values.

$$\begin{aligned} 21. f(5) &= \\ f(5) &= 8(5) - 3 \\ &= 40 - 3 \\ &= 37 \end{aligned}$$

$$\begin{aligned} 22. g(5) &= \\ g(5) &= 3(5) - 10 \\ &= 15 - 10 \\ &= 5 \end{aligned}$$

$$\begin{aligned} 23. f(-4) &= \\ f(-4) &= 8(-4) - 3 \\ &= -32 - 3 \\ &= -35 \end{aligned}$$

$$\begin{aligned} 24. g(-4) &= \\ g(-4) &= 3(-4) - 10 \\ &= -12 - 10 \\ &= -22 \end{aligned}$$

$$\begin{aligned} 24. f(0) &= \\ f(0) &= 8(0) - 3 \\ &= 0 - 3 \\ &= -3 \end{aligned}$$

$$\begin{aligned} 25. g(0) &= \\ g(0) &= 3(0) - 10 \\ &= 0 - 10 \\ &= -10 \end{aligned}$$

$$\begin{aligned} 26. f(1) &= \\ f(1) &= 8(1) - 3 \\ &= 8 - 3 \\ &= 5 \end{aligned}$$

$$\begin{aligned} 27. g(1) &= \\ g(1) &= 3(1) - 10 \\ &= 3 - 10 \\ &= -7 \end{aligned}$$