Ready, Set, Go!

Ready

Topic: Simplifying Radicals

A very common radical expression is a square root.

One way to think of a square root is the number that will multiply by itself to create a desired value. For example: $\sqrt{2}$ is the number that will multiply by itself to equal 2. And in like manner $\sqrt{16}$ is the number that will multiply by itself to equal 16, in this case the value is 4 because 4 x 4 = 16. (When the square root of a square number is taken you get a nice whole number value. Otherwise an irrational number is produced.)

This same pattern holds true for other radicals such as cube roots and fourth roots and so forth. For example: $\sqrt[3]{8}$ is the number that will multiply by itself three times to equal 8. In this case it is equal to the value of 2 because $2^3 = 2$ x 2 x 2 = 8.

With this in mind radicals can be simplified. See the examples below.

Example 1: Simplify $\sqrt{20}$

$$\sqrt{20} = \sqrt{4 \cdot 5} = \sqrt{2 \cdot 2 \cdot 5} = 2\sqrt{5}$$

Example 2: Simplify $\sqrt[5]{96}$

$$\sqrt[5]{96} = \sqrt[5]{2^5 \cdot 3} = 2\sqrt[5]{3}$$

Simplify each of the radicals.

1.
$$\sqrt{40}$$

2.
$$\sqrt{50}$$

3.
$$\sqrt[3]{16}$$

4.
$$\sqrt{72}$$

5.
$$\sqrt[4]{81}$$

6.
$$\sqrt{32}$$

7.
$$\sqrt[5]{160}$$

8.
$$\sqrt{45}$$

9.
$$\sqrt[3]{54}$$

Set

Topic: Finding arithmetic and geometric means and making meaning of rational exponents.

You may have found arithmetic and geometric means in your prior work. Finding arithmetic and geometric means requires finding values of a sequence between given values from non-consecutive terms. In each of the sequences below determine the means and show how you found them.

Find the *arithmetic* means for the following, show your work.

10.

x	1	2	3
y	5		11

11.

x	1	2	3	4	5
y	18				-10

12.

x	1	2	3	4	5	6	7
y	12						-6

Find the *geometric* means for the following, show your work.

13.

x	1	2	3
y	3		12

14.

x	1	2	3	4
y	7			875

15.

x	1	2	3	4	5	6
y	4					972

16.
Fill in the table of values and find the factor used to move between whole number values, F_w, as well as the factor, F_c, used to move between each column of the table.

x	0	½	1	³⁄₂	2
y	4		16		

$F_w =$
$F_c =$

17.
Fill in the table of values and find the factor used to move between whole number values, F_w, as well as the factor, F_c, used to move between each column of the table.

x	0	½	1	³⁄₂	2
y	4		8		

$F_w =$
$F_c =$

18.
Fill in the table of values and find the factor used to move between whole number values, F_w, as well as the factor, F_c, used to move between each column of the table.

x	0	½	1	³⁄₂	2
y	5		15		

$F_w =$
$F_c =$

Go

Topic: Evaluating functions

Find the desired values for each function below.

19.
$f(x) = 2x-7$

   a. Find $f(-3)$

   b. Find $f(x)=21$

   c. Find $f\left(\frac{1}{2}\right)$

20.
$g(x) = 3^x(2)$

   a. Find $g(-4)$

   b. Find $g(x)=162$

   c. Find $g\left(\frac{1}{2}\right)$

21.
$I(t) = 210(1.08^t)$

   a. Find $I(12)$

   b. Find $I(x)=420$

   c. Find $I\left(\frac{1}{2}\right)$

22.
$h(x) = x^2 + x - 6$

   a. Find $h(-5)$

   b. Find $h(x)=0$

   c. Find $h\left(\frac{1}{2}\right)$

23.
$k(x) = -5x + 9$

   a. Find $k(-7)$

   b. Find $k(x)=0$

   c. Find $k\left(\frac{1}{2}\right)$

24.
$m(x) = (5^x)2$

   a. Find $m(-2)$

   b. Find $m(x)=1$

   c. Find $m\left(\frac{1}{2}\right)$