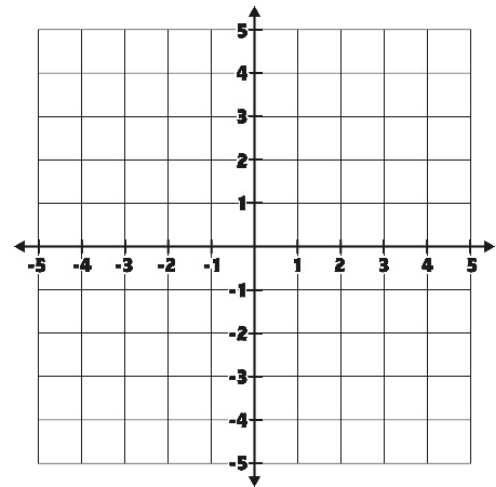


# BELL RINGER

1.) Simplify  $\sqrt{200}$

2.) Simplify  $\frac{5^6}{5^8}$ . Write your answer using only positive exponents.

3.) Graph  $y = 2x^2 - 2$



# Nth Roots and Rational Exponents

- **Objective:** Students will be able to find the  $n$ th root of numbers. Students will be able to evaluate expressions with rational exponents.
- **“I Can” Statement:** I can find the  $n$ th root of numbers. I can evaluate expressions with rational exponents.
- **HSN-RN.A.1:** Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.
- **HSN-RN.A.2:** Rewrite expressions involving radicals and rational exponents using the properties of exponents.

HSN-RN.A.1,  
HSN-RN.A.2

Evaluate each root using a calculator. Round your answer to the nearest hundredth if needed.

$$\sqrt{81} = \underline{\hspace{2cm}}$$

$$\sqrt[3]{49} = \underline{\hspace{2cm}}$$

$$\sqrt[4]{64} = \underline{\hspace{2cm}}$$

$$\sqrt[3]{81} = \underline{\hspace{2cm}}$$

$$\sqrt{49} = \underline{\hspace{2cm}}$$

$$\sqrt[3]{64} = \underline{\hspace{2cm}}$$

$$(\sqrt{9})^3 = \underline{\hspace{2cm}}$$

$$(\sqrt[5]{100})^2 = \underline{\hspace{2cm}}$$

$$(\sqrt[3]{50})^2 = \underline{\hspace{2cm}}$$

Use a calculator to evaluate each rational exponents. Round your answer to the nearest hundredth if needed.

$$81^{1/2} = \underline{\hspace{2cm}}$$

$$49^{1/3} = \underline{\hspace{2cm}}$$

$$64^{1/4} = \underline{\hspace{2cm}}$$

$$81^{1/3} = \underline{\hspace{2cm}}$$

$$49^{1/2} = \underline{\hspace{2cm}}$$

$$64^{1/3} = \underline{\hspace{2cm}}$$

$$9^{3/2} = \underline{\hspace{2cm}}$$

$$100^{2/5} = \underline{\hspace{2cm}}$$

$$50^{2/3} = \underline{\hspace{2cm}}$$

What do you notice about roots and rational exponents from the examples above?

Note sheet!

Definition of a Rational Exponent: Fractional exponents are occasionally used to represent power of numbers or variables. The numerator is the \_\_\_\_\_ and the denominator is the \_\_\_\_\_.

$$a^{m/n} =$$

Note sheet!

Write the expression  $9^{\frac{5}{2}}$  in radical form.

Note sheet!

Write the expression  $(\sqrt[3]{7})^2$  in exponential form.

Note sheet!

Evaluate the expression  $(\sqrt[3]{-27})^4$  without using a calculator.

Note sheet!

Evaluate the expression  $4^{-\frac{5}{2}}$  without using a calculator.



# Gallery Walk Problems

There are 10 problems posted around the room. Follow the directions on each problem.

# Gallery Walk Problem Answer Key

A.) 3

F.)  $\frac{1}{5^{\frac{1}{4}}}$

B.) -4

G.) 2.06

C.)  $(\sqrt[3]{5})^2$

H.) 15.59

D.)  $(\sqrt[4]{2})^3$

I.) 8

E.)  $5^{\frac{4}{3}}$

J.)  $-\frac{1}{3}$

## EXIT SLIP

Evaluate the expression  $9^{-\frac{1}{2}}$  without using a calculator.

On a scale from 1-5, 5 being the greatest, how well do you understand this standard?