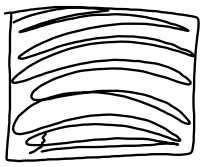
Sq. Root Notes

Why are they helpful?

- They help us find side lengths of squares

Example:



Area of square:

$l \times w$

$l \times l$ = area

$10 \times 10 = 100 ft^2$

$10 = \sqrt{100}$

Sep 11-12:26 PM

Example 2:

Area: $121 ft^2$

What is the side length?

$\sqrt{121}$

$\_ \times \_ = 2D = 11 ft$

$\_ \times \_ \times \_ = 3D$

Perfect Cubes

Why are these important?

- They help us find the side length.

$\sqrt[3]{x} = \_ \times \_ \times \_$

ex1: $\sqrt[3]{8} = 2 \cdot 2 \cdot 2 = 2^3$

ex2: $\sqrt[3]{64} = 4 \cdot 4 \cdot 4 = 4^3$

- The base represents the VOLUME

ex3:

Volume = $125 ft^3$

Side length?

$5 \cdot 5 = 25 \cdot 5 \; 125$

5ft

Sep 11-12:35 PM

Why are square roots important?

Reflect back on the DiscoveryEd lesson with crime scene grids.

What did square roots help us find? Why might that be useful?

Problem #1

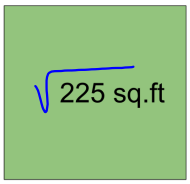
Jake is working on building a fence around his square backyard. He knows the area is 225 square feet. What is the length of ONE side of the fence?

$l \times w$

$l \times l$

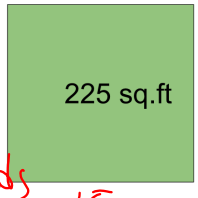
$\sqrt{l^2} = \sqrt{225}$

$l = 15$



Problem #2

Jake went to Home Depot and bought 50ft. of fencing. Does he have enough? How do you know?



No, b/c he needs 10 more ft.

Problem #3

A local artist has been assigned to a paint a mural in uptown Charlotte. The mural must fit in a 361 square foot area. What are the maximum dimensions the painter can use to paint the mural?

$15 \times 15 = 225$

$20 \times 20 = 400$

$17 \times 17 = 289$

$18 \times 18 = 324$

$19 \times 19 = 361$

Problem #4

If one can of paint covers 81 square feet, how many cans of paint will the artist need to complete his mural?

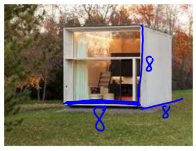
361

$81\overline{)361}$ 4.37

5

Problem #5

You're designing a tiny house in the shape of a cube. Your client wants the tiny home to be at most 625 cubic feet. What is the maximum dimensions the tiny house can be?



Volume of cube

$l \times w \times h$

$l \cdot l \cdot l$

$\sqrt[3]{l^3} = \sqrt[3]{625}$

$1 \cdot 1 = 1 \cdot 1$

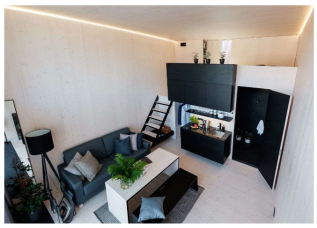
$2 \cdot 2 = 4 \cdot 2$

$8 \cdot 8 \cdot 8 = 8^3 = 512$

$9 \cdot 9 \cdot 9 = 729$

Problem #6

Using the dimensions from the previous problem, what would the area of one of the walls be?



$l \cdot w = l^2$

$8 \cdot 8 = 64$

Problem #7

An engineer at Sony has been given the task of designing a 3D jumbotron in the shape of cube. The Dodgers will be the first team to receive the new jumbotron. They are requesting that the screen be at least 274,625 cubic meters. What is the area of one of the sides of the jumbotron?