Warm-up:

Complete #13, 14, 17, 20
on handout from yesterday

3a) $\sqrt{12} = Q$

b) $\sqrt[4]{16} = Q$

c) $\sqrt[3]{-100} = Q$

10. a) $\sqrt[3]{70}$ $\sqrt{50}$ $\sqrt[4]{100}$ $\sqrt[3]{400}$

$\sqrt[3]{64}$ $\sqrt[3]{125}$ $\sqrt{49}$ $\sqrt{64}$ $\sqrt[4]{81}$ $\sqrt[4]{256}$ $\sqrt[3]{343}$ $\sqrt[3]{512}$

4 5 7 8 3 4 7 8

~ 4.1 ~ 7.1 ~ 3.3 ~ 7.4

$\sqrt[4]{100}, \sqrt[3]{70}, \sqrt{50}, \sqrt[3]{400}$

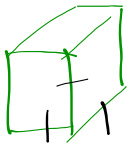
$c^2 = a^2 + b^2$

$= 5^2 + 3^2$

$= 25 + 9$

$c^2 = 34$

$c = \sqrt{34}$



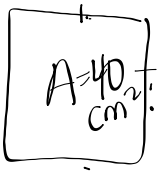
$S \cdot S \cdot S = V$

$\sqrt[3]{V} = S$

$\sqrt[3]{10}$ $\sqrt[3]{9}$ $\sqrt[3]{36}$

$\sqrt[3]{8}$ $\sqrt[3]{27}$

$\sqrt[3]{216}$



$S^2 = A$

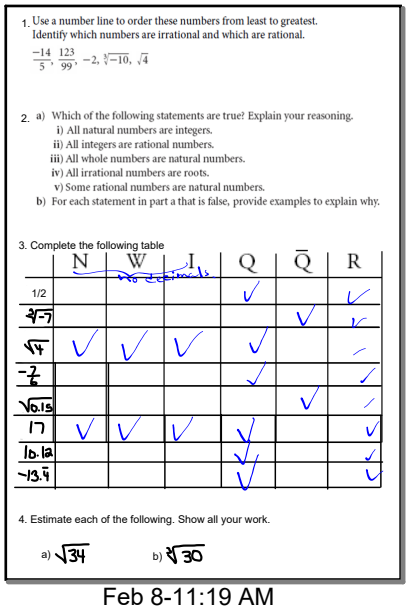
$\sqrt{A} = S$

$\sqrt{40} = S$

Last night sheet
#1 and 4

AND

3, 4, 10 on new sheet



1. Use a number line to order these numbers from least to greatest. Identify which numbers are irrational and which are rational.

$\frac{-14}{5}, \frac{123}{99}, -2, \sqrt[3]{-10}, \sqrt{4}$

2. a) Which of the following statements are true? Explain your reasoning.
   i) All natural numbers are integers.
   ii) All integers are rational numbers.
   iii) All whole numbers are natural numbers.
   iv) All irrational numbers are roots.
   v) Some rational numbers are natural numbers.
   b) For each statement in part a that is false, provide examples to explain why.

3. Complete the following table

	N	W	I	Q	$\bar{Q}$	R
1/2				✓		✓
$\sqrt{-7}$					✓	✓
$\sqrt{4}$	✓	✓	✓	✓		✓
$-\frac{7}{6}$				✓		✓
$\sqrt{0.15}$					✓	✓
17	✓	✓	✓	✓		✓
10.12				✓		✓
$-13.\overline{5}$				✓		✓

4. Estimate each of the following. Show all your work.

a) $\sqrt{34}$ b) $\sqrt[4]{30}$

Feb 8-11:19 AM

YOU TRY!

Order the following radicals from least to greatest.

$$\sqrt{2}, \sqrt[3]{-2}, \sqrt[3]{6}, \sqrt{11}, \sqrt[4]{30}$$

Feb 9-7:00 PM

So far...

powers

radicals

estimation

ordering

number systems

Quiz on this material tomorrow

chart / T or F

Feb 8-1:35 PM

4.3 Mixed and Entire Radicals

LESSON FOCUS Express an entire radical as a mixed radical, and vice versa.

Make Connections

We can name the fraction $\frac{3}{12}$ in many different ways:

$\frac{1}{4}$ $\frac{5}{20}$ $\frac{30}{120}$ $\frac{100}{400}$

How do you show that each fraction is equivalent to $\frac{3}{12}$?

Why is $\frac{1}{4}$ the simplest form of $\frac{3}{12}$?

Introduction

Reducing Radicals

Multiplication Property of Radicals

$\sqrt[n]{ab} = \sqrt[n]{a} \cdot \sqrt[n]{b}$,
where n is a natural number, and a and b are real numbers

Sep 11-8:24 PM

$$\sqrt[n]{ab} = \sqrt[n]{a} \cdot \sqrt[n]{b}$$

$\frac{75}{100}$

Radicals

Just as with fractions, Radicals expressions have equivalent expressions:

$\sqrt{16 \cdot 9}$ or $\sqrt{16 \cdot 9}$

Same works if we change the "index":

$\sqrt[3]{8 \cdot 27}$ or $\sqrt[3]{8 \cdot 27}$

Sep 11-8:22 PM

Ex:

$\sqrt{16 \cdot 9} = \sqrt{16} \cdot \sqrt{9}$

$= 4 \cdot 3$

$= 12$

$\sqrt{16 \cdot 9} = \sqrt{144}$

$= 12$

Radicals

Mixed Radical - has a coefficient in front of the radical sign.

ex: $3\sqrt{5}$ OR $\frac{2\sqrt{26}}{3}$ OR $-3\sqrt[3]{3}$

Entire Radical - has a coefficient of 1 or -1 in front of the radical sign. Everything is entirely under the radical sign

ex: $\sqrt{12}$ OR $-\sqrt{45}$

Sep 11-7:04 PM

$\sqrt{1 \cdot 125}$

Reducing Radicals

To reduce $\sqrt{125}$ you must find the largest square number that will divide into 125 evenly!

$\sqrt[n]{a \cdot b} = \sqrt[n]{a} \cdot \sqrt[n]{b}$

Greatest perfect n^{th}

Mar 16-12:12 AM

4
9
16
25
36
49
64
81
100
121

Use your life line to help you choose the proper square number.

$25 \times 5 = 125$

$\sqrt{125}$

$\sqrt{25 \bullet 5}$

one perfect square!

$\sqrt{25} \cdot \sqrt{5}$

$5\sqrt{5}$

13

4
9
16
25
36
49
64
81
100
121

Try these:

a) $\sqrt{12}$

$\sqrt{4 \cdot 3}$

$\sqrt{4} \cdot \sqrt{3}$

$2\sqrt{3}$

b) $\sqrt{72}$

$\sqrt{36 \cdot 2}$

$\sqrt{36} \cdot \sqrt{2}$

$6\sqrt{2}$

c) $\sqrt{54}$ $\frac{3}{2}$ $1\frac{1}{2}$

$\sqrt{9 \cdot 6}$

$\sqrt{9} \cdot \sqrt{6}$

$3\sqrt{6}$

d) $\sqrt{81}$

9

e) $7\sqrt{128}$

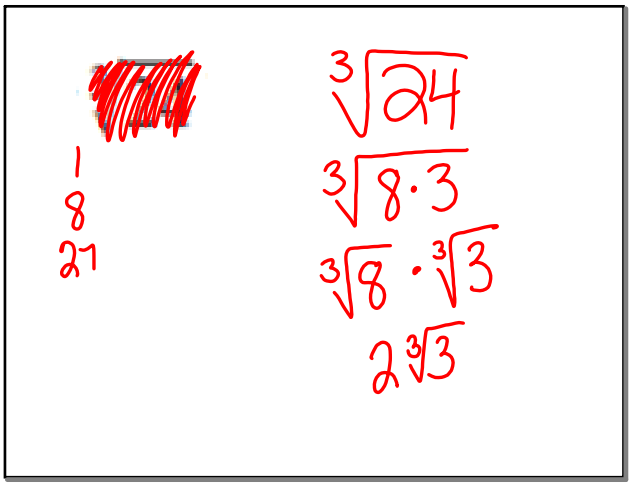
$7\sqrt{64 \cdot 2}$

$7\sqrt{64} \cdot \sqrt{2}$

$7(8)\sqrt{2}$

$56\sqrt{2}$

14



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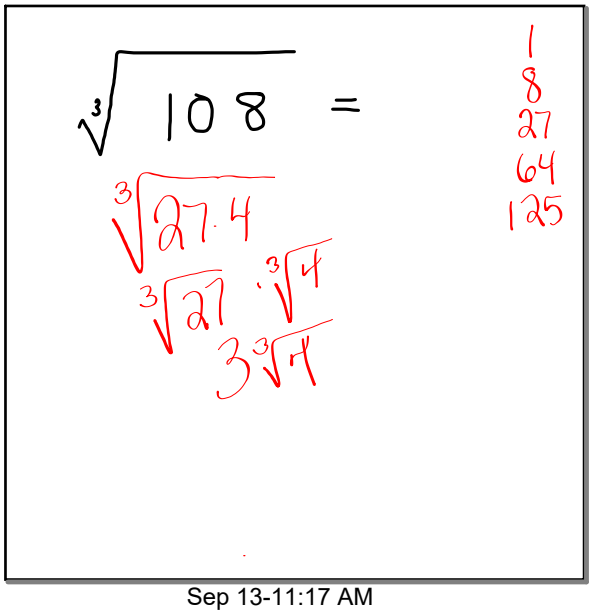

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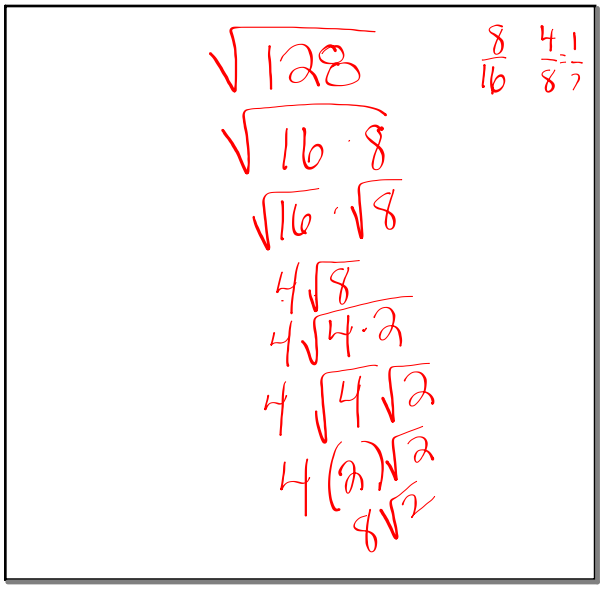

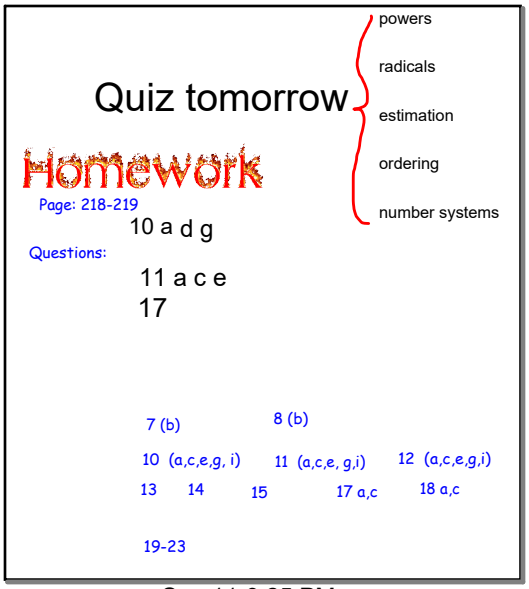

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Feb 10-7:49 AM