

Digits Lesson 1-3/1-4

9/4/2019

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Goal: I will be able to **estimate, compare, and order rational and irrational numbers.**

Tool Bag
Formulas, equations
Vocabulary, etc

Here's How... Notes & Examples

$$\sqrt{36} = \sqrt{6 \cdot 6} = \sqrt{6^2} = 6$$

$$\sqrt{144} = 12$$

$$\sqrt{18} = ?$$

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Estimating Irrationals

$$\sqrt{18} = ?$$

- 1) Look at the 2 closest perfect squares
 $16 < 18 < 25$
- 2) Take the square root
 $\sqrt{16} < \sqrt{18} < \sqrt{25}$
- 3) Simplify
 $4 < \sqrt{18} < 5$

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- 4) Get closer; guess
Look at the distance the number is from the perfect squares
 $16 < 18 < 25$
- 5) Guess 4.2 because 18 is close to 16
- 6) Check

$$\begin{array}{r} 4.2 \\ 4.2 \\ \hline 8.4 \\ 16.80 \\ \hline 17.64 \end{array}$$

$$\sqrt{18} \approx 4.2$$

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You Try

- a) $\sqrt{60}$
 $49 < 60 < 64$
 $7.7 < 60 < 8.8$
 $7^2 < 60 < 8^2$
 $\sqrt{49} < \sqrt{60} < \sqrt{64}$
 $7 < \sqrt{60} < 8$
 Guess 7.8
 Check $7.8^2 = 60.84$
 $\sqrt{60} \approx 7.8$
- b) $\sqrt{98}$
 $81 < 98 < 100$
 $\sqrt{81} < \sqrt{98} < \sqrt{100}$
 $9 < \sqrt{98} < 10$
 guess 9.9
 check $9.9^2 = 98.01$
 $\sqrt{98} \approx 9.9$

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Comparing Irrationals

- 1) Estimate them
- 2) Then compare $>, <, =$

Examples

- a) $\sqrt{84} > 9$
- b) $\sqrt{3} < 3$

Ordering Numbers

- 1) Estimate value
- 2) Compare (use a number line)
- 3) Put them in order

Example

3, $\sqrt{5}$, $\frac{1}{2}$, 6, $\sqrt{30}$
 A, B, C, D, E