

Name: KEY

Topic: 10.3 Finding and Estimating Square Roots

Date: _____ Block: _____

List as many perfect squares as possible (for example 25 is a perfect square):

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

121, 144, 169, 196, 225 → *must have through 15^2 memorized

Square Root: $\sqrt{\quad}$

a is a square root of b if $a^2 = b$

Radicand:

expression under the radical sign

Examples: (take sign in front)

1. $\sqrt{4}$

2

2. $-\sqrt{144}$

-12

3. $\pm\sqrt{196}$

± 14

4. $\sqrt{169}$

13

5. $-\sqrt{81}$

-9

6. $\sqrt{121}$

11

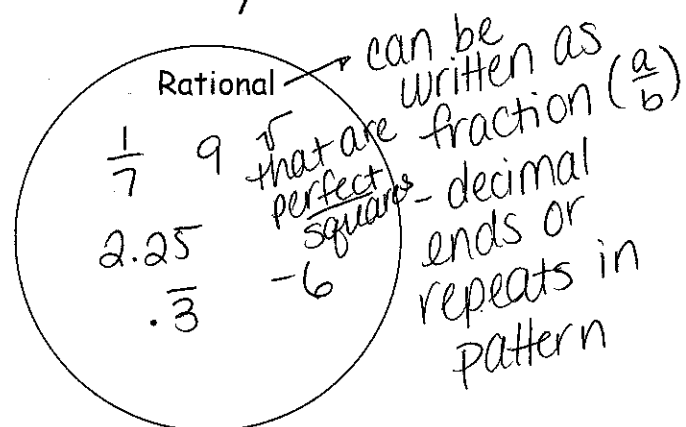
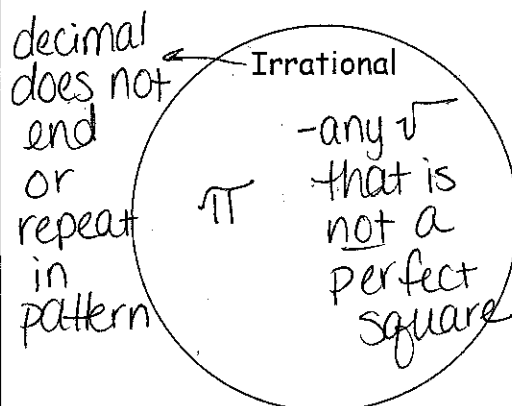
7. $\sqrt{\frac{9}{100}} = \frac{\sqrt{9}}{\sqrt{100}}$
 $\frac{3}{10}$

8. $\pm\sqrt{\frac{49}{25}} = \frac{\sqrt{49}}{\sqrt{25}}$
 $\pm \frac{7}{5}$

9. $\sqrt{\frac{144}{81}} = \frac{\sqrt{144}}{\sqrt{81}}$
 $\frac{12}{9} = \frac{4}{3}$

Irrational VS Rational:

Place the following numbers in the appropriate circle: $\frac{1}{7}$, 9, π , 2.25, $\bar{3}$, -6



Examples: Tell whether each expression is rational or irrational.

a) $\sqrt{25} = 5$
R

b) $\pm\sqrt{\frac{9}{25}} = \pm\frac{3}{5}$
R

c) $-\sqrt{64} = -8$
R

d) $\sqrt{\frac{1}{9}} = \frac{1}{3}$
R

e) $\sqrt{7}$
I

f) $-\sqrt{75}$
I

Examples: Between what two consecutive integers is each square root? Then use a calculator to find each square root to the nearest hundredth.

a) $\sqrt{28.34}$
between $\sqrt{25} + \sqrt{36}$
5 & 6

5.32 by calculator

b) $\sqrt{12.54}$
between $\sqrt{9} + \sqrt{16}$
3 & 4
3.54

c) $\sqrt{75.23}$ $\sqrt{64} + \sqrt{81}$
8 & 9
8.67

d) $\sqrt{50}$ $\sqrt{49} + \sqrt{64}$
7 & 8
7.07

Example: The formula $d = \sqrt{x^2 + (3x)^2}$ gives the length of the diagonal of a rectangular field that has a length three times its width x . Find the length of the diagonal if $x = 8$ feet.

$$8^2 + (3 \cdot 8)^2$$

$$64 + 576 = \sqrt{640}$$

$$\boxed{22.3 \text{ ft.}}$$

