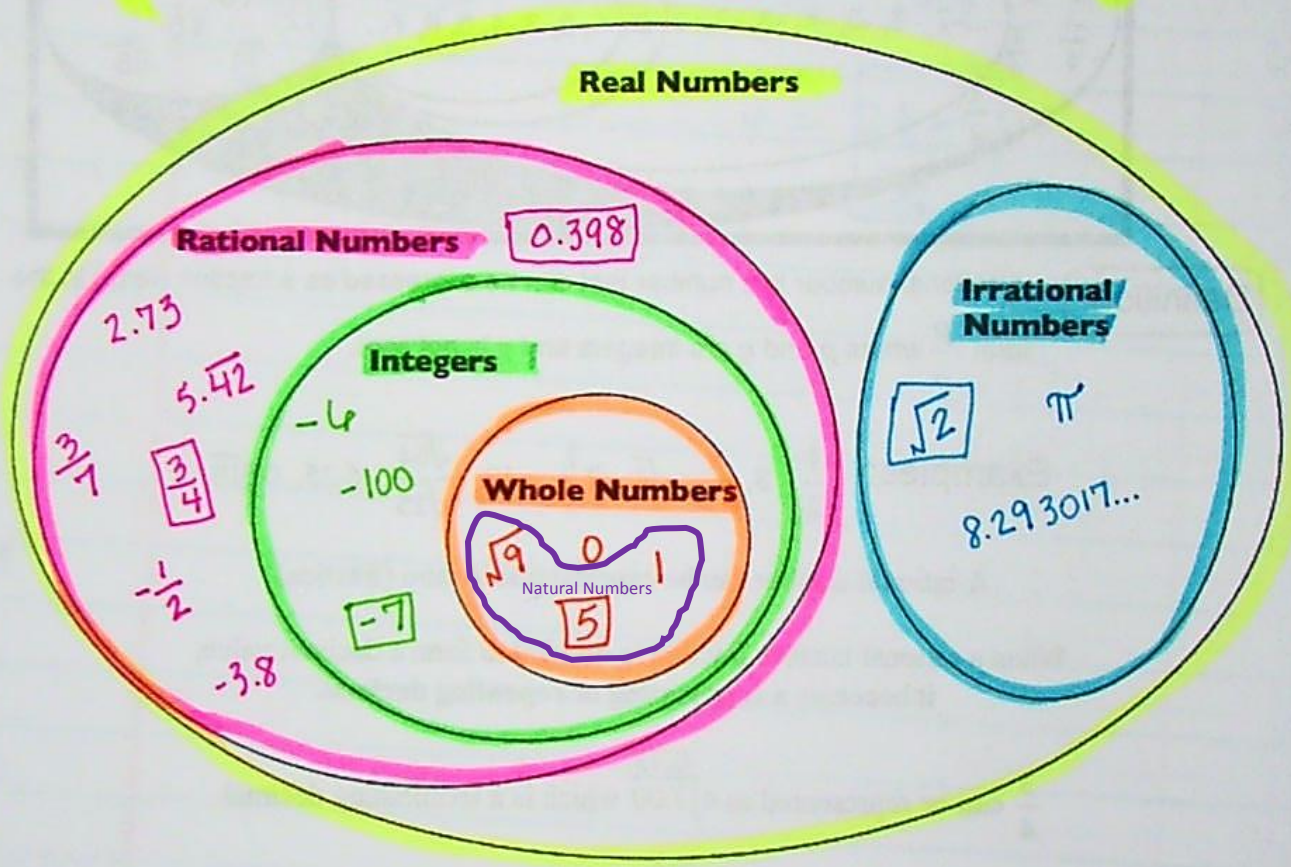


UNIT 6: IRRATIONAL MATH

~ Unit 6, Page 14 ~

Write each number in the correct location on the Venn Diagram of the real number system. Each number should be written only once.

- 3000* If possible, evaluate first
- (-6, 2.73, $\frac{3}{7}$, $\sqrt{2}$, $\sqrt{9}$, -100, 0, π , 1, $-\frac{1}{2}$, -3.8, 5.42, 8.293017...)

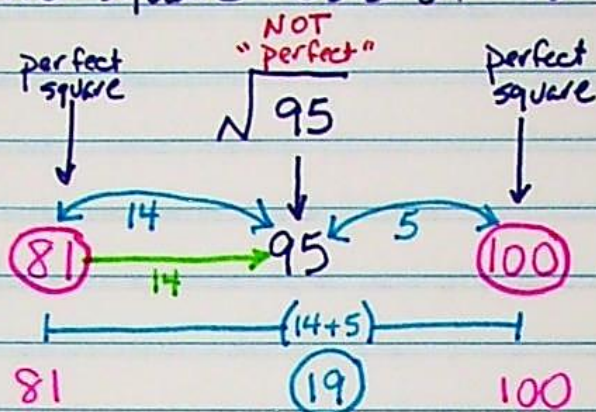


Put a check mark for each set that the number is a part of:

	Whole Numbers	Integers	Rational Numbers	Irrational Numbers	Real Numbers
● -7		✓	✓		✓
● $\frac{3}{4}$			✓		✓
● $\sqrt{2}$				✓	✓
● Natural Number 5	✓	✓	✓		✓
● 0.398			✓		✓

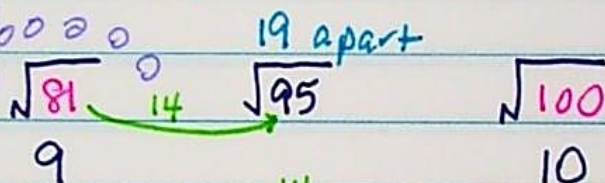
Approximating Square Roots

(Ex) Find the square root of 95 to the nearest tenth.



distance between the two perfect squares

these perfect squares are



$$9 \frac{14}{19}$$

estimate

$$\approx \frac{14}{20}$$

reduce

$$\approx \frac{7}{10}$$

fraction to decimal

$$.7$$

distance from 81 to 95 = 14
distance from 81 to 100 = 19

$$\sqrt{95} \approx \underline{9.7} \text{ answer}$$

Estimations of Irrational Numbers

Notes:

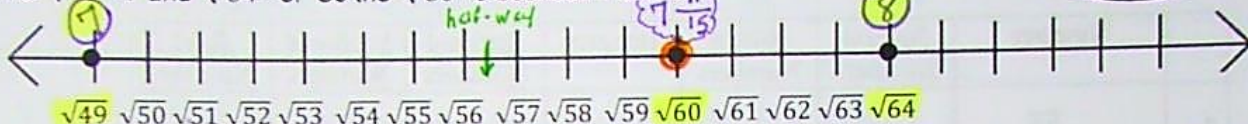
For the following assignment, do NOT use a calculator.



Example: Approximate $\sqrt{60}$

What two consecutive perfect squares is 60 in between? 49 and 64

The $\sqrt{49} = 7$ and $\sqrt{64} = 8$. So the $\sqrt{60}$ is between 7 and 8.



Since 60 is closer to 64, $\sqrt{60}$ will be closer to the 8. You might estimate 7.7 or 7.8. (If you use a calculator, you will find that $\sqrt{60} \approx 7.74597$) That is a pretty close estimation.

$$\sqrt{49} < \sqrt{60} < \sqrt{64}$$

$$7 < \sqrt{60} < 8 \quad \text{so I approximate: } \approx 7.7$$

$$7 \frac{11}{15} \approx 7.73$$

Approximate the following to the nearest tenth:

1) $\sqrt{36} < \sqrt{45} < \sqrt{49}$
 $6 < \sqrt{45} < 7$ so I approximate: ≈ 6.7

2) $\sqrt{16} < \sqrt{24} < \sqrt{25}$
 $4 < \sqrt{24} < 5$ so I approximate: ≈ 4.9

3) $\sqrt{4} < \sqrt{6} < \sqrt{9}$
 $2 < \sqrt{6} < 3$ so I approximate: ≈ 2.4

4) $\sqrt{64} < \sqrt{78} < \sqrt{81}$
 $8 < \sqrt{78} < 9$ so I approximate: ≈ 8.8

5) $\sqrt{64} < \sqrt{66} < \sqrt{81}$
 $8 < \sqrt{66} < 9$ so I approximate: ≈ 8.1

Estimate the following square roots to the nearest tenth. You must show the two perfect squares that the number is between. NO CALCULATOR!!!

6) $\sqrt{36} < \sqrt{38} < \sqrt{49}$
 $6 < \sqrt{38} < 7$ so I approximate: ≈ 6.2

7) $\sqrt{81} < \sqrt{95} < \sqrt{100}$
 $9 < \sqrt{95} < 10$ so I approximate: ≈ 9.7

8) $\sqrt{25} < \sqrt{31} < \sqrt{36}$
 $5 < \sqrt{31} < 6$ so I approximate: ≈ 5.6