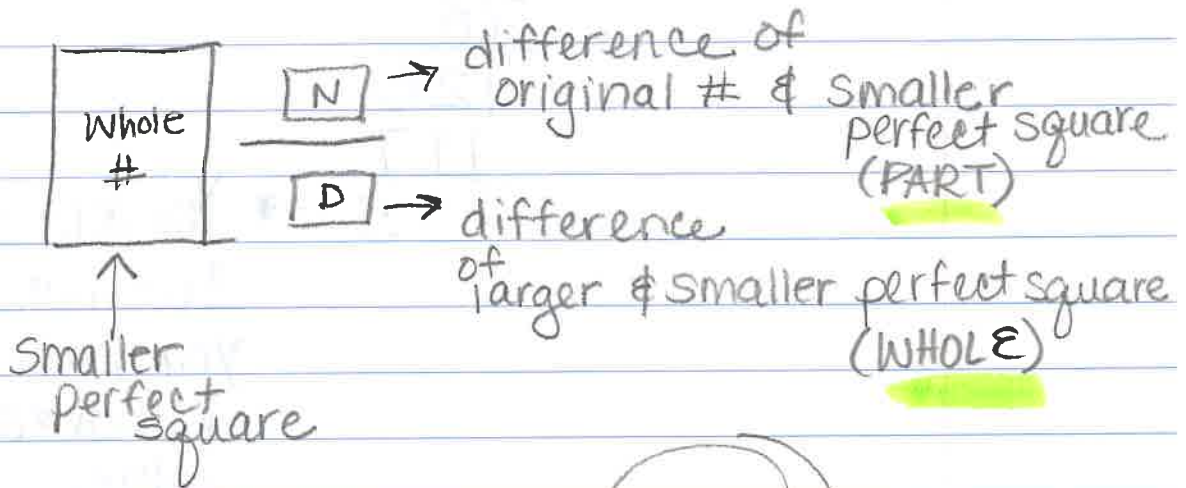


# Estimating how to find the square root of a NON-PERFECT square root.

→ Estimate  $\sqrt{37}$

- $\sqrt{37}$  is between  $\sqrt{36}$  &  $\sqrt{49}$
- Create a fraction



$$6 \frac{(37-36)}{(49-36)} = \left( 6 \frac{1}{13} \right)$$

- check how close you are in your calculator

$$\sqrt{37} = 6.08276253\dots$$

$$6 \frac{1}{13} = 6.076923077\dots$$

\* Remember this is an irrational #!  
\* Pretty close to it!  
\* Remember this is an irrational #!

⇒ What if you need  $6\frac{1}{3}$  as a decimal rounded to the nearest hundredth?

• Use long division

$$\begin{array}{r} 0.0769 \\ 13 \overline{) 10000} \\ \underline{91} \\ 90 \\ \underline{78} \\ 120 \\ \underline{117} \\ 3 \end{array}$$

$$= \textcircled{6.08}$$

3 → You don't have to continue b/c you have your hundredth place value

# Examples

$$\textcircled{A} \sqrt{31}$$
$$\begin{array}{c} \wedge \\ \sqrt{25} \quad \sqrt{36} \\ 5 \quad 6 \end{array}$$

$$5 \frac{(31-25)}{(36-25)}$$

$$5 \frac{6}{11}$$

✓

$$\sqrt{31} = 5.567$$

$$5 \frac{6}{11} = 5.45$$

$$\textcircled{B} \sqrt{58}$$
$$\begin{array}{c} \wedge \\ \sqrt{49} \quad \sqrt{64} \\ 7 \quad 8 \end{array}$$

$$7 \frac{(58-49)}{(64-49)}$$

$$7 \frac{9}{15}$$

✓

$$\sqrt{58} = 7.615$$

$$7 \frac{9}{15} = 7.6$$

