

7.2 Estimating Square Roots

Warm-up:

1. Use prime factorization to determine if...

a) $3^4 \times 5^8 \times 11$ is a perfect square.

It is not a perfect square.

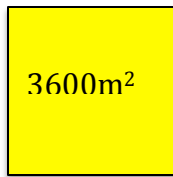
b) $5^6 \times 3^3 \times 11^{21}$ is a perfect cube.

It is a perfect cube.

2. Find the square of 81.

$$81^2 = 6561$$

3. Find the length of fence needed for a 3600m^2 square field.



$$S = \sqrt{3600} = 60\text{m}$$

$$\text{Fence} = 60 \times 4 = 240\text{m}$$

4. Find the square root of $\frac{4}{9}$

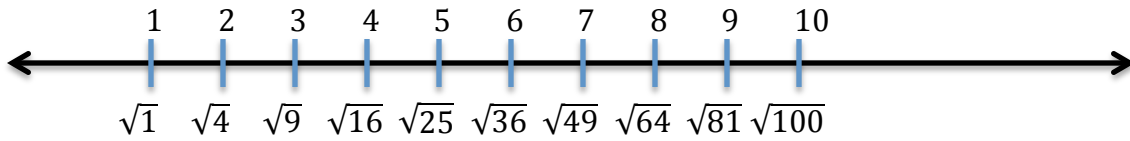
$$\sqrt{\frac{4}{9}} = \frac{2}{3}$$

5. How many whole numbers are between 72 and 4386?

$$4386 - 72 - 1 = 4313$$

Part A: Estimating Square Roots

Place on a number line: $\sqrt{1}, \sqrt{4}, \sqrt{9}, \sqrt{16}, \sqrt{25}, \sqrt{36}, \sqrt{49}, \sqrt{64}, \sqrt{81}, \sqrt{100}$



1. Estimate $\sqrt{20}$ $\sqrt{38}$

4.5

6.2

2. Identify a whole number with a square root between...

a) 6 and 7

$\sqrt{36}$ and $\sqrt{49}$

37, 38, 39, 40,, 48

How many possible answers are there?

$49 - 36 - 1 = 12$

b) 16 and 17

$\sqrt{256}$ and $\sqrt{289}$

How many possible answers are there?

$289 - 256 - 1 = 32$

3. What is the smallest natural number value for n if the solution for $\sqrt{135n}$ is also a natural number? (Natural numbers are counting numbers: 1, 2, 3, 4,)

$135 = 3^3 \times 5$

$3 \times 3 \times 5$

$3 \times 3 \times 5$

So, $n = 15$

Part A: Assignment: p.99 #6-10, 12, 14, 16, 17, 20