



Warm Up
Grade 8
Nov. 15, 2019



1) Estimate $\sqrt{96}$ (Show Work)

$$\begin{array}{l} \sqrt{81} \quad \leftarrow \quad \sqrt{100} \\ 9 \quad \quad \quad \rightarrow \quad 10 \\ \approx 9.8 \end{array}$$

2) Estimate $\sqrt{37}$ (Show Work)

$$\begin{array}{l} \sqrt{36} \quad \leftarrow \quad \sqrt{49} \\ 6 \quad \quad \quad \rightarrow \quad 7 \\ \approx 6.1 \end{array}$$

3) A square garden has area 97 m^2 .

a) What are the approximate dimensions of the garden to two decimal places?

$$\text{Side} = \sqrt{\text{Area}}$$

$$\text{Side} = \sqrt{97 \text{ m}^2}$$

$$\begin{array}{l} \sqrt{81} \quad \leftarrow \quad \sqrt{100} \\ 9 \quad \quad \quad \rightarrow \quad 10 \\ \text{Side} \approx 9.71 \text{ m} \end{array}$$

Dimensions are
9.71m by 9.71m

b) About how much fencing would be needed to go around the garden? (Perimeter)

Square \Rightarrow 4 equal sides

$$\begin{aligned} \text{Perimeter} &= 4 \times 9.71 \\ &= 38.84 \text{ m} \end{aligned}$$

We will need 38.84 m
of fence.

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Homework

Solutions

4a) $\sqrt{15 \times 15}$
15

b) $\sqrt{22 \times 22}$
22

c) $\sqrt{3 \times 3}$
3

d) $\sqrt{1 \times 1}$
1

5 a) $\sqrt{5}$
 $\sqrt{4}$ $\sqrt{9}$
2 3

Est $\sqrt{5} \approx 2.1$
or 2.2

b) $\sqrt{11}$
 $\sqrt{9}$ $\sqrt{16}$
3 4

Est $\sqrt{11} \approx 3.1$ or 3.2

c) $\sqrt{57}$
 $\sqrt{49}$ $\sqrt{64}$
7 8

Est $\sqrt{57} \approx 7.5$

d) $\sqrt{38}$
 $\sqrt{36}$ $\sqrt{49}$
6 7

Est $\sqrt{38} \approx 6.1$

e) $\sqrt{171}$
 $\sqrt{169}$ $\sqrt{196}$
13 14

Est $\sqrt{171} \approx 13.1$

f) $\sqrt{115}$
 $\sqrt{100}$ $\sqrt{121}$
10 11

Est $\sqrt{115} \approx 10.7$

$$\begin{array}{l} \#5) \text{ a) } \sqrt{5} \\ \sqrt{4} \quad \sqrt{9} \\ = 2 \quad = 3 \end{array}$$

$$\begin{array}{l} \text{b) } \sqrt{11} \\ \sqrt{9} \quad \sqrt{16} \\ = 3 \quad = 4 \end{array}$$

$$\begin{array}{l} \text{c) } \sqrt{57} \\ \sqrt{49} \quad \sqrt{64} \\ = 7 \quad = 8 \end{array}$$

$$\begin{array}{l} \text{d) } \sqrt{38} \\ \sqrt{36} \quad \sqrt{49} \\ = 6 \quad = 7 \end{array}$$

$$\begin{array}{l} \text{e) } \sqrt{171} \\ \sqrt{121} \quad \sqrt{144} \\ = 11 \quad = 12 \end{array}$$

$$\begin{array}{l} \text{e) } \sqrt{115} \\ \sqrt{100} \quad \sqrt{121} \\ = 10 \quad = 11 \end{array}$$

$$\begin{array}{l} \#7) \quad \sqrt{23} \\ \sqrt{16} \quad \sqrt{25} \\ = 4 \quad = 5 \end{array}$$

closer to 5

so 4.7

~~X~~

$$\begin{array}{l} \sqrt{30} \\ \sqrt{25} \quad \sqrt{36} \\ = 5 \quad = 6 \end{array}$$

closer to 5

so 5.4

✓

$$\begin{array}{l} \sqrt{64} = 8 \\ \sqrt{64} \quad \sqrt{81} \\ = 8 \quad = 9 \end{array}$$

closer to 8

so 8.4

✓

Class/Homework

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8 (a,b,c,d)

#9 (a,b,c,d)

#11 (a,b,c)

#12(a,d)

#13(a,d)

#14(a,d)

#15(a,b) Show work

#16(a,b)

#21

#23 (a,b,c)



Handwritten math work for problem 9(a):

$$\sqrt{14} \approx 3.7$$

The work shows the prime factorization of 14 as 2×7 and the square root of 14 as $\sqrt{2 \times 7}$. A red arrow points from the square root symbol to the number 3.7, indicating the decimal approximation.

Quiz

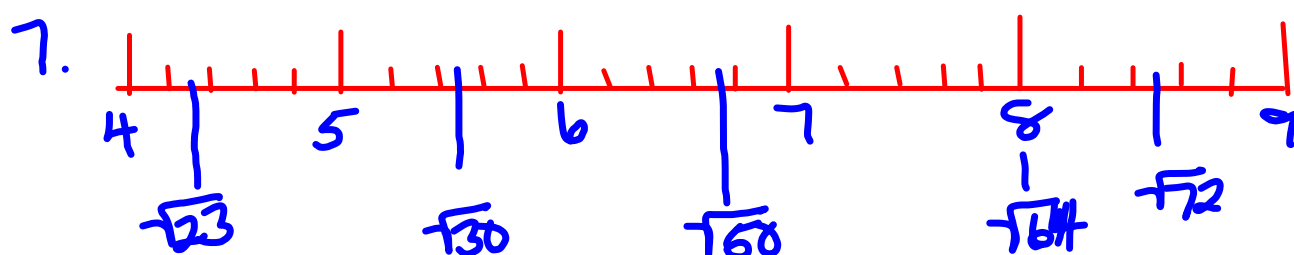
Nov. 19, 2019

Quiz

$$b. \sqrt{4} = 2 \quad \sqrt{9} = 3$$

$$\sqrt{7} \approx 2.7$$

Homework
Solutions



a) The estimates that are good are

$\sqrt{30}$ is in the middle between $\sqrt{25}$ and $\sqrt{36}$

$\sqrt{64}$ is exactly 8

$\sqrt{72}$ is in the middle between $\sqrt{64}$ and $\sqrt{81}$

b) $\sqrt{23}$ should be closer to 5 than 4
 $\sqrt{50}$ should be greater than 7

Homework Solutions

8a)

$$\sqrt{9} \quad \sqrt{11} \quad \sqrt{16}$$

$$3 \qquad \qquad 4$$

$$\sqrt{11} \approx 3.2$$

Perfect Squares	
1	4
9	16
25	36
49	64
81	100
121	144
169	196
225	

b)

$$\sqrt{36} \quad \sqrt{40} \quad \sqrt{49}$$

$$6 \qquad \qquad 7$$

$$\sqrt{40} \approx 6.3$$

c)

$$\sqrt{25} \quad \sqrt{30} \quad \sqrt{36}$$

$$5 \qquad \qquad 6$$

$$\sqrt{30} \approx 5.5$$

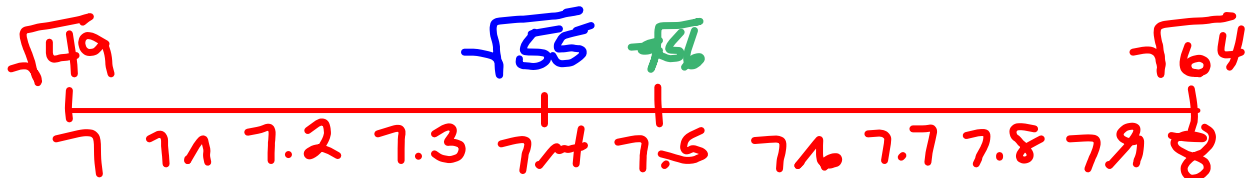
d)

$$\sqrt{49} \quad \sqrt{55} \quad \sqrt{64}$$

$$7 \qquad \qquad 8$$

$$\sqrt{55} \approx 7.4$$

Middle between
49 and 64
 ≈ 56



Homework Solutions

9. $7, \sqrt{14}$

$$\sqrt{16} = 4, \text{ so } \sqrt{14} < 7$$

b) $8, \sqrt{60}$

$$8^2 = 64, \text{ so } \sqrt{60} < 8$$

c) $11, \sqrt{121}$

$$11^2 = 121, \text{ so } \sqrt{121} = 11$$

d) $12, \sqrt{150}$

$$\sqrt{144} = 12, \text{ so } \sqrt{150} > 12$$

10 a)

$$\begin{array}{cc} \sqrt{58} & \\ \sqrt{49} & \sqrt{64} \\ 7 & 8 \\ \sqrt{58} \approx 7.8 \end{array}$$

b)

$$\begin{array}{cc} \sqrt{70} & \\ \sqrt{64} & \sqrt{81} \\ 8 & 9 \\ \sqrt{70} \approx 8.3 \end{array}$$

c)

$$\begin{array}{cc} \sqrt{90} & \\ \sqrt{81} & \sqrt{100} \\ 9 & 10 \\ \sqrt{90} \approx 9.5 \end{array}$$

d)

$$\begin{array}{cc} \sqrt{151} & \\ \sqrt{144} & \sqrt{169} \\ 12 & 13 \\ \sqrt{151} \approx 12.2 \end{array}$$

Perfect Squares

1	4
9	16
25	36
49	64
81	100
121	144
169	196
225	

11. a) $\sqrt{17}$ is between 16 and 18

False,

$\sqrt{17}$ is between 4 ($\sqrt{16}$) and 5 ($\sqrt{25}$)

Homework

Solutions

b) $\sqrt{5} + \sqrt{5} = \sqrt{10}$

$$\sqrt{5} \approx 2.2$$

$$\sqrt{4} = 2$$

$$\sqrt{9} = 3$$

$$\sqrt{10} \approx 3.2$$

$$\sqrt{9} = 3$$

$$\sqrt{16} = 4$$

Is $2.2 + 2.2 = 3.2$, NO

so False $\sqrt{5} + \sqrt{5}$ does not equal $\sqrt{10}$

c) $\sqrt{13}$ is between 11 and 12

True

$$\sqrt{121} = 11 \quad \text{and} \quad \sqrt{144} = 12$$

and 13 is between 121 and 144