

Warm Up

Grade 8



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

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

$$\begin{array}{l} \sqrt{81} \quad \sqrt{100} \\ \downarrow \quad \downarrow \\ 9 \quad 10 \\ \text{Closer} \\ \approx 9.7 \end{array}$$

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

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

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

$$\boxed{A=97}$$

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

$$\text{Side} = \sqrt{97}$$

$$\begin{array}{l} \sqrt{81} \quad \sqrt{100} \\ = 9 \quad = 10 \\ \approx 9.80 \end{array}$$

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

↓
Perimeter

$$\begin{aligned} P &= S + S + S + S \\ &\quad \text{or} \\ &= 4 \times \text{Side} \\ &= 4 \times 9.80 \\ &= 39.20 \end{aligned}$$

About 39.20 m of fencing is needed.

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Homework

Solutions

$$4a) \sqrt{15 \times 15} = \sqrt{15^2}$$

$15 \leftarrow$

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

22

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

3

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

1

$$5a) \sqrt{5}$$

$\sqrt{4} \quad \sqrt{9}$
 $2 \quad 3$

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

$$b) \sqrt{11}$$

$\sqrt{9} \quad \sqrt{16}$
 $3 \quad 4$

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

$$c) \sqrt{57}$$

$\sqrt{49} \quad \sqrt{64}$
 $7 \quad 8$

$$\text{Est } \sqrt{57} \approx 7.5$$

$$d) \sqrt{38}$$

$\sqrt{36} \quad \sqrt{49}$
 $6 \quad 7$

$$\sqrt{38} \approx 6.1$$

$$e) \sqrt{171}$$

$\sqrt{169} \quad \sqrt{196}$
 $13 \quad 14$

$$\text{Est } \sqrt{171} \approx 13.1$$

$$f) \sqrt{115}$$

$\sqrt{100} \quad \sqrt{121}$
 $10 \quad 11$

$$\sqrt{115} \approx 10.7$$

#5) a)	$\sqrt{5}$	b)	$\sqrt{11}$	c)	$\sqrt{57}$
$\sqrt{4}$	$\sqrt{9}$	$\sqrt{9}$	$\sqrt{16}$	$\sqrt{49}$	$\sqrt{64}$
= 2	= 3	= 3	= 4	= 7	= 8

d)	$\sqrt{38}$	e)	$\sqrt{171}$	e)	$\sqrt{115}$
$\sqrt{36}$	$\sqrt{49}$	$\sqrt{121}$	$\sqrt{144}$	$\sqrt{100}$	$\sqrt{121}$
= 6	= 7	= 11	= 12	= 10	= 11

#7)	$\sqrt{23}$	$\sqrt{30}$	$\sqrt{64} = 8$	$\sqrt{72}$	
$\sqrt{16}$	$\sqrt{25}$	$\sqrt{25}$	✓	$\sqrt{64}$	$\sqrt{81}$
= 4	= 5	= 5		= 8	= 9
closer to 5	closer to 5	closer to 5		closer to 8	
so 4.7	so 5.4	so 5.4		so 8.4	
✗	✓	✓		✓	

Class/Homework

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

Page 26-27 # 8 (a,b,c,d)

No calculators #9 (a,b,c,d)

Use #11 (a,b,c) SHOW WORK

estimation #12(a,d)

for all #13(a,d)

#14(a,d)

#15(a,b) Show work

#16(a,b)

#21

#23 (a,b,c)



Quiz-->

Friday we
have a
presentati
on at 9

$$11a) \sqrt{17} \Rightarrow 16, 18$$
$$\begin{array}{cc} \swarrow & \searrow \\ \sqrt{16} & \sqrt{25} \\ \Downarrow & \Downarrow \\ 4 & 5 \end{array}$$

$\sqrt{17}$ is between 4, 5 Not 16 and 18
False

11b) $\sqrt{5} + \sqrt{5}$

$\swarrow \quad \searrow$

$\sqrt{4} \quad \sqrt{9}$

$\Downarrow \quad \Downarrow$

2 3

≈ 2.1

$2.1 + 2.1$
 4.2

$\stackrel{?}{=} \sqrt{10}$

$\swarrow \quad \searrow$

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

$\Downarrow \quad \Downarrow$

3 4

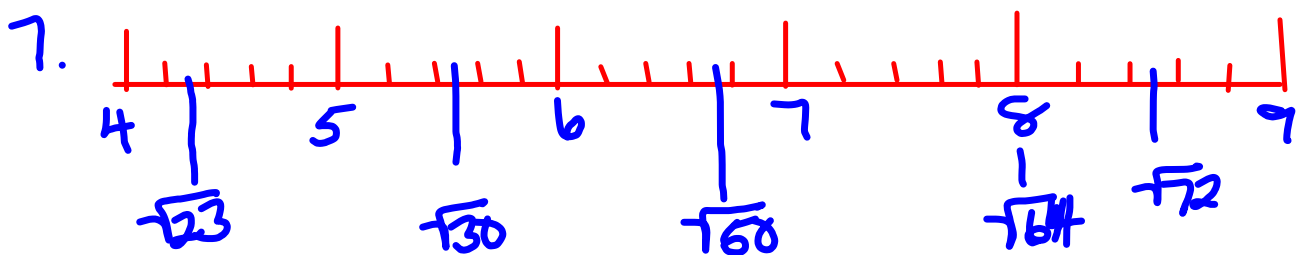
≈ 3.1

$\stackrel{?}{=} \text{Not same}$

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

$\sqrt{7} \approx 2.7$

Homework
Solutions



a) The estimates that are good are
 $\sqrt{30}$ 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)

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

$$5 \qquad \qquad 6$$

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

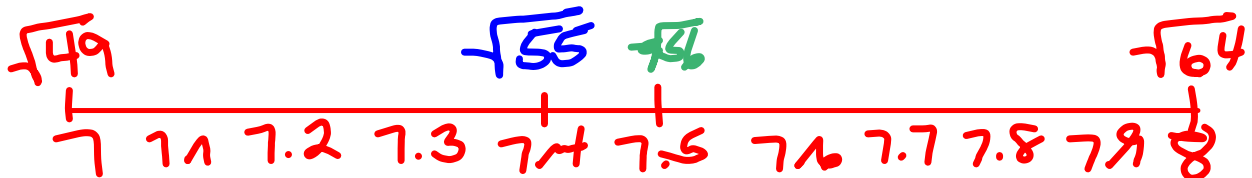
d)

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

$$7 \qquad \qquad 8$$

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

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