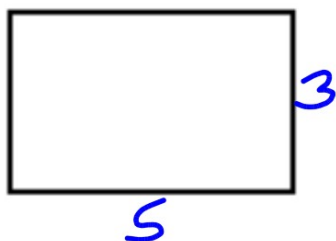


pg 30

1a) 15 is not a perfect square

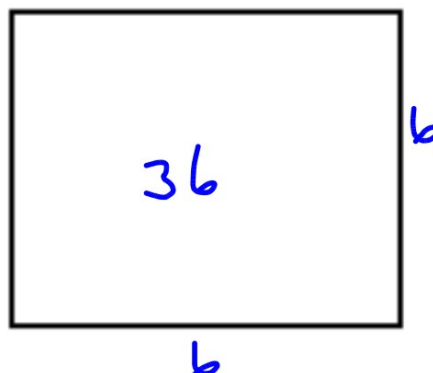
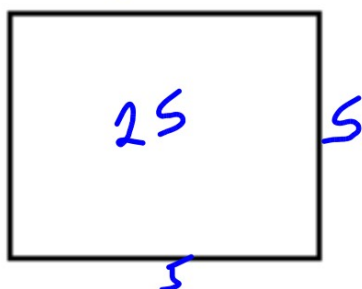


1×15 No repeats of factors so
not a perfect square
 3×5

b) 26 is not a perfect, 5×5 is a square which is 25

 1×26 2×13

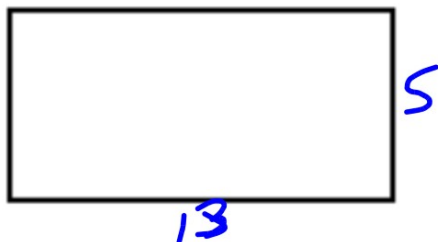
NO Repeats



c) 65 - not a square
 $8 \times 8 = 64$, is a square

 1×65 5×13

No repeats



d) 100 - perfect square

 1×100 2×50 4×25 5×20

10×10 repeated so perfect square

2a) $\sqrt{16} = 4$
 😊 $(4^2 = 16)$

b) $\sqrt{49} = 7$
 $(7 \times 7 = 49)$

c) $\sqrt{196}$
 $= \sqrt{14 \times 14}$
 $= 14$

d) $\sqrt{400}$
 $\sqrt{4 \times 100}$
 $\sqrt{4} \times \sqrt{100}$
 2×10
 20

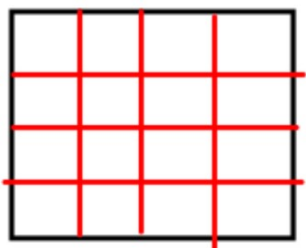
3a) $11^2 = 11 \times 11$
 $= 121$

b) $\sqrt{64} = 8$
 $(8 \times 8 = 64)$

c) $\sqrt{169} = 13$
 $13^2 = 169$

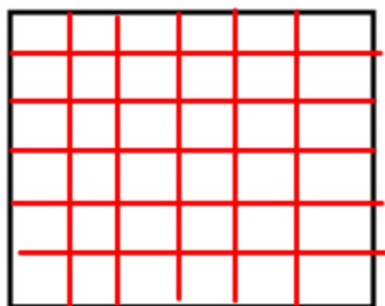
d) $\sqrt{225}$
 $\sqrt{15 \times 15}$
 15

4a)



Area = 16
 Side Length = $\sqrt{16}$
 $= 4$

b)



Area = 36
 Side Length = $\sqrt{36}$
 $= 6$

5a) 216

$$\begin{array}{l}
 1 \times 216 \\
 2 \times 108 \\
 3 \times 72 \\
 4 \times 54 \\
 6 \times 36 \\
 8 \times 27 \\
 9 \times 24 \\
 12 \times 18
 \end{array}$$

16 factor
- an even number of factors, so not a perfect square

b) 364

$$\begin{array}{l}
 1 \times 364 \\
 2 \times 182 \\
 4 \times 91 \\
 7 \times 52 \\
 14 \times 26
 \end{array}$$

12 factors,
not a perfect square

c)

$$\begin{array}{l}
 \underline{729} \\
 1 \times 729 \\
 3 \times 243 \\
 9 \times 81 \\
 27 \times 27
 \end{array}$$

7 factor
729 is a perfect square
 $\sqrt{729} = 27$

6. If you know a square number you can find the square root by:

- using prime factorization
- product of perfect squares
- list the factors
- find what number you multiply by itself to get the square number

😊 7a) 24 is not a perfect square, so the side length is not a whole number.

$$\text{Area} = 24$$

$$\text{Side Length} = \sqrt{24}$$

$$\sqrt{16} = 4$$

$$\sqrt{25} = 5$$

$$\sqrt{24} \approx 4.9$$

b) Side Length of Square = 9

$$\begin{aligned} \text{Area} &= 9 \times 9 \\ &= 81 \end{aligned}$$



$$\begin{aligned} 9a) \sqrt{12 \times 12} \\ = 12 \end{aligned}$$

$$\begin{aligned} b) \sqrt{34 \times 34} \\ = 34 \end{aligned}$$

10 a) $\sqrt{3}$

$\sqrt{1}$	$\sqrt{4}$
1	2

$\sqrt{3} \approx 1.7$

b) $\sqrt{65}$

$\sqrt{64}$	$\sqrt{81}$
8	9

$\sqrt{65} \approx 8.1$

c) $\sqrt{72}$

$\sqrt{64}$	$\sqrt{81}$
8	9

$\sqrt{72} \approx 8.5$

d) $\sqrt{50}$

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

$\sqrt{50} \approx 7.1$

11 a) $\sqrt{17}$

$\sqrt{16}$	$\sqrt{25}$
4	5

$\sqrt{17} \approx 4.1$

b) $\sqrt{108}$

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

$\sqrt{108} \approx 10.4$

c) $\sqrt{33}$

$\sqrt{25}$	$\sqrt{36}$
5	6

$\sqrt{33} \approx 5.8$

d) $\sqrt{79}$

$\sqrt{64}$	$\sqrt{81}$
8	9

$\sqrt{79} \approx 8.8$

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12 a)

$$\sqrt{23}$$

$$\begin{array}{r} \sqrt{16} \quad \sqrt{25} \\ 4 \quad 5 \end{array}$$

$$\sqrt{23} \approx 4.8$$

Homework

Solutions

b) $\sqrt{13}$

$$\begin{array}{r} \sqrt{9} \quad \sqrt{16} \\ 3 \quad 4 \end{array}$$

$$\sqrt{13} \approx 3.5$$

c) $\sqrt{78}$

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

$$\sqrt{78} \approx 8.8$$

d) $\sqrt{135}$

$$\begin{array}{r} \sqrt{121} \quad \sqrt{144} \\ 11 \quad 12 \end{array}$$

$$\sqrt{135} \approx 11.7$$

e) $\sqrt{62}$

$$\begin{array}{r} \sqrt{49} \quad \sqrt{64} \\ 7 \quad 8 \end{array}$$

$$\sqrt{62} \approx 7.8 \text{ or } 7.9$$

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

f) $\sqrt{45}$

$$\begin{array}{r} \sqrt{36} \quad \sqrt{49} \\ 6 \quad 7 \end{array}$$

$$\sqrt{45} \approx 6.7$$

13. Area = 92 cm^2

Side Length = $\sqrt{92}$

$$\begin{array}{r} \sqrt{81} \quad \sqrt{100} \\ 9 \quad 10 \end{array}$$

$$\sqrt{92} \approx 9.6$$

b) Area = 430 m^2

Side Length = $\sqrt{430}$

$$\begin{array}{r} \sqrt{400} \quad \sqrt{441} \\ 20 \quad 21 \end{array}$$

$$\sqrt{430} \approx 20.7$$

$$20^2 = 400$$

$$21^2 = 441$$

c) Area = 150 cm^2

Side Length = $\sqrt{150}$

$$\begin{array}{r} \sqrt{144} \quad \sqrt{169} \\ 12 \quad 13 \end{array}$$

$$\sqrt{150} \approx 12.2$$

d) Area = 29 m^2

Side Length = $\sqrt{29}$

$$\begin{array}{r} \sqrt{25} \quad \sqrt{36} \\ 5 \quad 6 \end{array}$$

$$\sqrt{29} \approx 5.3$$

Homework
Solutions

14a) $\sqrt{17}$ is about 8.50

Not a good estimate $\sqrt{16} = 4$, so
 $\sqrt{17}$ a little more than 4.

b) $\sqrt{20}$ is about 4.3

$$\sqrt{16} = 4, \sqrt{25} = 5$$

4.3 is an OK estimate, & 20 is
about the middle so 4.4 or 4.5
are better estimate

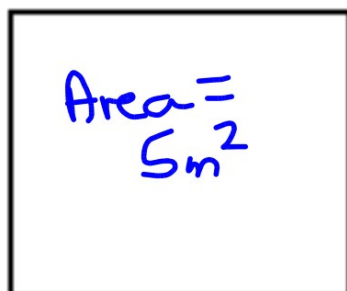
c) $\sqrt{8}$ is about 2.83

Good estimate since $\sqrt{9} = 3$

d) $\sqrt{34}$ is about 5.83

Good estimate since $\sqrt{36} = 6$

15.



Side
Length
 $\sqrt{5}$

Homework

Solutions

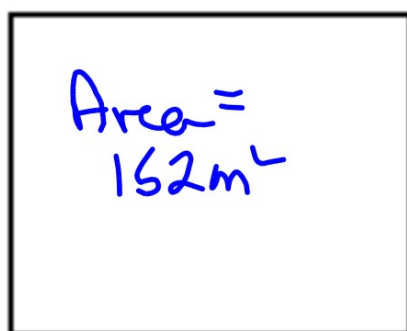
$$\sqrt{4} \quad \sqrt{5} \quad \sqrt{9}$$

$$2 \quad \quad 3$$

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

b) Justify your answer.

16.



Side
Length = $\sqrt{152}$

$$\sqrt{144}$$

$$12$$

$$\sqrt{169}$$

$$13$$

$$\sqrt{152} \approx 12.3$$

b) Tape around the outside

$$- 4 \times 12.3 = 49.2$$

≈ 50 m of tape needed

20 I, the product of 2 perfect squares a perfect square? Homework
Solutions

$$49 \times 64 = 3136 \quad \sqrt{3136} = 56$$

$$36 \times 16 = 576 \quad \sqrt{576} = 24$$

$$144 \times 121 = 17424 \quad \sqrt{17424} = 132$$

$$25 \times 16 = 400 \quad \sqrt{400} = 20$$

$$9 \times 4 = 36 \quad \sqrt{36} = 6$$

$$169 \times 196 = 33124 \quad \sqrt{33124} = 182$$

$$\frac{\sqrt{a \times b}}{\sqrt{a} \times \sqrt{b}} = \frac{\sqrt{a \times b}}{\sqrt{a \times b}}$$

Yes the product of any two perfect squares will give a perfect square

21. 7.67^2

Homework

Solutions

Is it closer to 49 or 64?

7.67 is closer to 8, so
 7.67^2 is closer to 8^2 or 64.

22. Five number whose square roots are between 9 and 10.

$$\sqrt{81} = 9$$

$$\sqrt{100} = 10$$

$$\sqrt{82}, \sqrt{83}, \sqrt{84} \dots \sqrt{98}, \sqrt{99}$$

Homework Solutions

$$23) a) \sqrt{81} + \sqrt{16}$$

$$9 + 4$$

$$13$$

$$b) \sqrt{81 + 16}$$

$$\sqrt{97}$$

$$\sqrt{81} \quad \sqrt{100}$$

$$9 \quad 10$$

$$\sqrt{97} \approx 9.8$$

$$c) \sqrt{\sqrt{81} + 16}$$

$$\sqrt{9 + 16}$$

$$\sqrt{25}$$

$$5$$

$$d) \sqrt{\sqrt{81} + \sqrt{16}}$$

$$\sqrt{9 + 4}$$

$$\sqrt{13}$$

$$\approx 3.6$$

$$e) \sqrt{\sqrt{81} + \sqrt{16}}$$

$$\sqrt{9 + 4}$$

$$\sqrt{13}$$

$$\approx 3.6$$