BLM 3-6

Target A-1 Extra Practice 1

1. If the underlined word is incorrect, write the correct word in the blank.

a) The square of a number can be thought of as the area of a square.

_____

b) In the prime factorization of a perfect square, there is an odd number of each prime factor. _____

c) The square of a number is the number divided by itself.

_____

d) The square root of a number can be thought of as the side length of a rectangle. _____

2. Follow the instructions for each number below.

a) Write the prime factorization.

b) Determine whether the number is a perfect square and justify your answer.

	Prime Factorization	Perfect Square?
35		Circle one: YES NO Justify your answer:
64		Circle one: YES NO Justify your answer:

3. Complete the table.

Side Length of Square	Side Length Squared	Area of Square
Example: 2	2 × 2	4
a) ____	4 × 4	16
b) 7	_____	49
c) 6	6 × 6	____
d) 10	_____	____

4. Determine the square roots. **Hint**: Look for patterns.

a) $\sqrt{100}$ ____ $\sqrt{225}$ ____ $\sqrt{400}$ ____

b) $\sqrt{400}$ ____ $\sqrt{625}$ ____ $\sqrt{900}$ ____

c) $\sqrt{100}$ ____ $\sqrt{144}$ ____ $\sqrt{196}$ ____

d) $\sqrt{225}$ ____ $\sqrt{324}$ ____ $\sqrt{441}$ ____

5. Find the area of the square, given its side length.

a) 7 cm

_____

b) 11 mm

_____

c) 15 m

_____

d) 22 cm

_____

e) 40 m

_____

f) 90 mm

_____

6. Find the side length of the square, given its area.

a) 100 cm^2

_____

b) 121 mm^2

_____

c) 169 m^2

_____

d) 256 cm^2

_____

e) 529 mm^2

_____

f) 2500 m^2

_____

Extra Practice Answers

1. b) even **c)** multiplied **d)** square

2.

	Prime Factorization	Perfect Square?
35	5×7	Circle one: YES (NO) Justify your answer: There is an odd number (1) of each factor.
64	$2 \times 2 \times 2 \times 2 \times 2 \times 2$	Circle one: (YES) NO Justify your answer: There is an even number (6) of each factor.

3. a) 4

b) 7×7

c) 36

d) 10×10, 100

4. a) 10, 15, 20
b) 20, 25, 30
c) 10, 12, 14
d) 15, 18, 21

5. a) 49 cm^2
b) 121 mm^2
c) 225 m^2
d) 484 cm^2
e) 1600 m^2
f) 8100 mm^2

6. a) 10 cm
b) 11 mm
c) 13 m
d) 16 cm
e) 23 mm
f) 50 m

Target A-1

Extra Practice 1

Lesson 1.1: Square Numbers and Area Models

1. Find the area of a square with each side length.
a) 7 units **b)** 11 units

2. Show that 16 is a square number.
Use a diagram, symbols, and words.

3. Which of these numbers is a perfect square?
How do you know?
a) 14 **b)** 60 **c)** 36

4. These numbers are not square numbers.
Which two consecutive square numbers is each number between?
a) 7 **b)** 30 **c)** 50 **d)** 90

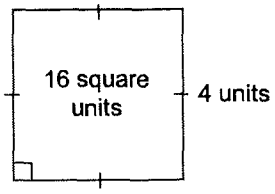
5. I am a two-digit square number. The sum of my digits is 13.
What square number am I?

6. A square patio has area 225 m^2.
a) Find the dimensions of the patio.
b) The owner wants to put lights around the patio.
How many metres of lighting is needed?
c) Each string of lights is 25 m long.
How many strings of lights are needed?

Extra Practice 1 Answers

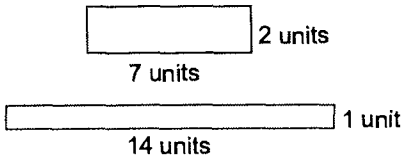
1. a) 49 square units **b)** 121 square units

2.

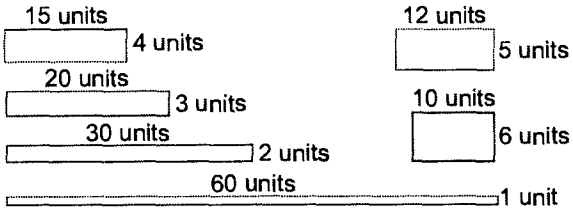


$16 = 4 \times 4$.
A square with area 16 square units has side length 4 units.

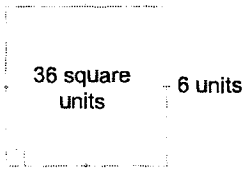
3. a) Not a square. The rectangles with area 14 square units are:



b) Not a square. The rectangles with area 60 square units are:



c) A square. I can draw a square with side length 6 units whose area is 36 square units.



4. a) 4 and 9 **b)** 25 and 36
c) 49 and 64 **d)** 81 and 100

5. 49

6. a) 15 m by 15 m
b) 60 m
c) 3 strings

Target A-1

Extra Practice 2

Lesson 1.2: Squares and Square Roots

1. Find.
a) 6^2 **b)** 11^2 **c)** 5^2

2. Find a square root of each number.
a) 49 **b)** 64 **c)** 196

3. **a)** List the factors of each number in ascending order.
Which numbers are squares? How do you know?
i) 70 **ii)** 144 **iii)** 180
b) Find a square root of each square number in part a.

4. The factors of each number are listed in ascending order.
Which numbers are square numbers?
Find a square root of each square number.
a) 216: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 27, 36, 54, 72, 108, 216
b) 196: 1, 2, 4, 7, 14, 28, 49, 98, 196
c) 441: 1, 3, 9, 21, 49, 147, 441

5. Find a number whose square root is 24.

6. Find the square root of each number.
a) 12^2 **b)** 15^2 **c)** 37^2

7. Find the square of each number.
a) $\sqrt{9}$ **b)** $\sqrt{121}$ **c)** $\sqrt{841}$

Extra Practice 2 Answers

1. a) 36 **b)** 121 **c)** 25

2. a) 7 **b)** 8 **c)** 14

3. a) i) 70: 1, 2, 5, 7, 10, 14, 35, 70
Not a square since it has an even number of factors

ii) 144: 1, 2, 3, 4, 6, 8, 9, 12, 16, 18, 24, 36, 48, 72, 144
This is a square since it has an odd number of factors.

iii) 180: 1, 2, 3, 4, 5, 6, 9, 10, 12, 15, 18, 20, 30, 36, 45, 60, 90, 180
Not a square since it has an even number of factors

b) ii) 12

4. a) Not a square since it has an even number of factors

b) This is a square since it has an odd number of factors. The square root of 196 is 14.

c) This is a square since it has an odd number of factors. The square root of 441 is 21.

5. 576

6. a) 12 **b)** 15 **c)** 37

7. a) 9 **b)** 121 **c)** 841

Target A-2 Extra Practice 1

1. Fill in the blanks.

The first step in estimating the square root of a number that is not a perfect square is to think of the _____ _____ less than and greater than the number.

2. Complete the table.

Number	Perfect Square Less Than the Number	Perfect Square Greater Than the Number	Perfect Square Number Is Closer To
33	25	36	36
11			
47			
6			
70			
116			

3. Estimate the square root of each number in #2. Then, check your answers with a calculator. Express your answers to one decimal place.

	Estimate	Check
a) $\sqrt{33}$	_____	_____
b) $\sqrt{11}$	_____	_____
c) $\sqrt{47}$	_____	_____
d) $\sqrt{6}$	_____	_____
e) $\sqrt{70}$	_____	_____
f) $\sqrt{116}$	_____	_____

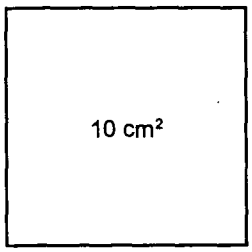
4. Estimate the square root of each number. Then, check your answers with a calculator. Express your answers to one decimal place.

	Perfect Square Less Than the Number	Perfect Square Greater Than the Number	Perfect Square Number Is Closer To	Estimate	Check
a) $\sqrt{14}$	_____	_____	_____	_____	_____
b) $\sqrt{38}$	_____	_____	_____	_____	_____
c) $\sqrt{140}$	_____	_____	_____	_____	_____
d) $\sqrt{94}$	_____	_____	_____	_____	_____

5. Identify all of the possible whole numbers with a square root greater than 3 and less than 4.

_____

6. The square has an area of 10 cm^2.



a) Use perfect squares to estimate the side length of the square, to one decimal place. Show your work.

b) Use a ruler to measure the side length of the square, to the nearest tenth of a centimetre. _____

Extra Practice Answers

1. perfect squares

2. 33, 25, 36, 36
11, 9, 16, 9
47, 36, 49, 49
6, 4, 9, 4
70, 64, 81, 64
116, 100, 121, 121

3. Estimates may vary. Checks:
a) 5.7
b) 3.3
c) 6.9
d) 2.4
e) 8.4
f) 10.8

4. **a)** 9, 16, 16, estimates may vary, 3.7
b) 36, 49, 36, estimates may vary, 6.2
c) 121, 144, 144, estimates may vary, 11.8
d) 81, 100, 100, estimates may vary, 9.7

5. 10, 11, 12, 13, 14, 15

6. **a)** Estimates may vary. Estimates should be between 3 and 4.
b) 3.2 cm

Target A-2

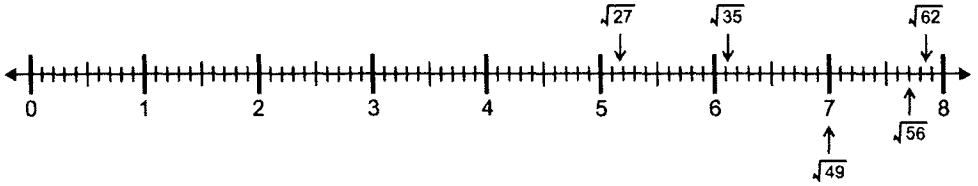
Extra Practice 4

Lesson 1.4: Estimating Square Roots

1. Use the number line below.

a) Which placements are good estimates of the square roots? Explain your reasoning.

b) Use the number line to estimate the value of each square root that is incorrectly placed.



2. **a)** Which two consecutive numbers is each square root between? How do you know?

b) Use guess and check to estimate the value of each square root to two decimal places.

i) $\sqrt{15}$ **ii)** $\sqrt{72}$

iii) $\sqrt{110}$ **iv)** $\sqrt{41}$

3. Is each statement true or false? Explain.

a) $\sqrt{19}$ is between 18 and 20.

b) $\sqrt{101}$ is greater than 10.

c) $\sqrt{5+10}$ is less than $\sqrt{5}+\sqrt{10}$.

d) $\sqrt{3}\times\sqrt{8}$ is less than $\sqrt{36}$.

e) $\sqrt{12}+\sqrt{10}$ is less than $\sqrt{32}-\sqrt{10}$.

f) $\sqrt{1}+\sqrt{1}+\sqrt{1}$ is equal to $\sqrt{3}$.

4. Chess is played on a square board.
A particular board has an area of about 3250 cm^2.
What are the approximate dimensions of the board to two decimal places?

5. A farmer has 600 m of fencing.
He wants to enclose a square field of area 24 200 m^2.
What are the approximate dimensions of the field?
Give your answer to one decimal place.
Does the farmer have enough fencing to enclose the field? Explain.

Extra Practice 4 Answers

1. a) $\sqrt{27}$: 27 is a bit more than 25 and $\sqrt{25} = 5$

$\sqrt{49}$: $\sqrt{49} = 7$

$\sqrt{62}$: 62 is a bit less than 64 and $\sqrt{64} = 8$

b) $\sqrt{35}$: 35 is a bit less than 36 and $\sqrt{36} = 6$,

so $\sqrt{35}$ is about 5.9.

$\sqrt{56}$: 56 is a about halfway between 49 and 64. $\sqrt{49} = 7$ and $\sqrt{64} = 8$, so $\sqrt{56}$ is about 7.5

2. a) i) 15 is between 9 and 16, so $\sqrt{15}$ is between $\sqrt{9} = 3$ and $\sqrt{16} = 4$, but closer to 4.

ii) 72 is about halfway between 64 and 81, so $\sqrt{72}$ is about halfway between $\sqrt{64} = 8$ and $\sqrt{81} = 9$.

iii) 110 is about halfway between 100 and 121, so $\sqrt{110}$ is about halfway between $\sqrt{100} = 10$ and $\sqrt{121} = 11$.

iv) 41 is about halfway between 36 and 49, so $\sqrt{41}$ is about halfway between $\sqrt{36} = 6$ and $\sqrt{49} = 7$.

b) i) 3.87

ii) 8.49

iii) 10.49

iv) 6.40

3. a) False; 19 is between 16 and 25, so $\sqrt{19}$ is between $\sqrt{16} = 4$ and $\sqrt{25} = 5$.

b) True; $10 \times 10 = 100$, which is less than 101

c) True; $\sqrt{5+10} = \sqrt{15}$, which is a little less than $\sqrt{16} = 4$. $\sqrt{5}$ is greater than $\sqrt{4} = 2$ and $\sqrt{10}$ is greater than $\sqrt{9} = 3$.

So, $\sqrt{5} + \sqrt{10}$ is greater than $2 + 3 = 5$.

d) True; $\sqrt{3}$ is less than $\sqrt{4} = 2$ and $\sqrt{8}$ is less than $\sqrt{9} = 3$. So, $\sqrt{3} \times \sqrt{8}$ is less than $2 \times 3 = 6$. $\sqrt{36} = 6$

e) False; $\sqrt{12}$ is greater than $\sqrt{9} = 3$ and $\sqrt{10}$ is greater than $\sqrt{9} = 3$.

So, $\sqrt{12} + \sqrt{10}$ is greater than $3 + 3 = 6$.

$\sqrt{32}$ is less than $\sqrt{36} = 6$, so $\sqrt{32} - \sqrt{10}$ is less than $6 - 3 = 3$.

f) False; $\sqrt{1} = 1$, and $\sqrt{1} + \sqrt{1} + \sqrt{1} = 3$.

$\sqrt{3}$ is less than $\sqrt{4} = 2$.

So, $\sqrt{1} + \sqrt{1} + \sqrt{1}$ is greater than $\sqrt{3}$.

4. About 57.01 cm by 57.01 cm

5. About 155.6 m by 155.6 m

No. The perimeter of the field is:

$4 \times 155.6 \text{ m} = 622.4 \text{ m}$