

Lesson 2: Square Roots : F16

Classwork

Exercises 1–4

1. Determine the positive square root of 81, if it exists. Explain.

The square root of 81 is 9, because $9^2 = 81$
 $\sqrt{81} = 9$

2. Determine the positive square root of 225, if it exists. Explain.

The square root of 225 is 15, because $15^2 = 225$
 $\sqrt{225} = 15$

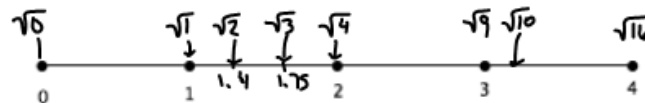
3. Determine the positive square root of -36, if it exists. Explain.

The number -36 does not have a square root, because there is no number squared that can produce a negative number.

4. Determine the positive square root of 49, if it exists. Explain.

The square root of 49 is 7 because $7^2 = 49$
 $\sqrt{49} = 7$

Discussion



Exercises 5–9

Determine the positive square root of the number given. If the number is not a perfect square, determine which whole number the square root would be closest to, and then use *guess and check* to give an approximate answer to one or two decimal places.

5. $\sqrt{49} = 7$

6. $\sqrt{62} =$ Between 7 and 8 (closer to 8) ≈ 7.87
because $7^2 = 49$ and $8^2 = 64$

7. $\sqrt{122} =$ close to 11 ≈ 11.05

8. $\sqrt{400} = 20$

9. Which of the numbers in Exercises 5–8 are not perfect squares? Explain.

#6 & #7

Lesson Summary

A positive number whose square is equal to a positive number b is denoted by the symbol \sqrt{b} . The symbol \sqrt{b} automatically denotes a positive number. For example, $\sqrt{4}$ is always 2, not -2 . The number \sqrt{b} is called a *positive square root of b* .

The square root of a perfect square of a whole number is that whole number. However, there are many whole numbers that are not perfect squares.

Problem Set

Determine the positive square root of the number given. If the number is not a perfect square, determine the integer to which the square root would be closest.

- $\sqrt{169}$
- $\sqrt{256}$
- $\sqrt{81}$
- $\sqrt{147}$
- $\sqrt{8}$
- Which of the numbers in Problems 1–5 are not perfect squares? Explain.
- Place the following list of numbers in their approximate locations on a number line.
 $\sqrt{32}$, $\sqrt{12}$, $\sqrt{27}$, $\sqrt{18}$, $\sqrt{23}$, and $\sqrt{50}$



- Between which two integers will $\sqrt{45}$ be located? Explain how you know.