

Absolute Value

The **absolute value** of a real number is _____ Note that the absolute value of a _____

PROPERTIES

Looking Ahead

The following example involves a dot plot, which is a statistical graph representing data on a real number line.

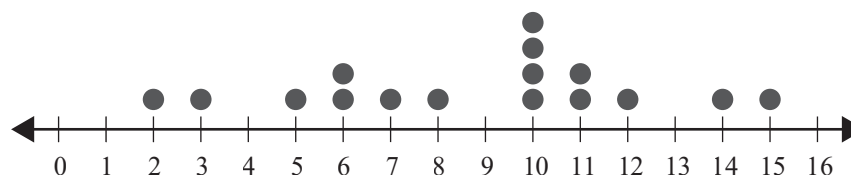
Example Preview

The following data represent the number of oranges, in hundreds, which were sold by various grocery stores in the month of May. Construct a dot plot for the given data.

10	12	6	3	10	10	8	11
7	5	10	15	14	6	2	11

Solution

Recall that a dot plot is a graphical display of data where a dot is used to represent each data value on a number line. If any data value repeats, that value will have more than one dot, corresponding to the number of times that data value appears. The given data are plotted on the following number line.



2.R.7 Exercises

Concept Check

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

1. On a number line, smaller numbers are always to the left of larger numbers.
2. The absolute value of a negative number is a positive number.

3. All whole numbers are also integers.

4. Zero is a positive number.

Graph each set of real numbers on a real number line.

5. $\{-3, -2, 0, 1\}$

6. $\{-2, -1, -\frac{1}{3}, 2\}$

List the numbers in the set $A = \{-7, -\sqrt{6}, -2, -\frac{5}{3}, -1.4, 0, \frac{3}{5}, \sqrt{5}, \sqrt{11}, 4, 5.9, 8\}$ that are described in each exercise.

7. Whole numbers

8. Rational numbers

Determine whether each statement is true or false. If a statement is false, rewrite it in a form that is a true statement.

(There may be more than one way to correct a statement.)

9. $0 = -0$

10. $|-8| \geq 4$

Applications

Solve. Represent each quantity with a signed integer.

11. **Oceans:** The Alvin is a manned deep-ocean research submersible that has explored the wreck of the Titanic. The operating depth of the Alvin is 4500 meters below sea level.

12. **Oceans:** The Mariana trench is the deepest known location on the Earth's ocean floor. The deepest known part of the Mariana Trench is approximately 11 kilometers below sea level.

13. *Finance:* The closing price of a stock dropped 37 points in one day.

14. *Auto Mechanics:* Last winter the average air pressure in Ian's car tires decreased by 5 psi.

Writing & Thinking

15. Explain, in your own words, how an expression such as $-y$ might represent a positive number.

16. Compare and contrast absolute value with opposites.