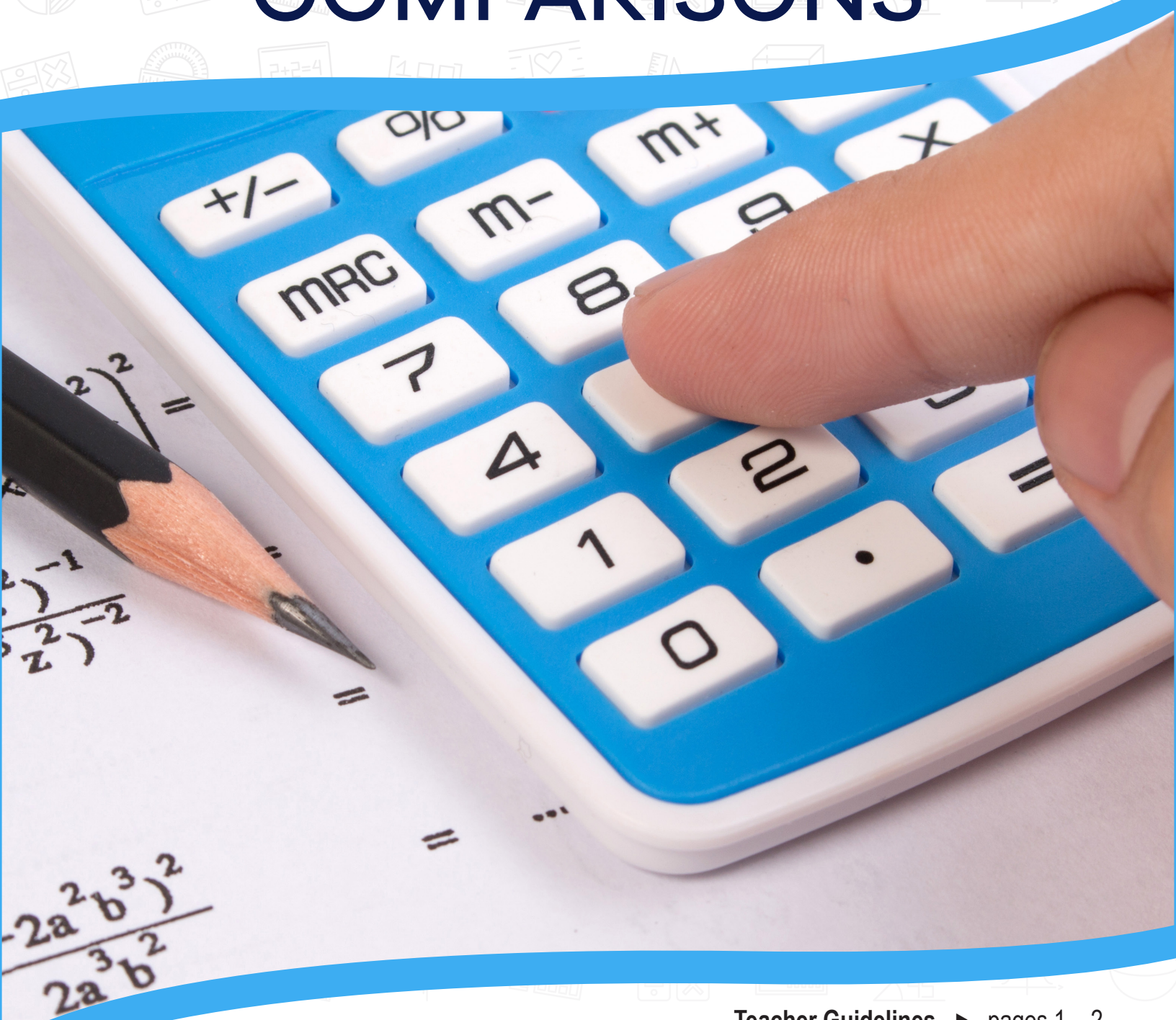


Learn
BRIGHT

ABSOLUTE VALUE COMPARISONS



GRADE 6

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- Instructional Pages ▶ pages 3 – 7
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Classroom Procedure:

1. Begin by discussing distance as a measure of forward and backward in relation to positive and negative.
2. While reading the content pages, reinforce vocabulary and give students additional examples of Absolute Value Comparison problems in order to help them practice. Use the additional resources to enhance understanding.
3. Introduce notes on Absolute Value Comparisons. Have students practice problems with comparing and ordering absolute value.
4. Follow Activity page with students. Have students work individually or with a partner on the activity.
5. Distribute Practice page. Check and review the students' responses as a class.
6. Distribute the Homework page. Have students work a few problems at the beginning of the next class to reinforce their understanding.
7. In closing, ask students why the absolute value of a number can never be negative. Allow for responses and discussion.

Approximate Grade Level: 6

Objectives: Students will be able to distinguish comparisons of absolute value from statements about order.

State Educational Standards*
LB.Math.Content.6.NS.C.7.D

Class Sessions (45 minutes): 1

Teaching Materials/Worksheets:

Absolute Value Comparisons content pages

Activity pages

Practice page

Homework page

Student Supplies:

Red, green, blue, and yellow markers or colored pencils

Extra paper

Ruler

Prepare Ahead of Time:

Copy Materials

Options for Lesson:

Have students draw and write their own examples that mirror those in the activity section; for advanced students begin to expand on the absolute value bars as a grouping symbol and apply to order of operations problems.

*Lessons are aligned to meet the education objectives and goals of most states. For more information on your state objectives, contact your local Board of Education or Department of Education in your state.



Teacher Notes

In this lesson, students learn to compare absolute values to one another. Students work with real world examples during a partnered activity to solidify their understanding of ordering absolute value while providing creativity in their final product. Use this lesson in conjunction with other lessons on absolute value.

Absolute Value Comparisons

When thinking about absolute value, ask yourself the question, "How far is the value from zero?"

Absolute value is a measure of distance along the number line. The positive and negative tell you the direction you are moving rather than the value of the digit.

The symbol for absolute value is two straight parallel bars on either side of the number.

$$| 4 | \text{ or } | -7 |$$

To find the solution to , look at the distance on a number line. The number 4 is 4 units away from zero, so the solution is 4.



$$| 4 | = 4$$

To find the solution to , look at the distance on a number line. The number -7 is 7 units away from zero, so the solution is 7.



$$| -7 | = 7$$

If you compare the distances, 7 is greater than 4. Therefore, $| 4 | < | -7 |$ because $4 < 7$.

Let's look at a couple more comparison problems.

$$| -10 | > | -5 | \text{ because } 10 > 5$$

$$| -1 | < | -7 | \text{ because } 1 < 7$$

$$| 4 | < | -7 | \text{ because } 4 < 7$$

Absolute value bars are a grouping symbol which means that when evaluating them for an answer, everything inside of the bars must be calculated first and then the outside.

$$- \left| -14 \right| = \left| -14 \right|$$

The absolute value of -14 is 14. The negative on the outside is actually a -1 which you multiply to the answer. Technically it looks like this: $-1 \times |-14| = -1 \times 14 = -14$

Absolute value is also used to find distance in real world applications. When people invest in a stock, they track the movement of the value of the stock. The stock rises and falls in value. If you invest in a stock that is below market price by \$6 and then it rises above market price by \$4, the distance the stock has increased is \$10.

$$-1 \times |-14| = -1 \times 14 = -14$$

$$-1 \times |-14| = -1 \times 14 = -14$$

*Remember that absolute value is a measure of distance, so it can never be negative!





Instructions

Using the information below, place the submarines and helicopters on a poster showing their relation to one another.

Submarines

You are in charge of watching the depth of 4 submarines, so they do not crash into one another. The blue one is located at a depth of 326 feet below sea level. The red one is located at a depth of 4,944 inches below sea level and the green one is located at 73 yards below sea level. The yellow one is $\frac{1}{10}$ of a mile below sea level.

Helicopters

Your partner is in charge of watching the height of 4 helicopters, so they too do not crash into one another. The blue one is 4,260 inches above sea level, and the green one is 161 yards above sea level. The red one is 672 feet above sea level and the yellow one is 5% of a mile above sea level.



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(in feet)

672 red helicopter

483 green helicopter

355 blue helicopter

264 yellow helicopter

0 sea level

-219 green submarine

-326 blue submarine

-412 red submarine

-528 yellow submarine



Practice

Name _____ Date _____



Instructions

What does absolute value measure? _____

What is the absolute value of -2 ? _____

What is the absolute value of 1 ? _____

What is the absolute value of -8 ? _____

What is the absolute value of -7 ? _____

What is the absolute value of 9 ? _____

What is ? _____

What is ? _____

What is ? _____

What is ? _____

What is ? _____

Fill in the blank with $<$, $>$, or $=$.

In Anchorage, Alaska, the weather can be very cold. The low temperatures for 5 consecutive days were Monday -9°F , Tuesday 7°F , Wednesday -3°F , Thursday -4°F , and Friday 1°F . Place these temperatures in order on a number line.



Instructions

What does absolute value measure? distance

What is the absolute value of -2 ? 2

What is the absolute value of 1 ? 1

What is the absolute value of -8 ? 8

What is the absolute value of -7 ? 7

What is the absolute value of 9 ? 9

What is ? 3

What is ? 6

What is ? -4

What is ? 0

What is ? -5

Fill in the blank with $<$, $>$, or $=$.

In Anchorage, Alaska, the weather can be very cold. The low temperatures for 5 consecutive days were Monday -9°F , Tuesday 7°F , Wednesday -3°F , Thursday -4°F , and Friday 1°F . Place these temperatures in order on a number line.



Homework

Name _____ Date _____



Instructions

What is your understanding of the vocabulary word 'absolute value'? _____

Can absolute value ever be negative? _____

What is the absolute value of 17 ? _____

What is the absolute value of -31 ? _____

What is the absolute value of -100 ? _____

What is ? _____

What is ? _____

What is ? _____

Fill in the blank with $<$, $>$, or $=$.

In a college football game, the quarterback was looking for a receiver to catch the ball. The quarterback tossed the ball behind him 4 yards to the running back and then the running back ran 10 yards past the quarterback before being tackled.

How far did the running back go in all? _____

Draw a diagram of the ball.



Instructions

What is your understanding of the vocabulary word 'absolute value'? _____

____ **answers will vary but should focus on a measurement of distance** _____

Can absolute value ever be negative? ____ **no** _____

What is the absolute value of 17 ? ____ **17** _____

What is the absolute value of -31 ? ____ **31** _____

What is the absolute value of -100 ? ____ **100** _____

What is ? ____ **-12** _____

What is ? ____ **75** _____

What is ? ____ **28** _____

Fill in the blank with $<$, $>$, or $=$.

In a college football game, the quarterback was looking for a receiver to catch the ball. The quarterback tossed the ball behind him 4 yards to the running back and then the running back ran 10 yards past the quarterback before being tackled.

How far did the running back go in all? ____ **14 yards** ____

Draw a diagram of the ball.