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Introduction

Instruction

This book includes a collection of station-based activities to provide students with opportunities to practise and apply the mathematical skills and concepts they are learning. It contains five sets of activities for each of the four strands: Number and Operations; Geometry and Measurement; Algebra; and Data Analysis and Probability. You may use these activities in addition to the direct instruction lessons, or, especially if a pre-test or other formative assessment suggests it, instead of direct instruction in areas where students have the basic concepts but need practice. The debriefing discussions after each set of activities provide an important opportunity to help students reflect on their experiences and synthesise their thinking. It also provides an additional opportunity for ongoing, informal assessment to inform instructional planning.

Implementation Guide

The following guidelines will help you prepare for and use the activity sets in this book.

Setting Up the Stations

Each activity set consists of four stations. Set up each station at a desk, or at several desks pushed together, with enough chairs for a small group of students. Place a card with the number of the station on the desk. Each station should also contain the materials specified in the teacher's notes, and a stack of Student Activity Sheets (one copy per student). Place the required materials (as listed) at each station.

When a group of students arrives at a station, each student should take one of the activity sheets to record the group's work. Although students should work together to develop one set of answers for the entire group, each student should record the answers on his or her own activity sheet. This helps keep students engaged in the activity and gives each student a record of the activity for future reference.

Forming Groups of Students

All activity sets consist of four stations. You might divide the class into four groups by having students count from 1 to 4. If you have a large class and want to have students working in small groups, you might set up two identical sets of stations, labelled A and B. In this way, the class can be divided into eight groups, with each group of students rotating to the "A" stations or "B" stations.

Number and Operations

Set 1: Integers and Absolute Value

Instruction

Goal: To provide opportunities for students to develop concepts and skills related to absolute values

Maths Standards

Number and Operations

Understand numbers, ways of representing numbers, relationships among numbers and number systems: develop meaning for integers and represent and compare quantities with them.

Student Activities Overview and Answer Key

Station 1

Students work together to use a number line to plot numbers that have a given absolute value. Students reflect on their work to recognise that there are two points on a number line with a given absolute value (for positive absolute values) and one point (0) with an absolute value of zero.

Answers: 1. 1 and -1 ; 2. 3 and -3 ; 3. 4.5 and -4.5 ; 4. 0; 5. 2 and -2

Possible responses: For a given positive absolute value, two points have the given absolute value. The only point with an absolute value of 0 is 0. No points have a negative absolute value.

Station 2

Students use a coin and a die to generate positive and negative two-digit numbers. They work together to find the absolute value of each of the numbers.

Answers: Answers will depend upon numbers that are rolled.

Possible explanation: If the number is positive, the absolute value of the number is the same as the number. If the number is negative, the absolute value of the number is the same as the number without its sign.

Discussion Guide

To support students in reflecting on the activities and to gather some formative information about student learning, use the following prompts to facilitate a class discussion to “debrief” the station activities.

Prompts/Questions

1. What is the absolute value of a number?
2. How do you find the absolute value of a number?
3. Can the absolute value of a number ever be negative? Why or why not?
4. Can two different numbers ever have the same absolute value? Explain.

Think, Pair, Share

Have students jot down their own responses to questions, discuss with a partner (who was not in their station group) and then discuss as a whole class.

Suggested Appropriate Responses

1. the distance of the number from 0 on a number line
2. If the number is positive, the absolute value of the number is the same as the number. If the number is negative, the absolute value of the number is the same as the number without its sign. The absolute value of 0 is 0.
3. No. The absolute value represents a distance, so it cannot be negative.
4. Yes. A number and its opposite, such as 5 and -5 , have the same absolute value.

Possible Misunderstandings/Mistakes

- Forgetting that the absolute value of a number cannot be negative
- Incorrectly finding the absolute value of expressions (e.g. $|2 - 12| \neq |2| - |12|$)
- Incorrectly ordering the absolute value of two numbers (e.g. stating that $|-5|$ is less than $|4|$ because -5 is less than 4)

NAME: _____

Number and Operations

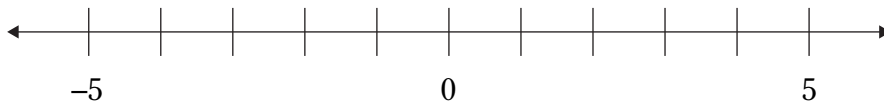
Set 1: Integers and Absolute Value

Station 1

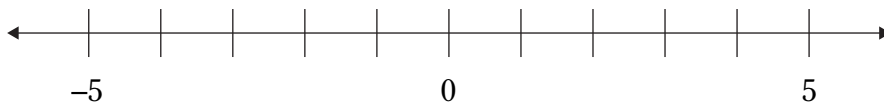
In this activity, you will work with other students to plot points on a number line. Recall that the absolute value of a number is its distance from zero on a number line.

For each of the following, plot all the points (if any) that satisfy the statement.

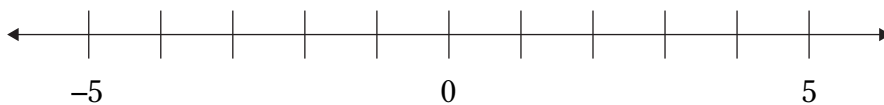
1. The absolute value is 1.



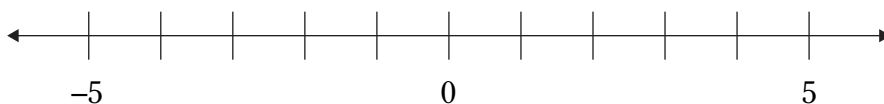
2. The absolute value is 3.



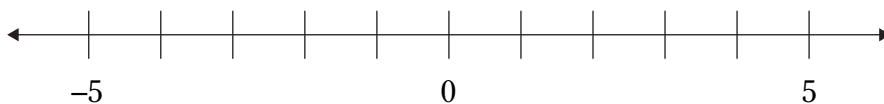
3. The absolute value is 4.5.



4. The absolute value is 0.



5. The absolute value is -2.



Work with other students to list at least three things you notice from your work. _____

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