

Integers in the Real World Math Lab Instructor Notes

- Course Level/Topic: Pre-algebra/Integers
- Purpose: This lab gives students the opportunity to see integers in real world situations.
- Learning Goals:
 - Express real world situations using the appropriate signed number
 - Write the appropriate expression to illustrate a given situation
 - Perform basic arithmetic operations with integers in a real world situation
- Prerequisite Knowledge:
 - Addition and subtraction with integers
 - How to find the average of a set of numbers
- Materials/Technology: None
- Time Required: about 20 minutes
- Description: Given real world situations, students will represent the given numbers using the appropriate signs, then write the arithmetic expression which illustrates the situation and finally perform the required arithmetic operation to answer the question.
- General Notes:
 - I do not let students use a calculator for any part of the activity.
- Follow Up/ Discussion Questions:

Integers in the Real World

Name(s): KEY

In this lab you will be using integers to express real-world data.

Example: Extreme Temperatures

The hottest temperature ever recorded on Earth was a balmy 136 degrees Fahrenheit recorded in a city in Libya. The coldest temperature ever recorded on Earth was a chilly 129 degrees Fahrenheit below zero recorded at an Arctic weather station.

1. What integer represents the hottest temperature ever recorded? 136
2. What integer represents the coldest temperature ever recorded? -129
3. What numeric expression represents the difference between the hottest and coldest temperatures ever recorded? $136 - (-129)$
4. What is the difference between the hottest temperature ever recorded on Earth and the lowest temperature ever recorded on Earth? 265

Exercises Part 1: Elevation

The highest elevation on Earth is at Mount Everest. It is 29,035 feet (8850 meters) above sea level. The lowest is the Bentley Subglacial Trench. It is 8327 feet (2555 meters) below sea level.

1. What integer represents the highest elevation on Earth? 29,035
 2. What integer represents the lowest elevation on Earth? -8327
 3. What numeric expression represents the difference between the highest and lowest elevation? $29035 - (-8327)$
 4. What is the elevation difference between the highest elevation on Earth and the lowest elevation on Earth? 37,362 ft
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Part 2: The Stock Market

The Dow-Jones Industrial Average (or “The Dow”) is a number that tracks the overall progress of the stock market. If stocks are generally doing well, then the Dow goes up. If stocks are overall doing poorly, the Dow goes down. In a typical week, news about the stock market will be reported something like this...

Monday: “The Dow is up 125 points.”

Tuesday: “The Dow is down 73 points.”

Wednesday: “The Dow is down 46 points.”

Thursday: “The Dow is up 158 points.”

Friday: “The Dow is down 89 points.”

1. Choose an integer to represent the stock market’s progress for every day of the week:

Monday: 125

Thursday: 158

Tuesday: -73

Friday: -89

Wednesday: -46

2. What numeric expression represents the overall change in The Dow for the whole week?

$125+(-73)+(-46)+158+(-89)$

3. What was the overall result for the week?

75 pts

4. What is the average change in the stock market for the 5 days?

15 pts

Part 3: Temperature

The following table gives some information about the **normal temperature on the sunny side (°C)** for each of the planets in our solar system.

Planet	Earth	Jupiter	Mars	Mercury	Neptune	Saturn	Uranus	Venus
Temperature	20	-150	-20	430	-220	-180	-210	474

You may be familiar with how to calculate an average.

To calculate the average of a list of numbers:

1. add all the values in the list
2. divide by the numbers of numbers in the list
3. the result is the average of the list of numbers

1. What numeric expression represents the *average* of all the normal temperatures of the planets?

$$\frac{20 + (-150) + (-20) + 430 + (-220) + (-180) + (-210) + 474}{8}$$

2. What is the average normal temperature of all the planets? 18 degrees