

story problems with integers answer key

Story problems with integers answer key are essential tools for educators and students alike, as they help bridge the gap between abstract mathematical concepts and real-world applications. These problems not only enhance students' understanding of integers but also improve their problem-solving skills. In this article, we will explore the definition of integers, the significance of story problems, examples of such problems, and an answer key for various integer story problems.

Understanding Integers

Integers are whole numbers that can be positive, negative, or zero. They do not include fractions or decimals. The set of integers is usually represented as:

- Positive integers: $\{1, 2, 3, \dots\}$
- Negative integers: $\{\dots, -3, -2, -1\}$
- Zero: $\{0\}$

Understanding integers is crucial because they are used extensively in everyday calculations, from tracking finances to measuring temperatures.

The Importance of Story Problems

Story problems, also known as word problems, play a significant role in mathematics education for several reasons:

1. **Real-World Relevance:** They help students see the practical applications of mathematics in daily life.
2. **Critical Thinking:** Story problems require students to analyze situations, identify relevant information, and apply appropriate mathematical operations.
3. **Engagement:** By framing problems in a narrative context, students may find math more interesting and relatable.
4. **Skill Development:** They enhance various skills, including reading comprehension, reasoning, and mathematical fluency.

Examples of Integer Story Problems

Here are some examples of story problems involving integers, which are designed to challenge students and encourage them to think critically.

Example 1: Temperature Changes

Problem: The temperature in a city was 5 degrees Celsius in the morning. In the afternoon, the temperature dropped by 8 degrees. What was the temperature in the afternoon?

Solution Approach:

- Start with the morning temperature: 5°C
- Subtract the drop in temperature: $5 - 8 = -3^{\circ}\text{C}$

Example 2: Bank Account Balance

Problem: Maria had \$150 in her bank account. She withdrew \$75 and then deposited \$50. How much money is in her account now?

Solution Approach:

- Start with the initial balance: \$150
- Subtract the withdrawal: $150 - 75 = 75$
- Add the deposit: $75 + 50 = \$125$

Example 3: Elevation Changes

Problem: A hiker starts at an elevation of 300 meters above sea level. During the hike, he descends 450 meters. What is his elevation now?

Solution Approach:

- Start with the initial elevation: 300 meters
- Subtract the descent: $300 - 450 = -150$ meters (indicating 150 meters below sea level)

Example 4: Temperature Fluctuation

Problem: The temperature outside was -10°C . It increased by 15 degrees during the day. What is the temperature now?

Solution Approach:

- Start with the initial temperature: -10°C
- Add the increase: $-10 + 15 = 5^{\circ}\text{C}$

Example 5: Shopping Expenses

Problem: Jack had \$200. He spent \$50 on groceries and \$30 on a new shirt. How much money does he have left?

Solution Approach:

- Start with the initial amount: \$200
- Subtract the grocery expense: $200 - 50 = 150$
- Subtract the shirt expense: $150 - 30 = 120$

Answer Key for Integer Story Problems

Here is an answer key for the above examples along with additional problems to provide a comprehensive resource for educators and students.

1.

Temperature Changes:

- Answer: -3°C

2.

Bank Account Balance:

- Answer: \$125

3.

Elevation Changes:

- Answer: -150 meters

4.

Temperature Fluctuation:

- Answer: 5°C

5.

Shopping Expenses:

- Answer: \$120

Additional Story Problems

To further practice working with integers, here are a few more story problems:

Problem 6: Score Calculation

Problem: A basketball player scored 20 points in the first half and lost 5 points due to a foul in the second half. What is his total score?

Problem 7: Bank Transactions

Problem: Tom's bank account started with a balance of \$300. He made three transactions: a deposit of \$100, a withdrawal of \$50, and another withdrawal of \$150. What is his current balance?

Problem 8: Weight Changes

Problem: A person weighed 70 kilograms and lost 10 kilograms over a month. After gaining 5 kilograms back, how much does he weigh now?

Problem 9: Depth Below Sea Level

Problem: A submarine was at a depth of 150 meters below sea level. It ascended 200 meters. What is its current depth?

Problem 10: Elevator Ride

Problem: An elevator starts at the ground floor (0 meters) and moves up 3 floors (each floor is 3 meters). It then goes down 2 floors. What is the current height of the elevator?

Answer Key for Additional Problems

1.

Score Calculation:

- Answer: 15 points ($20 - 5 = 15$)

2.

Bank Transactions:

- Answer: \$200 ($300 + 100 - 50 - 150 = 200$)

3.

Weight Changes:

- Answer: 65 kilograms ($70 - 10 + 5 = 65$)

4.

Depth Below Sea Level:

- Answer: 50 meters ($150 - 200 = -50$, indicating 50 meters above sea level)

5.

Elevator Ride:

- Answer: 3 meters ($0 + 33 - 23 = 3$)

Conclusion

Story problems with integers answer key serve as a valuable tool for both teachers and students. They not only reinforce the understanding of integers but also enhance critical thinking and problem-solving abilities. By practicing with various story problems, students can gain confidence in their mathematical skills while recognizing the relevance of mathematics in everyday life. Whether in the classroom or at home, these problems can be an engaging way to learn and apply integer concepts, ultimately leading to a deeper understanding of mathematics as a whole.

Frequently Asked Questions

What are story problems with integers?

Story problems with integers are mathematical problems presented in a narrative format that require the use of whole numbers (positive and negative) to solve.

How can I effectively teach students to solve story problems with integers?

To effectively teach students, encourage them to identify key information in the problem, visualize the scenario, translate the narrative into mathematical equations, and practice with a variety of examples.

What are some common keywords to look for in integer story problems?

Common keywords include 'increase', 'decrease', 'net', 'total', 'difference', 'above', and 'below', which can help students determine the operations needed.

Can you give an example of a story problem involving integers?

Sure! If Sarah has 12 apples and gives away 7, how many apples does she have left? The solution is $12 - 7 = 5$ apples.

Where can I find answer keys for integer story problems?

Answer keys for integer story problems can be found in educational textbooks, online math resources, or educational websites that focus on math practice.

Why are story problems with integers important for students?

They are important because they help students develop critical thinking and problem-solving skills, making math more relatable and applicable to real-life situations.

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