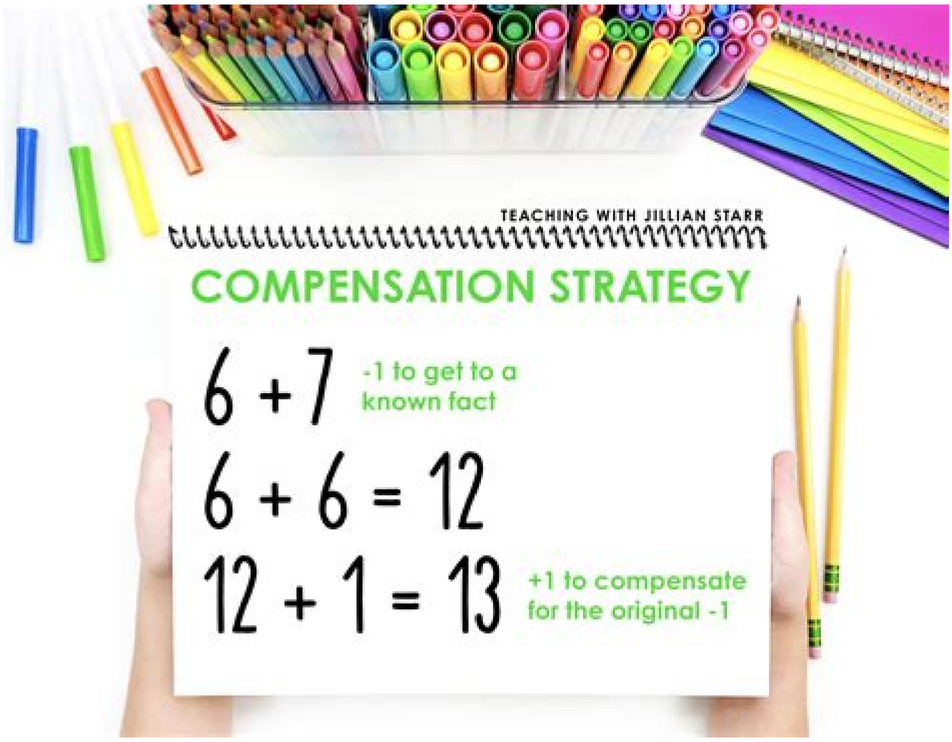
Compensation Strategy In Math


TEACHING WITH JILLIAN STARR
COMPENSATION STRATEGY
6 + 7
-1 to get to a known fact
6 + 6 = 12
12 + 1 = 13
+1 to compensate for the original -1

Compensation strategy in math is a powerful technique that allows students to simplify complex calculations by adjusting numbers to make them easier to work with. This method is particularly useful in mental math, where the goal is to arrive at answers quickly and efficiently. By employing compensation strategies, students can enhance their computational skills, improve their confidence in math, and develop a deeper understanding of numerical relationships. In this article, we will explore the concept of compensation strategy in math, its applications, benefits, and practical examples.

Understanding Compensation Strategy

Compensation strategy involves altering a number to make calculations simpler while still arriving at the correct answer. This method often involves rounding numbers to the nearest ten, hundred, or other convenient values, and then compensating for this change in the final calculation.

How Compensation Strategy Works

The basic idea behind the compensation strategy is to change one or more numbers in an equation for easier computation. Here’s how it typically works:

1. Identify the Numbers: Look at the numbers involved in the calculation.
2. Make a Rounding Adjustment: Round one of the numbers to a more manageable

figure.
3. Perform the Calculation: Carry out the calculation with the adjusted number.
4. Compensate for the Change: Adjust the result by accounting for the initial rounding.

For example, if you need to calculate 48 + 37, you might round 48 up to 50 (which is easier to add) and then subtract the 2 you added after completing the calculation. Thus, 50 + 37 equals 87, and then you subtract the 2 to get 85.

Types of Compensation Strategies

Compensation strategies can be categorized based on the type of numbers involved and the operations being performed. Here are some common types:

- Rounding Up: This involves increasing a number to the nearest ten or hundred to simplify addition or subtraction.
- Rounding Down: Conversely, this strategy entails decreasing a number to a simpler value, often for ease of calculation.
- Adjusting for Multiplication and Division: Involves modifying numbers in a multiplication or division problem to make common factors or multiples more apparent.

Applications of Compensation Strategy

Compensation strategies are versatile and can be applied in various mathematical contexts. Here are some key applications:

1. Mental Math

In mental math, speed and efficiency are crucial. Compensation strategies allow students to perform calculations without relying on paper and pencil. For example:

- Calculate 29 + 56:
- Round 29 to 30.
- Add 30 + 56 = 86.
- Compensate by subtracting 1 (the amount we rounded up): 86 - 1 = 85.

2. Estimation

When estimation is required, compensation strategies can help provide a quick approximation. For instance, if asked for a rough estimate of 198 + 375, you might round 198 to 200 and 375 to 380, leading to an estimate of 580.

3. Problem Solving

In complex problem-solving scenarios, particularly in word problems, compensation can simplify the math involved. It helps break down larger problems into manageable parts, allowing for a clearer path to the solution.

Benefits of Using Compensation Strategy

Adopting compensation strategies in math offers numerous benefits for learners of all ages. Here are some of the most significant advantages:

1. Enhanced Mental Math Skills

Compensation strategies improve students’ ability to perform calculations mentally, reducing reliance on calculators or paper methods. This skill is valuable not only in academic settings but also in everyday life.

2. Greater Confidence in Math

As students become more proficient with compensation strategies, their confidence in handling math problems increases. This newfound confidence can lead to a more positive attitude toward math as a whole.

3. Improved Problem-Solving Abilities

Learning to utilize compensation strategies enhances problem-solving skills. Students develop a toolkit of techniques that they can apply to various mathematical situations, fostering flexibility in their thinking.

4. Deepened Understanding of Numbers

Compensation encourages a deeper understanding of numerical relationships and operations. Students learn to see numbers in different ways and recognize patterns that can simplify their work.

Practical Examples of Compensation Strategy

To illustrate the effectiveness of compensation strategies, consider the following examples:

Example 1: Addition

Calculate 78 + 46:

1. Round 78 up to 80 (easier to add).
2. Calculate 80 + 46 = 126.
3. Compensate by subtracting the 2 you added: 126 - 2 = 124.

Example 2: Subtraction

Calculate 65 - 29:

1. Round 29 up to 30.
2. Calculate 65 - 30 = 35.
3. Compensate by adding back the 1 you subtracted: 35 + 1 = 36.

Example 3: Multiplication

Calculate 19 x 6:

1. Round 19 up to 20.
2. Calculate 20 x 6 = 120.
3. Compensate by subtracting 6 (since you added 1 to 19): 120 - 6 = 114.

Example 4: Division

Calculate 84 ÷ 7:

1. Recognize that 84 is close to 70 (10 x 7) which is easier to divide.
2. Calculate 70 ÷ 7 = 10.
3. Adjust for the difference by recognizing you used 14 extra: 10 + 2 = 12.

Conclusion

In conclusion, the compensation strategy in math is an invaluable tool for learners, enabling them to tackle calculations with greater ease and confidence. By understanding how to adjust numbers and compensate for those adjustments, students can enhance their mental math skills, improve their problem-solving abilities, and develop a robust understanding of numerical relationships. As educators and parents encourage the use of compensation strategies, they equip students with essential tools that will serve them well throughout their academic and professional lives. By practicing and applying these strategies regularly, students can transform their approach to mathematics, making it a more enjoyable and less daunting subject.

Frequently Asked Questions

What is a compensation strategy in mathematics?

A compensation strategy in mathematics refers to a method where a student adjusts numbers to make calculations easier, often by rounding numbers or using compatible numbers to simplify the problem.

How can compensation strategies improve problem-solving skills?

Compensation strategies can enhance problem-solving skills by helping students to think flexibly about numbers, allowing them to find quicker and more efficient ways to solve problems without relying solely on traditional algorithms.

What are some examples of compensation strategies in math?

Examples of compensation strategies include rounding numbers to the nearest ten or hundred to simplify addition or subtraction, or adjusting one number in a multiplication problem to make it easier to compute.

At what grade level should students start learning compensation strategies?

Students typically start learning compensation strategies around the second or third grade, as they begin to develop a deeper understanding of numbers and operations.

How can teachers effectively teach compensation strategies to students?

Teachers can effectively teach compensation strategies by using hands-on activities, visual aids, and real-life examples, encouraging students to practice these strategies in various contexts to reinforce their understanding.

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