Applying the Split Strategy to Solve Two-Digit Addition Problems with Abstract Numbers and Real-World Applications

Lesson Overview

This lesson is designed to help 7-year-old students develop their problem-solving skills in mathematics, specifically focusing on the application of the split strategy to solve two-digit addition problems with abstract numbers and real-world applications.

The lesson aligns with the Australian Curriculum outcomes and assessment standards for grade 2 maths, including ACARA's Number and Algebra strand, where students are expected to "use mental and written strategies to solve addition and subtraction problems involving multi-digit numbers" (ACMNA057).

Lesson Objectives

- Students will understand the concept of the split strategy and how it can be used to break down complex numbers into tens and ones, making it easier to perform addition operations.
- Students will be able to apply the split strategy to solve two-digit addition problems with abstract numbers and real-world applications.
- Students will develop their problem-solving skills, including critical thinking, reasoning, and communication, through the use of "I do, we do, you do" activities and opportunities for sharing and discussing solutions.

Introduction to the Split Strategy

The split strategy is a mathematical technique used to break down complex numbers into tens and ones, making it easier to perform addition operations.

This strategy is particularly useful when dealing with two-digit numbers, as it allows students to visualize and manipulate the numbers more easily.

Concrete Representation of the Split Strategy

Using base-ten blocks, students can represent the split strategy in a concrete way, making it easier to understand and visualize the concept.

For example, the number 45 can be represented as 40 + 5, with 40 being the tens and 5 being the ones.

Pictorial Representation of the Split Strategy

Using number lines, students can represent the split strategy in a pictorial way, making it easier to visualize and understand the concept.

For example, the number 45 can be represented as a point on the number line, with 40 being the tens and 5 being the ones.

Abstract Representation of the Split Strategy

Using abstract symbols, such as numbers, students can represent the split strategy in an abstract way, making it easier to apply to different mathematical operations.

For example, the number 45 can be represented as 40 + 5, with 40 being the tens and 5 being the ones.

Guided Practice

Provide students with worksheets containing two-digit addition problems and ask them to solve them using the split strategy.

Circulate around the room to provide support and feedback.

Use "I do, we do, you do" activities to cater to mixed abilities.

Independent Practice

Provide students with real-world scenarios that require the use of the split strategy to solve two-digit addition problems.

Ask students to work in pairs to solve the problems and share their solutions with the class.

Encourage students to use the split strategy to solve problems involving money, measurement, and time.

Assessment and Feedback

Observe students during the guided and independent practice activities to assess their understanding of the split strategy.

Review student worksheets and provide feedback.

Use formative assessments, such as quizzes and class discussions, to inform instruction and adjust the lesson as needed.

Conclusion

Review the key concepts and objectives of the lesson.

Ask students to reflect on their learning and identify areas for improvement.

Provide opportunities for students to share their thoughts and solutions with the class.

Learning Wall Content

A diagram of the split strategy

Examples of two-digit addition problems

A list of real-world scenarios where the split strategy can be applied

A graph or chart to track student progress

A section for students to ask questions and seek help

Resources

Base-ten blocks

Number lines

Worksheets with two-digit addition problems

Real-world scenario cards

Whiteboard and markers

Math games and activities

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PowerPoint Slides

Slide 1: Introduction to the split strategy

Slide 2: Concrete representation of the split strategy using base-ten blocks

Slide 3: Pictorial representation of the split strategy using number lines

Slide 4: Abstract representation of the split strategy using numbers

Slide 5: Examples of two-digit addition problems

Slide 6: Real-world scenarios where the split strategy can be applied

Slide 7: Graph or chart to track student progress

Slide 8: Conclusion and reflection

Assessment Rubric

Can solve two-digit addition problems using the split strategy with accuracy and efficiency (4 marks)

Can solve two-digit addition problems using the split strategy with some accuracy, but may make minor errors (3 marks)

Can attempt to solve two-digit addition problems using the split strategy, but may make significant errors (2 marks)

Cannot solve two-digit addition problems using the split strategy (1 mark)

Applying the Split Strategy to Real-World Problems

The split strategy can be applied to a variety of real-world problems, such as calculating the total cost of items, measuring the length of objects, and determining the time it takes to complete a task. By breaking down complex numbers into tens and ones, students can more easily solve problems and develop a deeper understanding of mathematical concepts.

Example: Calculating the Total Cost of Items

A book costs $25 and a pencil costs $5. How much will it cost to buy 3 books and 2 pencils? Using the split strategy, students can break down the numbers into tens and ones, making it easier to calculate the total cost.

Using Technology to Support the Split Strategy

Technology can be a powerful tool in supporting the split strategy. Online math games, apps, and software can provide students with interactive and engaging ways to practice and apply the split strategy. Additionally, digital tools can help students visualize and explore mathematical concepts, making it easier for them to understand and apply the split strategy.

Some examples of digital tools that can support the split strategy include:

- Math games and apps, such as Math Playground and Khan Academy
- Online math software, such as MathType and GeoGebra
- Digital worksheets and activity sheets, such as those found on Teachers Pay Teachers

Assessment and Evaluation

Assessing and evaluating student understanding of the split strategy is crucial in determining their mastery of the concept. Teachers can use a variety of assessment tools, such as quizzes, tests, and project-based assessments, to evaluate student understanding. Additionally, teachers can use observational data and feedback from students to inform instruction and adjust the lesson as needed.

Case Study: Assessing Student Understanding

A teacher uses a combination of quizzes, tests, and project-based assessments to evaluate student understanding of the split strategy. The teacher also uses observational data and feedback from students to inform instruction and adjust the lesson as needed. As a result, the teacher is able to identify areas where students need additional support and provide targeted instruction to help students master the concept.

Conclusion

In conclusion, the split strategy is a powerful tool for solving two-digit addition problems with abstract numbers and real-world applications. By breaking down complex numbers into tens and ones, students can more easily solve problems and develop a deeper understanding of mathematical concepts. Teachers can support student learning by providing explicit instruction, using visual aids and manipulatives, and incorporating technology into the lesson. Additionally, teachers can use assessment and evaluation tools to determine student understanding and adjust instruction as needed.

Reflection

As teachers, it is essential to reflect on our practice and consider how we can improve student learning. By using the split strategy and incorporating technology into the lesson, teachers can provide students with a more engaging and effective learning experience. Additionally, teachers can use assessment and evaluation tools to determine student understanding and adjust instruction as needed, ensuring that all students have the opportunity to master the concept.

Future Directions

As students progress in their mathematical journey, they will encounter more complex mathematical concepts, such as multi-digit addition and subtraction, fractions, and decimals. The split strategy can be adapted and extended to support student learning in these areas, providing a foundation for future mathematical success. Additionally, teachers can continue to incorporate technology into the lesson, using digital tools to support student learning and provide real-world applications.

Strategy: Adapting the Split Strategy for Multi-Digit Addition

To adapt the split strategy for multi-digit addition, teachers can use a combination of visual aids, manipulatives, and digital tools. For example, teachers can use base-ten blocks to represent the numbers, and then use a hundreds chart to help students visualize the concept. Additionally, teachers can use online math games and apps to provide students with interactive and engaging ways to practice and apply the concept.

Resources

There are a variety of resources available to support teacher instruction and student learning, including textbooks, workbooks, online resources, and educational software. Teachers can use these resources to provide students with additional practice and support, as well as to inform instruction and adjust the lesson as needed.

Resource: Online Math Games and Apps

Some examples of online math games and apps that can support student learning include:

- Math Playground
- Khan Academy
- Math Games
- Coolmath

Glossary

A glossary of key terms and concepts can help students and teachers understand the language and terminology used in the lesson. Some key terms and concepts include:

Glossary

Split strategy: a mathematical technique used to break down complex numbers into tens and ones. Abstract numbers: numbers that are not concrete or tangible. Real-world applications: situations or scenarios that occur in everyday life. Manipulatives: physical objects used to represent mathematical concepts. Visual aids: tools used to help students visualize mathematical concepts.

PLANIT TEACHERS

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