



Lesson 1: The Relationship of Addition and Subtraction

Student Outcomes

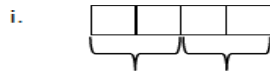
- Students build and clarify the relationship of addition and subtraction by evaluating identities such as $w - x + x = w$ and $w + x - x = w$.

Classwork

Opening Exercise

- a. Draw a tape diagram to represent the following expression: $5 + 4$.

- b. Write an expression for each tape diagram.



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Exercises

- Predict what will happen when a tape diagram has a large number of squares, some squares are removed, but then the same amount of squares are added back on.
- Build a tape diagram with 10 squares.
 - Remove 6 of them. Write an expression to represent the tape diagram.
 - Add 6 squares onto the tape diagram. Alter the original expression to represent the current tape diagram.
 - Evaluate the expression.

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3. Write a number sentence, using variables, to represent the identities we demonstrated with tape diagrams.

4. Using your knowledge of identities, fill in each of the blanks.

a. $4 + 5 - \underline{\hspace{1cm}} = 4$

b. $25 - \underline{\hspace{1cm}} + 10 = 25$

c. $\underline{\hspace{1cm}} + 16 - 16 = 45$

d. $56 - 20 + 20 = \underline{\hspace{1cm}}$

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5. Using your knowledge of identities, fill in each of the blanks.

a. $a + b - \underline{\hspace{1cm}} = a$

b. $c - d + d = \underline{\hspace{1cm}}$

c. $e + \underline{\hspace{1cm}} - f = e$

d. $\underline{\hspace{1cm}} - h + h = g$

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Problem Set

1. Fill in each blank

a. $\underline{\quad} + 15 - 15 = 21$

b. $450 - 230 + 230 = \underline{\quad}$

c. $1289 - \underline{\quad} + 856 = 1289$

2. Why are the number sentences $w - x + x = w$ and $w + x - x = w$ called identities?

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