Grades 2 and Up: Using Tape Diagrams to Solve Word Problems

- Introduced in Grade 2 but useful for all grade levels through algebra, tape diagrams use rectangular shapes (similar to measuring tapes) to model numbers and the relationships between them.

- Tape diagrams are a visual tool for solving word problems. They can represent fractions, differences between amounts, and many other concepts.

- Once you have created a tape diagram, there are usually several ways to figure out the right answer. In each of the two example problems, the notes in blue show one way to find the answer, but there may be other strategies that work.

Example Problem #1

Ana spent $6 on 10 stickers. Each sticker cost the same amount of money. How much money did she spend on each sticker?

**Step 1:** Draw a rectangle that is divided into 10 roughly equal parts (one part = one sticker).

**Step 2:** Write the total amount Ana spent on top. This shows that the cost of all 10 stickers adds up to $6.

**Step 3:** Label the unknown part (thing we need to figure out) with a question mark. We want to know how much one sticker costs, so we can label one of the 10 parts with a question mark.

**Step 4:** Divide the total money spent by the total number of stickers to find out how much one sticker costs.

One Way to Solve the Problem:

- $6 \div 10 = ?$
- $6 \times \frac{1}{10} = \frac{6}{10}$
- $6/10 = 60/100$
- There are 100 pennies in 1 dollar, so...
- $60/100$ of one dollar
- Ana spent $60 on each sticker.
Example Problem #2

Ms. Cooper, Ms. Rios, and Mr. Wu are hard-working math teachers. Ms. Cooper works 10 hours every weekend. Ms. Rios works twice as many hours as Ms. Cooper every weekend. Mr. Wu works 3 fewer hours than Ms. Rios every weekend. How many hours do all three teachers together work every weekend?

Step 1: Draw three rectangles of equal size, one for each “character” (in this case, teacher) in the problem. Label the diagram for Ms. Cooper to show that her total hours equal 10.

Step 2: To show that Ms. Rios works twice as many hours as Ms. Cooper, add another equal-sized piece to Ms. Rios’s tape diagram. 10 + 10 = 20, so write 20 on top for Ms. Rios’s total hours.

Step 3: Make Mr. Wu’s diagram the same size as Ms. Rios’s, but then cross out or shade in a small part of the diagram to show he works 3 fewer hours than her.

Step 4: As in Example 1, label anything we need to figure out with a question mark. The big green question mark represents our final answer.

For More on This Topic: https://www.engageny.org/resource/word-problems-with-tape-diagrams

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