Drawing Tape Diagrams to Deepen Understanding

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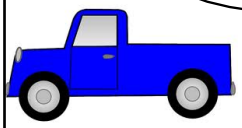
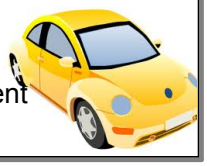
Between 9 and 10 o'clock 156 vehicles were in the lot. There were 3 times as many cars as trucks. How many cars and how many trucks were counted?

Convince me in 2 different ways...





Source: OA Progression Document

What are tape diagrams?

A drawing that looks like a segment of tape used to illustrate number relationships. Also known as strip diagrams, bar models, fraction strips, or length models. (CCSSM Glossary, p.87)

Operations and Algebraic Thinking 1.OA

1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.[2]

Operations and Algebraic Thinking 2.OA

1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]

Operations and Algebraic Thinking 3.OA

3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]

Ratios and Proportional Relationships 6.RP

Understand ratio concepts and use ratio reasoning to solve problems.

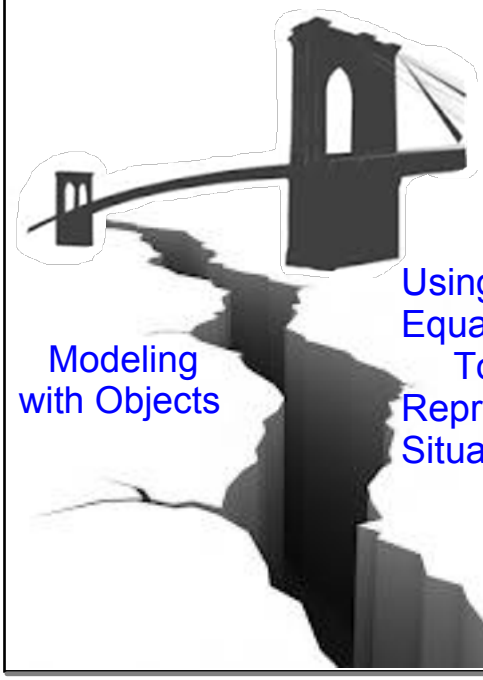
3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

   a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

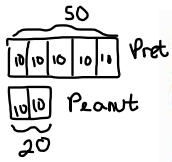
   c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

Sam has 47 marbles. Sam has 18 fewer marbles than Kari. How many marbles does Kari have?

Kari has three times as many marbles as Sam. Kari has 24 marbles. How many marbles does Sam have?



For a trail mix recipe the ratio of the number of cups of pretzels to the number of cups of peanuts is 5 to 2. If you used 20 cups of peanuts for the trail mix, how many cups of pretzels did you use?



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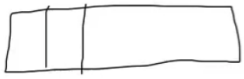
pretzels



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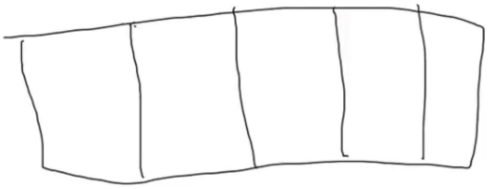

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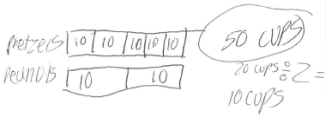

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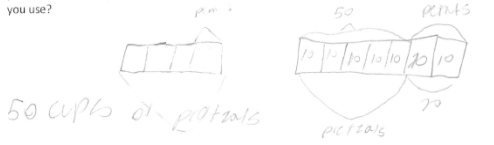
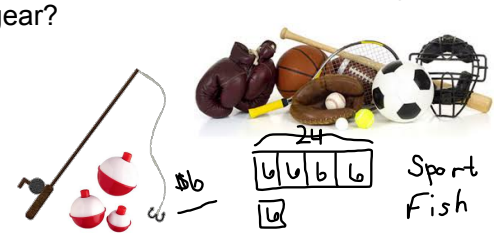


Tommy spent 1/4 as much money on fishing gear as sporting equipment. If he spent $24 on sporting equipment, how much did he spend on fishing gear?



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fishing- 6 6 6
sporting- 6 6 6 6
4 | 24 | 6
24
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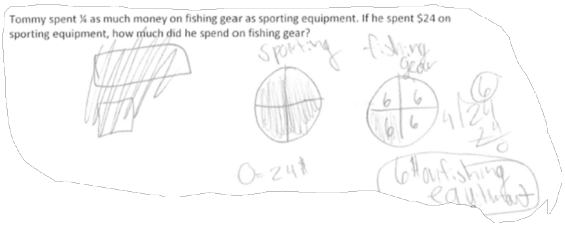

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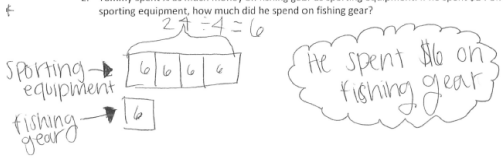
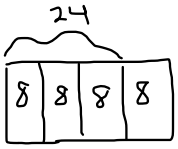
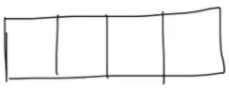


Mrs. McCool had a collection of stickers. She used 3/4 of the stickers on 24 student tests giving each student one sticker. How many stickers did Mrs. McCool originally have?



32

4. Mrs. McCool had a collection of stickers. She used ¾ of the stickers on 24 student tests giving each student one sticker. How many stickers did Mrs. McCool originally have?



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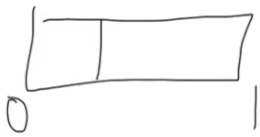

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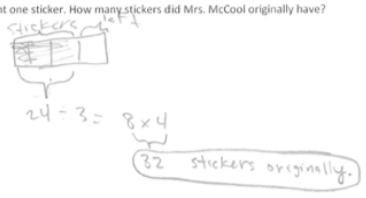

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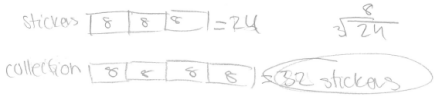
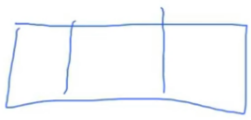


The ratio of the number of boys to the number of girls in the math club is 3 to 5. If there are 20 or more girls in the math club, how many total students are in the math club?

$\sqrt{-1}$ ♥ **Math**

80

3. The ratio of the number of boys to the number of girls in the math club is 3 to 5. If there are 20 more girls in the math club, how many total students are in the math club?



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32 students

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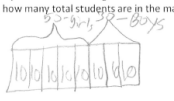

80 students

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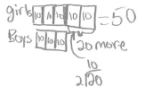


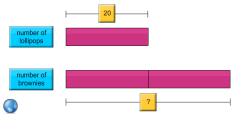
There are 50 girls and 30 boys So the are 80 students in math club.

Voices from the field...

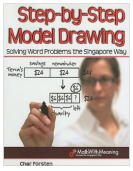
- Provide the Structure
- Equal Size Pieces
- Focus on the Part and on the Whole
- Have Them Create a Problem Scenario

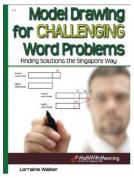
Resources:

www.thinkingblocks.com



Books





NCTM Journals

Thank you for coming today!

Any questions or comments?

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University of Wisconsin
LA CROSSE

Attachments

- trail mix correct.mp4
- stickers correct.mp4
- gear answer 18.mp4
- gear oops.mp4
- stickers 24 is whole.mp4
- boys and girls correct.mp4
- trail mix misconception.mp4