A Picture + Technology = Understanding x 10

CCTM – Fall 2016 Conference

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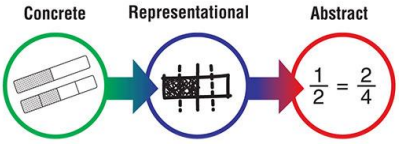
TAPE DIAGRAM

A drawing that looks like a segment of tape, used to illustrate number relationships. Also known as a *strip diagram, bar model, fraction strip, or length model.*

Concrete - Pictorial - Abstract =



PROGRESSIONS DOCUMENTS FOR THE COMMON CORE MATH STANDARDS

http://ime.math.arizona.edu/progressions/

TECHNOLOGY – Drawing Models

Thinking Blocks: MathPlayground.com and iPad

Conceptua Math: ConceptuaMath.com/bar-models-tool

The Singapore Maths Teacher: thesingaporemaths.com

~~Ultimath Modeler: ultimath.com~~

Houghton-Mifflin: Proprietary with curriculum and iPad

TECHNOLOGY – Assessing Models

Khan Academy

Essential Discussions & Questions:

What is the word problem about? What is happening? Can you restate the word problem without any numbers?

What are the important facts? Are there any irrelevant facts?

What will the answer look like? (Units of measurement, multiple answers, level of accuracy, etc)

What information do we need in order to answer the question?

How can we draw a picture to solve this problem?

What do the bars represent?

What information do we know? What do we need to find?

Are we give the total? Parts?

How do you find a missing part?

Is the problem asking for the difference between two numbers or are we given the difference?

Are we comparing two amounts?

Is there a more efficient strategy to solve this problem? Are there other approaches that would work?

Word Problems

There were 48 chocolates in a box. After eating some of them, Tara found that she had $\frac{5}{8}$ of the chocolates left. How many chocolates did she eat?

James bought a bag of jellybeans. $\frac{1}{4}$ of the jellybeans were cherry, $\frac{1}{8}$ were apple and $\frac{1}{5}$ of the remainder were blueberry. If there were ___ blueberry jellybeans, how many jellybeans did he buy?

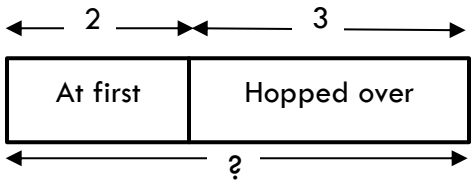
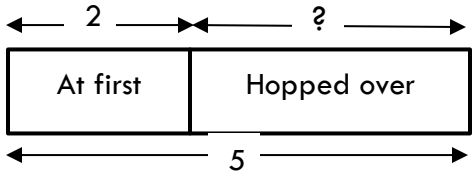
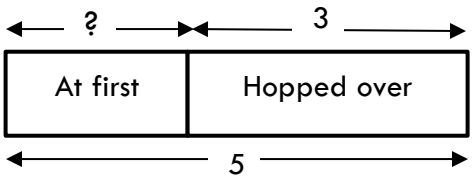
A wading pool is half filled with water. When 12 more gallons of water are added, the pool is $\frac{7}{8}$ full. How many gallons of water can the wading pool hold?

Running errands, Mr. Turner spends $\frac{1}{3}$ of his money at the thrift store. He then spends $\frac{1}{3}$ of the money he has left at the dollar store. Finally, he spends his remaining $40 on Powerball tickets. How much money did Mr. Turner have at first?

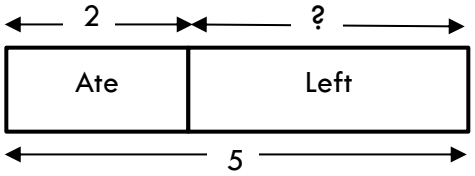
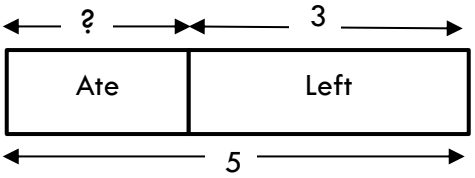
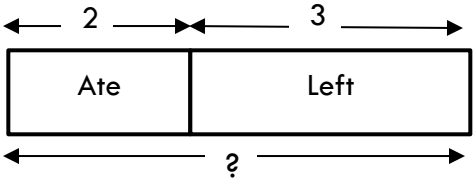
A shopkeeper had 150 lb. of rice in his bag. He sold $\frac{2}{5}$ of it and packed the remainder equally into 5 bags. Find the weight of rice in each bag.

Addition & Subtraction Situations

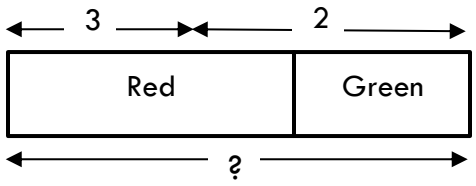
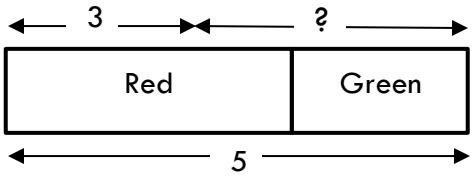
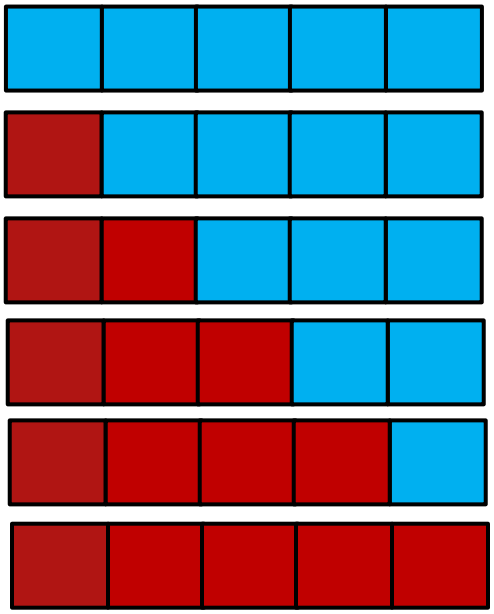
ADD TO:

Result Unknown	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now?	
Change Unknown	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two?	
Start Unknown	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before?	

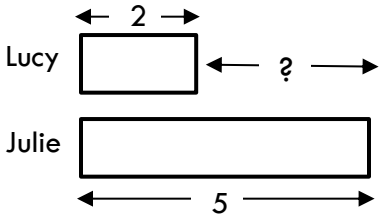
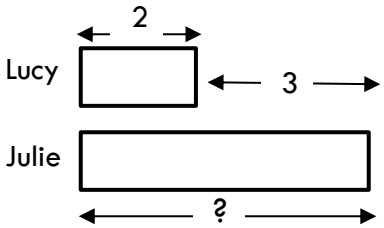
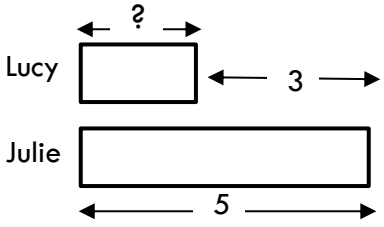
TAKE FROM:

Result Unknown	Five apples were on the table. I ate two apples. How many apples are on the table now?	
Change Unknown	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat?	
Start Unknown	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before??	

PUT TOGETHER/TAKE APART

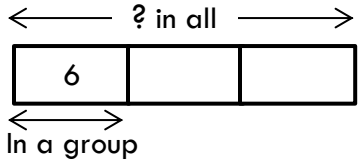
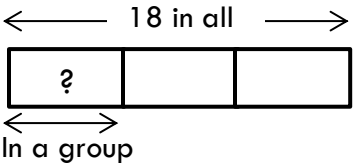
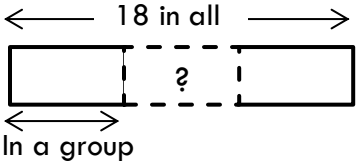
Total Unknown	Three red apples and two green apples are on the table. How many apples are on the table?	
Addend Unknown	Five apples are on the table. Three are red and the rest are green. How many apples are green?	
Both Addends Unknown	Grandma has five flowers. How many can she put in the red vase and how many in her blue vase?	

COMPARE

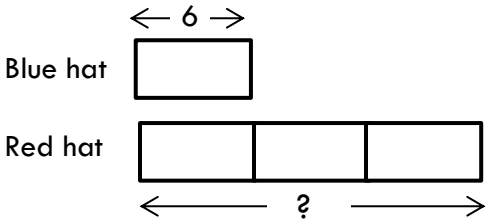
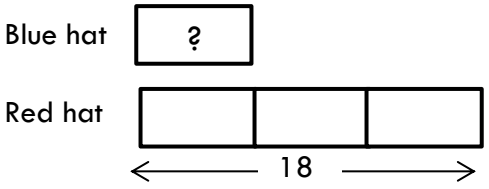
Difference Unknown	Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? OR: Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have then Julie?	
Bigger Unknown	Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? OR: Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have?	
Smaller Unknown	Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? OR: Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have?	

Multiplication & Division Situations

EQUAL GROUPS:

Unknown Product	There are 3 bags with 6 plums in each bag. How many plums are there in all? Measurement example: You need 3 lengths of string, each 6 inches long. How much string will you need altogether?	
Group Size Unknown	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? Measurement example: You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?	
Number of Groups Unknown	If 18 plums are to be packed 6 to a bag, then how many bags are needed? Measurement example: You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?	

COMPARE:

Unknown Product	A blue hat costs $6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? Measurement example: A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	
Group Size Unknown	A red hat costs $18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? Measurement example: A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?	
Number of Groups Unknown	A red hat costs $18 and a blue hat costs $6. How many times as much does the red hat cost as the blue hat? Measurement example: A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?