

Strip Models, Tape Diagrams, Bar Models, Oh My

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Slides will be posted:

<https://goo.gl/j4aBY>



Twitter hashtag #cmcmath

@Cassyt Bio: Passionate about Singapore Math, Teacher Trainer/Coach, Treasure Hunter, Learner, Answer to the ultimate question? 42.

Why models?

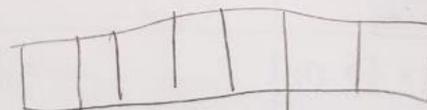
1. Huiling bought a pair of shoes for \$24.95. She also bought a shirt for \$9.50. She gave the shopkeeper \$50. How much change did she receive?

$$\begin{array}{r} \$50.00 \\ - \$24.95 \\ - \$9.50 \\ \hline \$15.55 \end{array}$$

- Sufen bought a ball and a bat. The ball cost \$1.20. The bat cost \$2.60 more than the ball. How much did she spend altogether?

$$\begin{array}{r} \$1.20 \\ + \$1.00 \\ \hline \$2.20 \end{array}$$

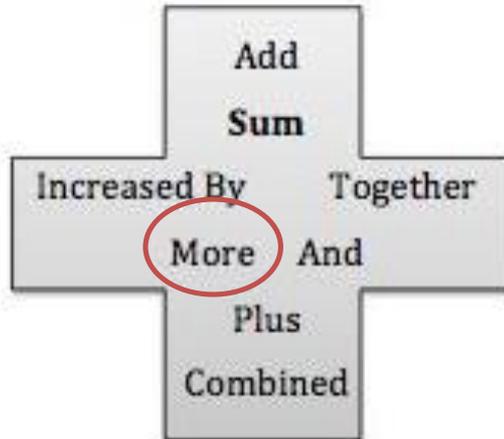
4. Of a group of children, $\frac{4}{7}$ are boys. If there are 18 more boys than girls, how many children are there altogether?



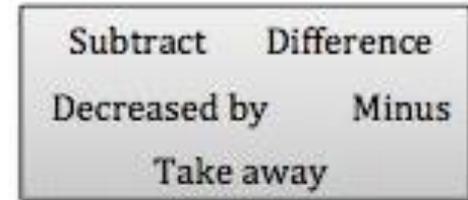
there are 126 people together?

Words into Math

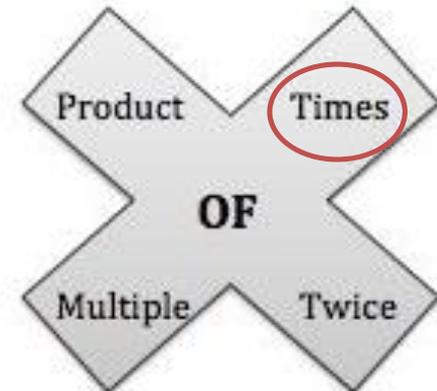
ADDITION



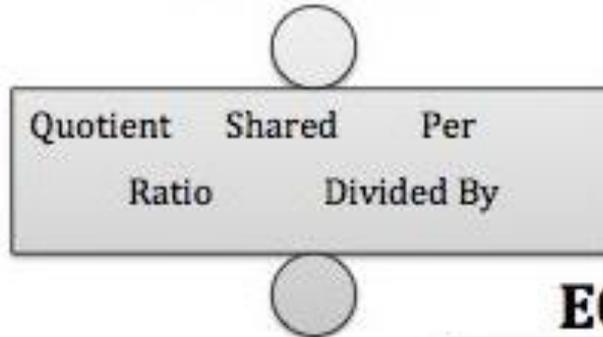
SUBTRACTION



MULTIPLICATION



DIVISION

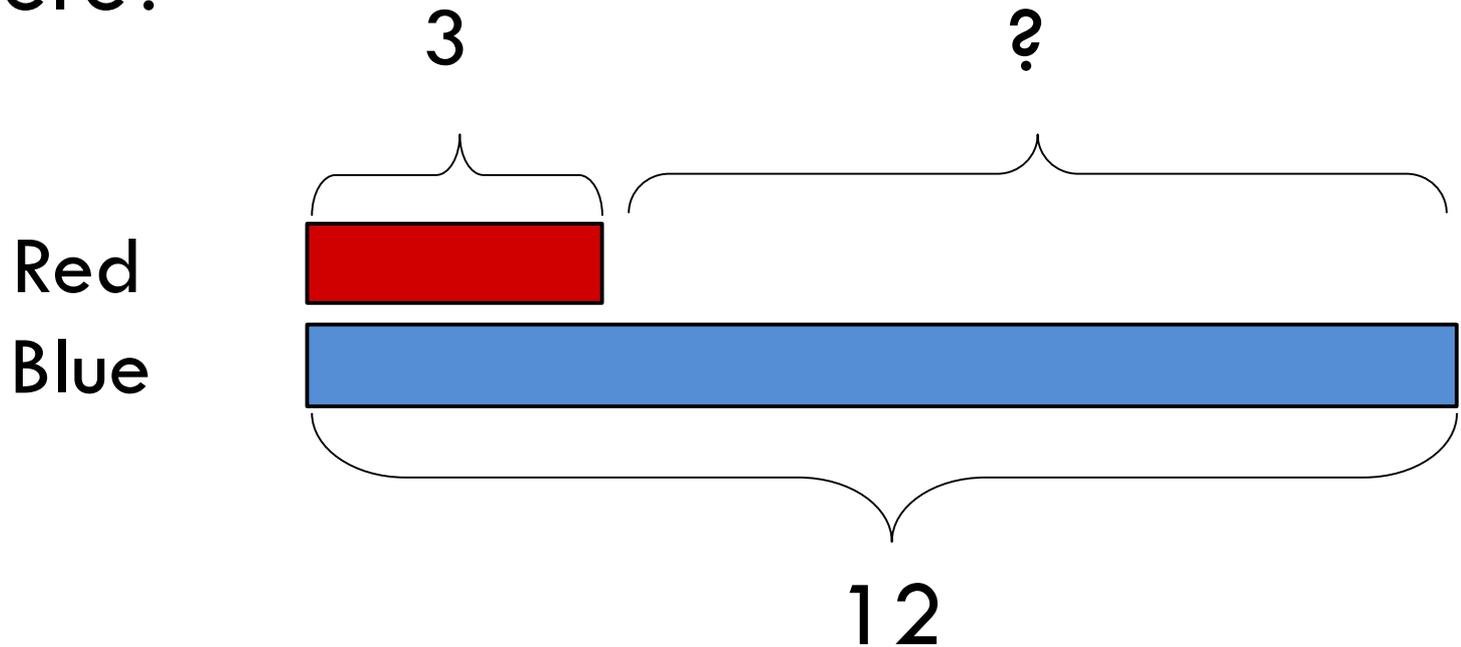


EQUALS

IS

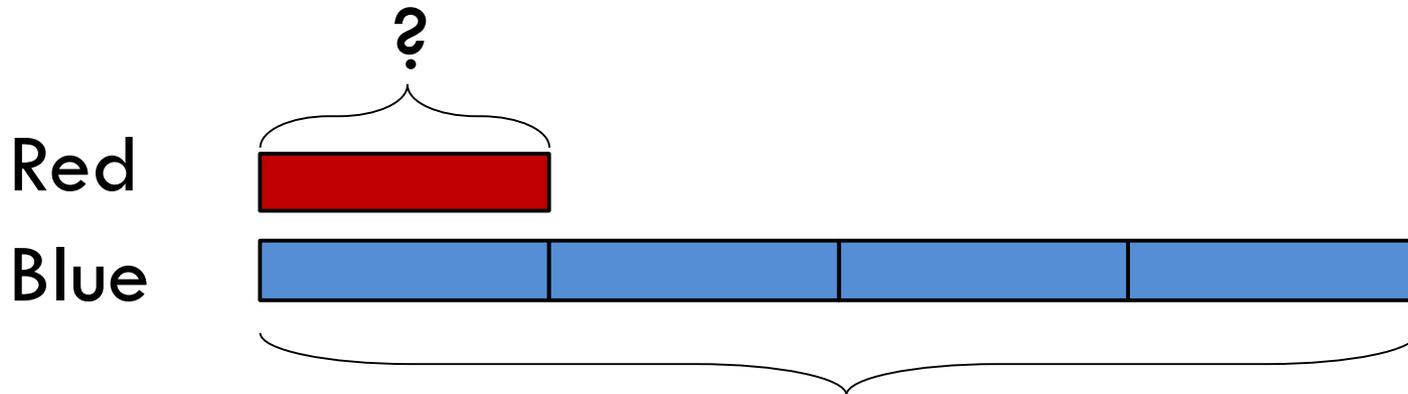
are were will be
gives totals

There are 3 red marbles and 12 blue marbles.
How many more blue marbles than red marbles
are there?



*There are 9 more blue
marbles than red marbles.*

There are 12 blue marbles. There are 4 times as many blue marbles as red marbles. How many red marbles are there?



$$4 \square = 12$$

$$1 \square = 12 \div 4 = 3$$

12

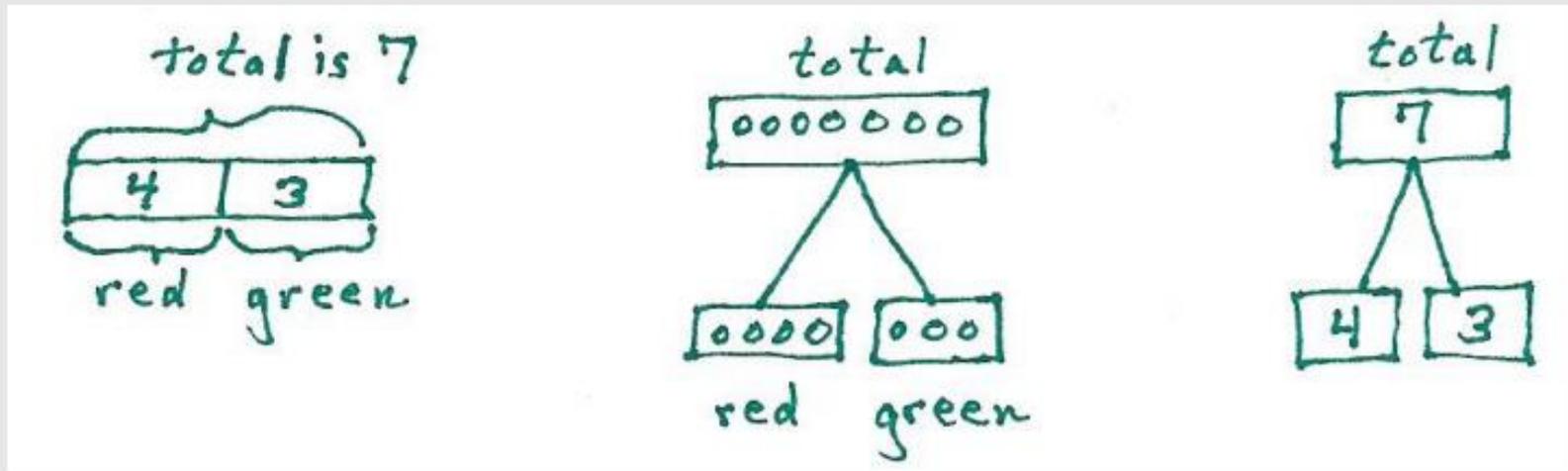
There are 3 red marbles.

What is a 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.”

-CCSS Glossary

Additive relationship shown in tape, part-whole, and number-bond figures



Progressions for the Common Core State Standards in Mathematics (draft)

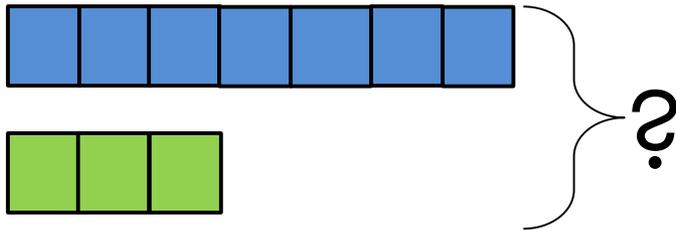
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How about C-P-A Sequence?



Concrete



Pictorial

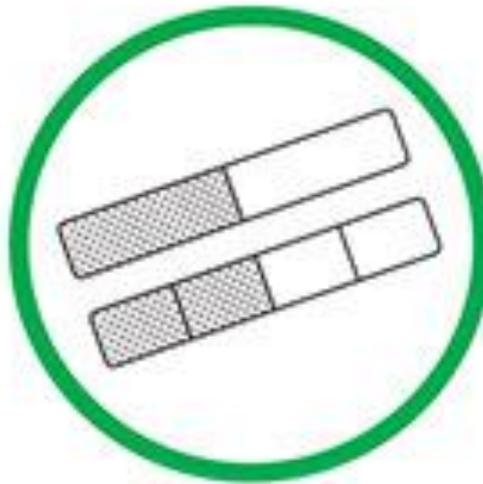


$$7 + 3 =$$

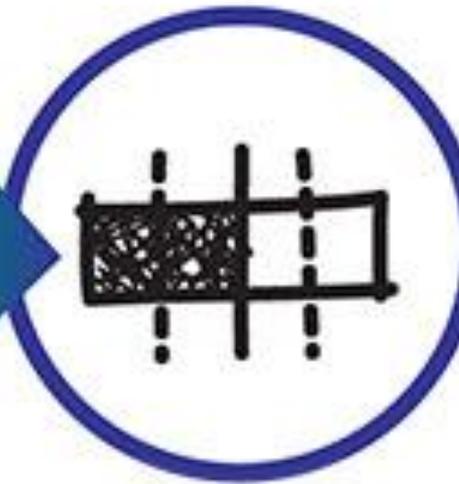
Abstract

How about C-R-A Sequence?

Concrete



Representational



Abstract

$$\frac{1}{2} = \frac{2}{4}$$

Recommendation 1
PROBLEM SOLVING MUST BE THE FOCUS
OF SCHOOL MATHEMATICS IN THE 1980s

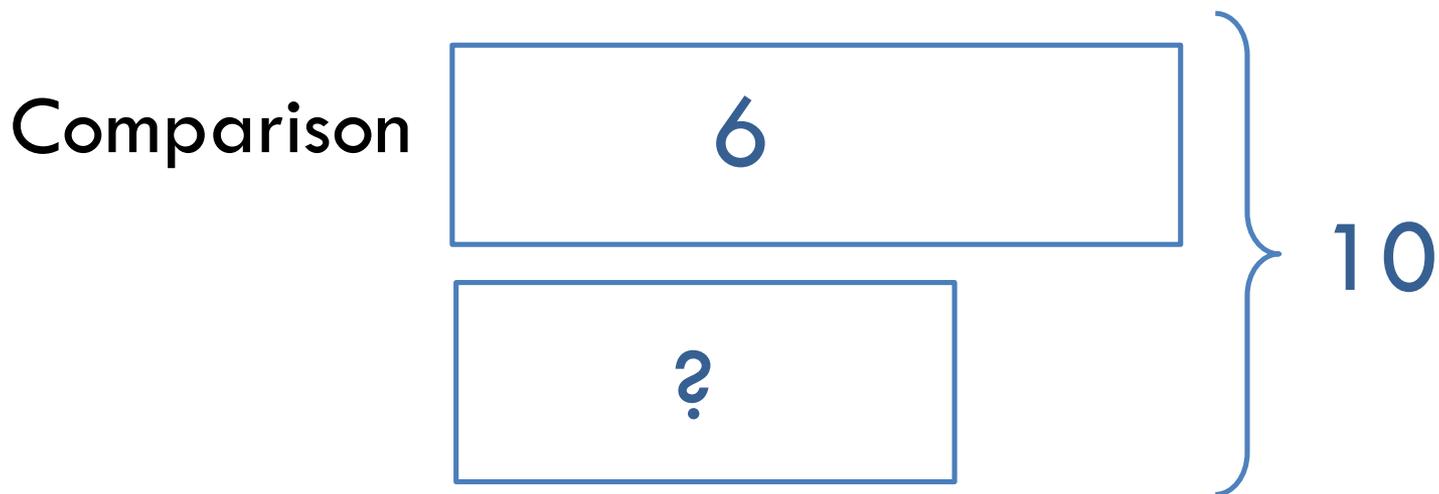
The development of problem-solving ability should direct the efforts of mathematics educators through the next decade. Performance in problem solving will measure the effectiveness of our personal and national possession of mathematical competence.

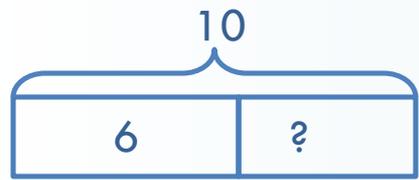
National Council of Teachers of Mathematics

AN AGENDA FOR ACTION

Recommendations for School Mathematics
of the 1980s

Forms of Bar Models





Addition & Subtraction Situations

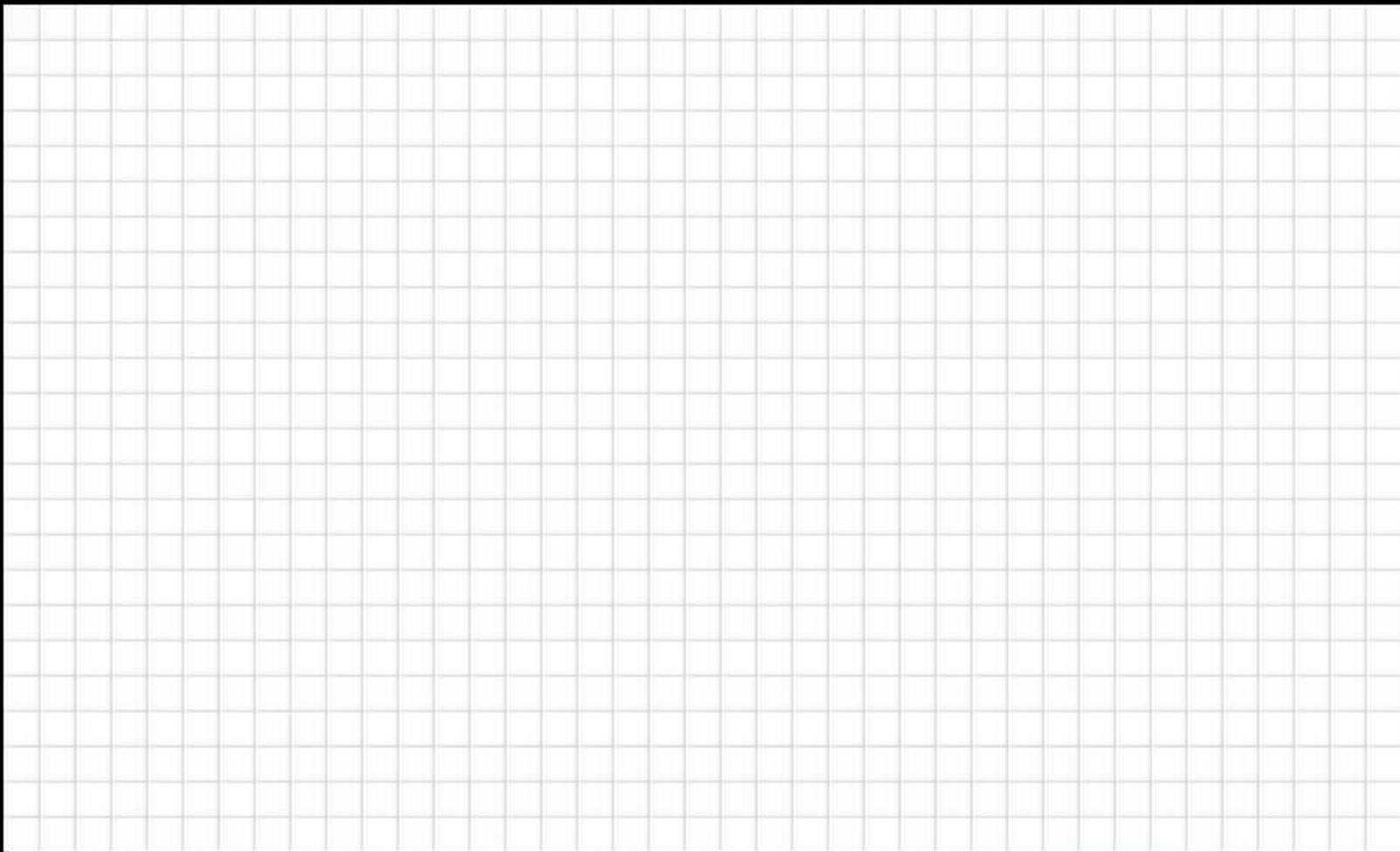
	Result Unknown	Change Unknown	Start Unknown
Add to	<p>Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now?</p> $2 + 3 = ?$	<p>Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two?</p> $2 + ? = 5$	<p>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?</p> $? + 3 = 5$
Take from	<p>Five apples were on the table. I ate two apples. How many apples are on the table now?</p> $5 - 2 = ?$	<p>Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat?</p> $5 - ? = 3$	<p>Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before?</p> $? - 2 = 3$
Put Together/ Take Apart ²	Total Unknown	Addend Unknown	Both Addends Unknown ¹
	<p>Three red apples and two green apples are on the table. How many apples are on the table?</p> $3 + 2 = ?$	<p>Five apples are on the table. Three are red and the rest are green. How many apples are green?</p> $3 + ? = 5, 5 - 3 = ?$	<p>Grandma has five flowers. How many can she put in her red vase and how many in her blue vase?</p> $5 = 0 + 5, 5 = 5 + 0$ $5 = 1 + 4, 5 = 4 + 1$ $5 = 2 + 3, 5 = 3 + 2$

Models for Take From: ~~Change~~ Unknown

Five apples were on the table. One student ate 3 apples.
How many apples are left? How many apples did
the student eat? How many apples were on the table at first?

Enter your prompt here.





Resize Blocks and Braces

40

Make Equal Parts

1

- Solid Line
- Dotted Line



Show or hide the word problem display.

- Horizontal
- Vertical



Label

Reset

- Problems
- Full Screen
- Grid
- Keyboard

Undo

Erase

Primary Mathematics – Grade 4

There were 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?

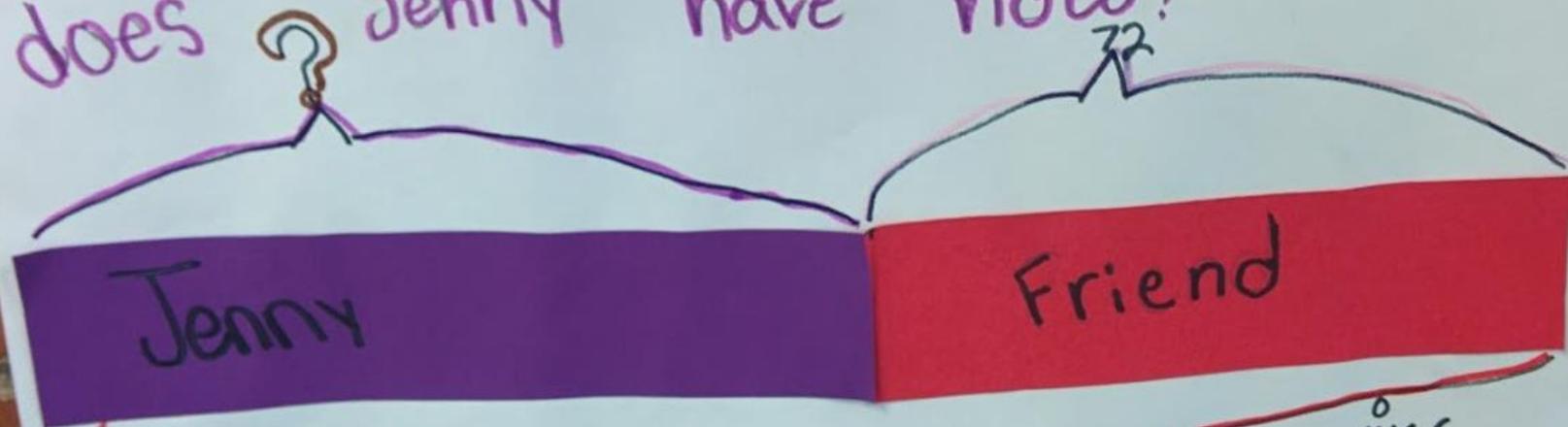
There were 48 chocolates in a box. After eating some of them, Tara found that she had $\frac{5}{8}$ of the chocolates left. How many chocolates did she eat?

Interface toolbar with various tools and settings:

- Resize Blocks and Braces**: Slider set to 40.
- Make Equal Parts**: Slider set to 1.
- Line Style**: Radio buttons for **Solid Line** (selected) and **Dotted Line**.
- Orientation**: Radio buttons for **Horizontal** (selected) and **Vertical**.
- Label**: A text box containing the word "Label".
- Reset**: A blue button.
- Problems**: A button.
- Full Screen**: A button.
- Grid**: A button.
- Keyboard**: A button.
- Undo**: A button with a trash can icon.
- Erase**: A button with a pencil icon.

Part - whole Bar Model

Jenny had 166 Fish. Her Friend takes 72 Fish. How many Fish does Jenny have now?



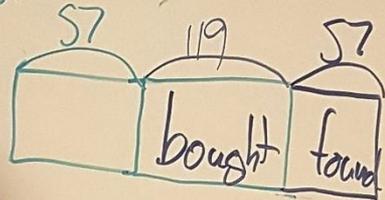
Jenny has 94 Fish.

$$166 - 72 = \underline{94}$$

$$\begin{array}{r} 0 \\ - 166 \\ \underline{72} \\ 094 \end{array}$$



Bob had 57 model airplanes. He bought 119 airplanes and found
y. If he now has 176 airplanes how many did he find?



He found 57 airplanes.

$$\begin{array}{r} 119 \\ + y \\ \hline 176 \end{array} \quad \begin{array}{r} 176 \\ - 119 \\ \hline 57 \end{array}$$

$$\begin{array}{r} 9 \\ + 7 \\ \hline 16 \end{array}$$

Aniel



$$\underbrace{\hspace{10em}}_7$$

Ania



9

6

?



10

Addition & Subtraction Situations

Compare³

Difference Unknown

(“How many more?” version):
Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy?

(“How many fewer?” version):
Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie?

$$2 + ? = 5, 5 - 2 = ?$$

Bigger Unknown

(Version with “more”):
Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have?

(Version with “fewer”):
Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have?

$$2 + 3 = ?, 3 + 2 = ?$$

Smaller Unknown

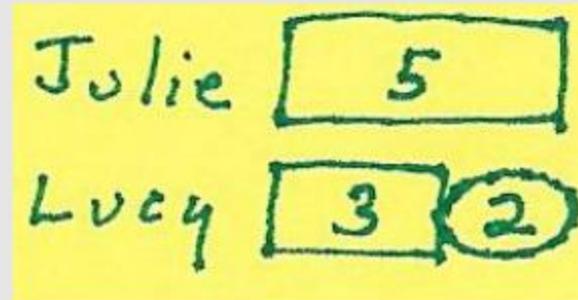
(Version with “more”):
Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have?

(Version with “fewer”):
Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have?

$$5 - 3 = ?, ? + 3 = 5$$

Models for Compare

Compare problem represented in tape diagram



Progressions for the Common Core
State Standards in Mathematics (draft)

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Models for Compare: Difference Unknown

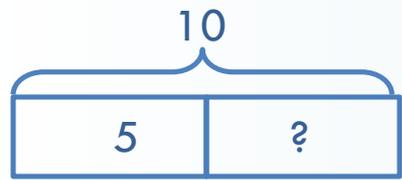
Lucy has two apples. Julie has five apples. How **many more apples** does Julie have than Lucy?

Cassidy has \$92.65 in

the bank she deposits another
\$79.80. How much money
does she have in
the bank now

\$92.65	?
\$79.80	

\$172.45



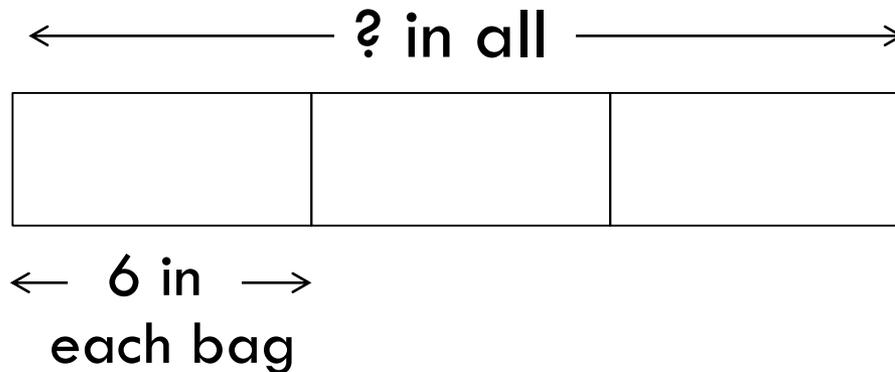
Multiplication & Division Situations

	Unknown Product	Group Size Unknown ("How many in each group?" Division)	Number of Groups Unknown ("How many groups?" Division)
	$3 \times 6 = ?$	$3 \times ? = 18$, and $18 \div 3 = ?$	$? \times 6 = 18$, and $18 \div 6 = ?$
Equal Groups	<p>There are 3 bags with 6 plums in each bag. How many plums are there in all?</p> <p><i>Measurement example.</i> You need 3 lengths of string, each 6 inches long. How much string will you need altogether?</p>	<p>If 18 plums are shared equally into 3 bags, then how many plums will be in each bag?</p> <p><i>Measurement example.</i> You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?</p>	<p>If 18 plums are to be packed 6 to a bag, then how many bags are needed?</p> <p><i>Measurement example.</i> 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?</p>
Arrays,⁴ Area⁵	<p>There are 3 rows of apples with 6 apples in each row. How many apples are there?</p> <p><i>Area example.</i> What is the area of a 3 cm by 6 cm rectangle?</p>	<p>If 18 apples are arranged into 3 equal rows, how many apples will be in each row?</p> <p><i>Area example.</i> A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?</p>	<p>If 18 apples are arranged into equal rows of 6 apples, how many rows will there be?</p> <p><i>Area example.</i> A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?</p>

Models for Multiplication & Division: Equal groups

There are 3 bags with 6 plums in each bag. How many plums are there in all?

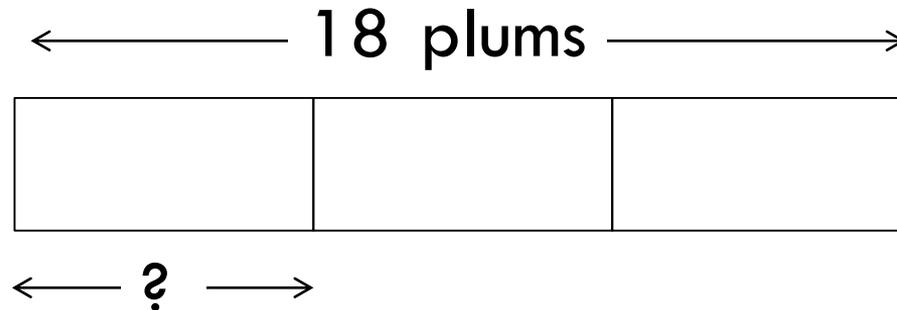
You need 3 lengths of string, each 6 inches long. How much string will you need altogether?



Multiplication & Division: How many in a group?

If 18 plums are shared equally into 3 bags, then how many plums will be in each bag?

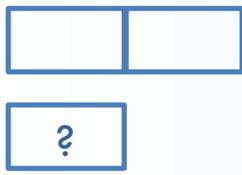
You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?



Multiplication & Division: How many groups?

If 18 plums are to be packed 6 to a bag, then how many bags are needed?

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?



15

Multiplication & Division Situations

Compare

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?

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?

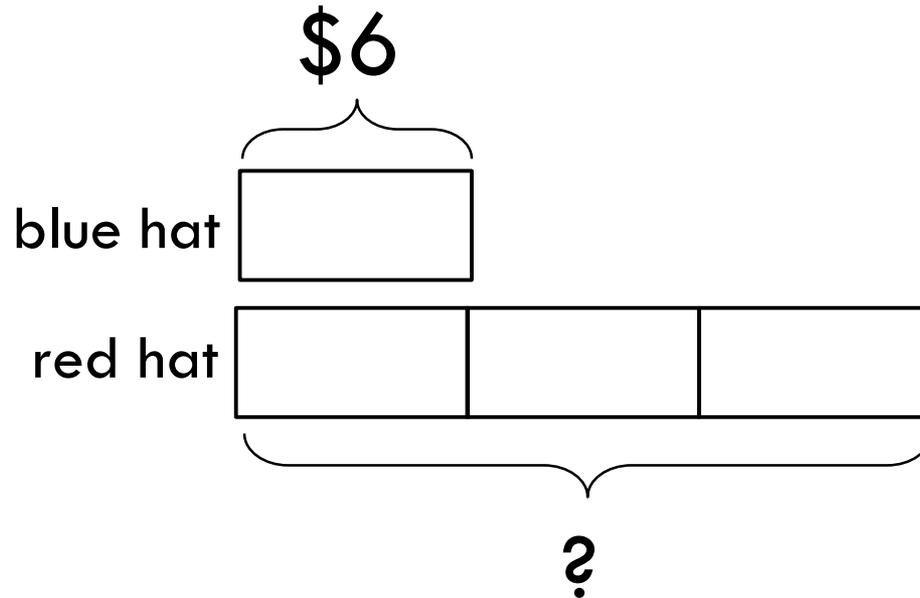
A red hat costs \$18 and a blue hat costs \$6. How many times as much does the red hat cost as the blue hat?

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?

Multiplication & Division Comparison: Equal groups

A blue hat costs \$6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost?

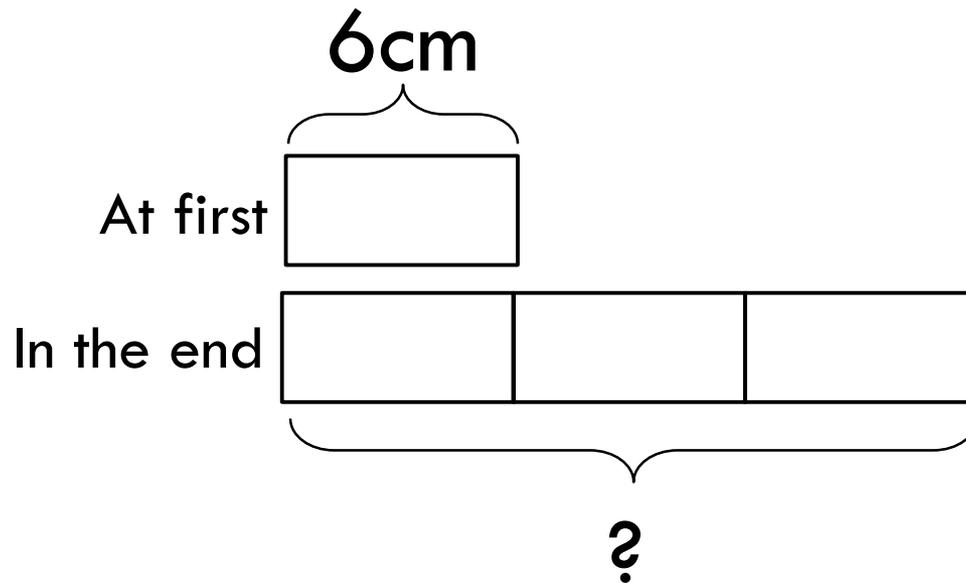
A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?



Multiplication & Division Comparison: Equal groups

A blue hat costs \$6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost?

A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?

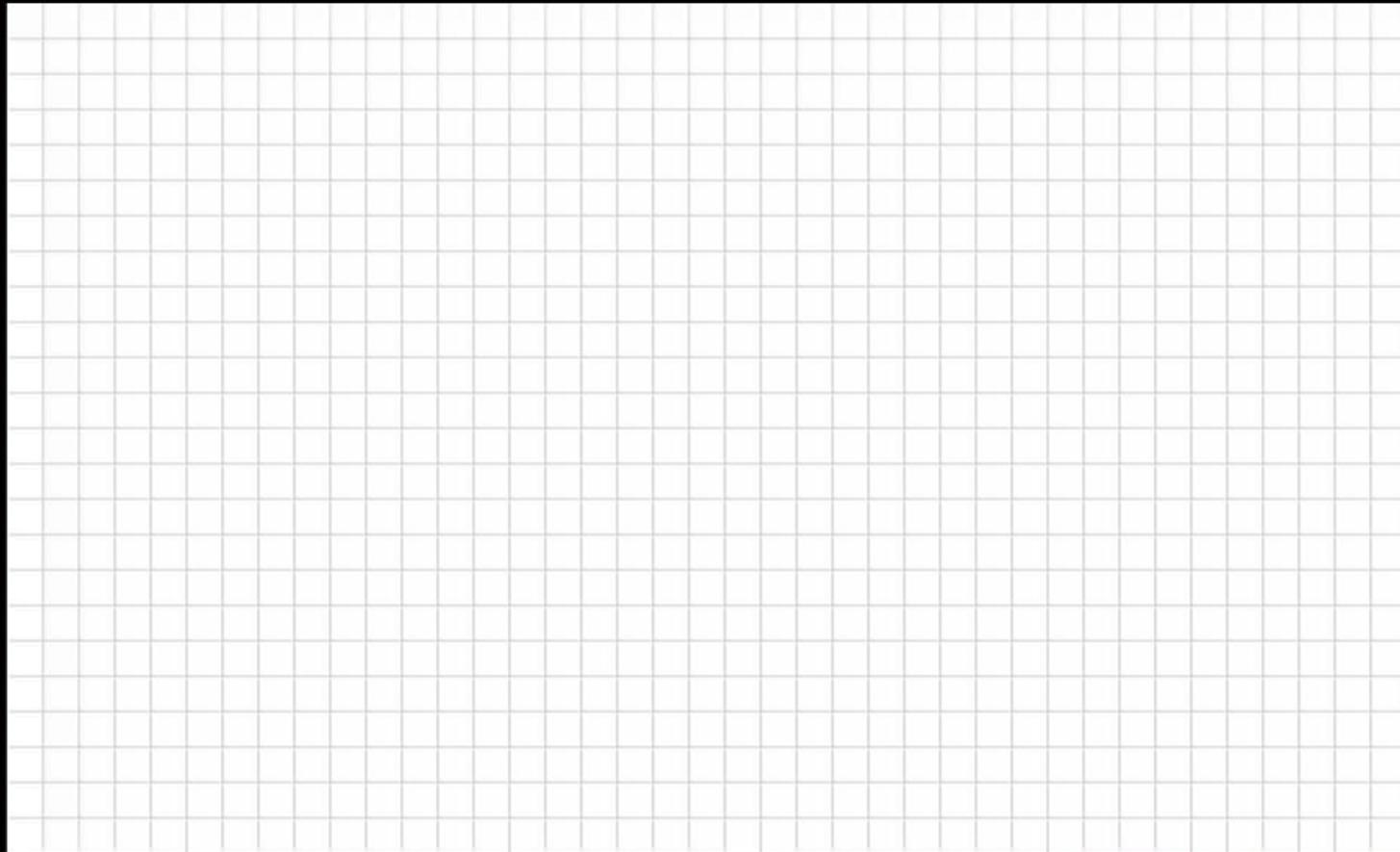


Enter your prompt here.



THINKING BLOCKS MODELING TOOL...

WORD PROBLEMS ARE EASY TO SOLVE WHEN YOU BUILD A MODEL FIRST!



Toolbars for the modeling tool:

- Line Tools:** Solid Line, Dotted Line
- Block Tools:** Resize Blocks and Braces (slider at 40), Make Equal Parts (slider at 1), Show or hide the word problem display.
- Orientation:** Horizontal (selected), Vertical
- Other Tools:** Label, Reset
- Display Options:** Problems, Full Screen, Grid, Keyboard
- Editing:** Undo, Erase

Tape diagram used to solve the Compare problem in Table 3

B is the cost of a blue hat in dollars

R is the cost of a red hat in dollars

\$6

$$3 \times B = R$$

\$6	\$6	\$6
-----	-----	-----

$$3 \times \$6 = \$18$$

Progressions for the Common Core
State Standards in Mathematics (draft)

Mixed Operations/Multi-Step

A two-step problem with diagram showing problem situation and equations showing the two parts

Carla has 4 packages of silly bands. Each package has 8 silly bands in it. Agustin is supposed to get 15 fewer silly bands than Carla. How many silly bands should Agustin get?



C = number of Carla's silly bands
 A = number of Agustin's silly bands

$$C = 4 \times 8 = 32$$

$$A + 15 = C$$

$$A + 15 = 32$$

$$A = 17$$

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State Standards in Mathematics (draft)

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Students may be able to solve this problem without writing such equations.

PARCC Grade 3 – 2015 PBA Released Item

Tom and Ann collect toy cars. Tom has 39 more toy cars than Ann. Ann has 38 blue cars and 58 red cars. How many toy cars does Tom have?

PARCC Grade 3 – 2015 PBA Released Item

conceptua MATH

Bar Modeling Tool

Enter your prompt here.



PARCC Grade 3 – 2015 PBA Released Item

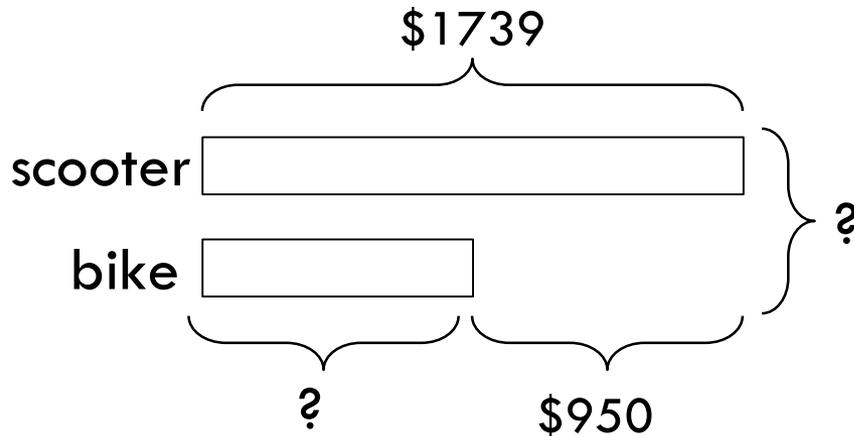
Tom and Ann collect toy cars. Tom has 39 more toy cars than Ann. Ann has 38 blue cars and 58 red cars. How many toy cars does Tom have?



A scooter costs \$. A bike costs \$ less than the scooter. Mr. Turner bought both the scooter and the bike. How much did he spend?

Step 1:

How much for the bike?



$$\$1739 - \$950 = \$789$$

The bike cost \$789.

Step 2:

How much altogether?

$$\$1739 + \$789 = \$2528$$

Mr. Turner spent \$2528 on the bike and scooter.

EXERCISE 7

1. Ling reads 8 pages of a book a day. After reading the book for 4 days, she still has 5 pages to read. How many pages are there in the book?

step 1

How many after four days.

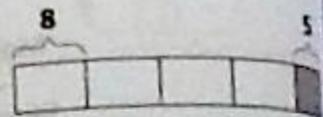
$$8 \times 4 = 32$$

step 2

How many pgs?

$$32 + 5 = 37$$

there are 37 pgs total



2. Rani had \$47. After paying for 3 kg of prawns, she had \$20 left. Find the cost of 1 kg of prawns.

step 1

How much did she pay?

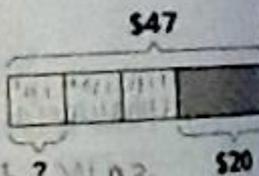
$$47 - 20 = 27$$

step 2

How much was 1 kg?

$$27 \div 3 = 9$$

1 kg costs \$9.



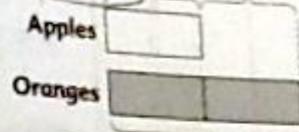
3. Mary bought 8 apples. She bought twice as many oranges as apples. How many more oranges than apples did she buy?

step 1

How many oranges?

$$8 \times 2 = 16$$

step 2



$$16 - 8 = 8$$

she had 8 left.

4. A pole is 3 m long. A rope is 8 times as long as the pole. If the rope is divided equally into 4 pieces, what is the length of each piece of rope?

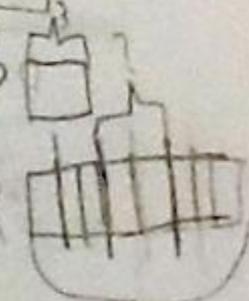
step 1

How long is the rope?

$$8 \times 3 = 24$$

step 2

How long is a piece of rope?



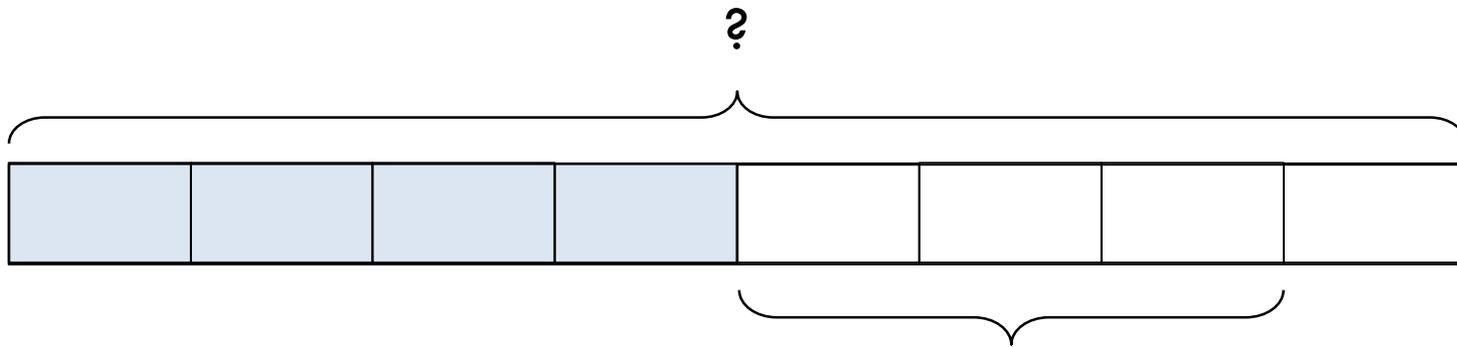
the piece is 6m long

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



A wading pool is half filled with water. When ■ more gallons of water are added, the pool is $\frac{7}{8}$ full.

How many gallons of water can the wading pool hold?



$$3 \square = 12 \text{ gal}$$

$$1 \square = 12 \text{ gal} \div 3 \\ = 4 \text{ gal}$$

$$8 \square = 4 \text{ gal} \times 8 \text{ units} \\ = 32 \text{ gal}$$

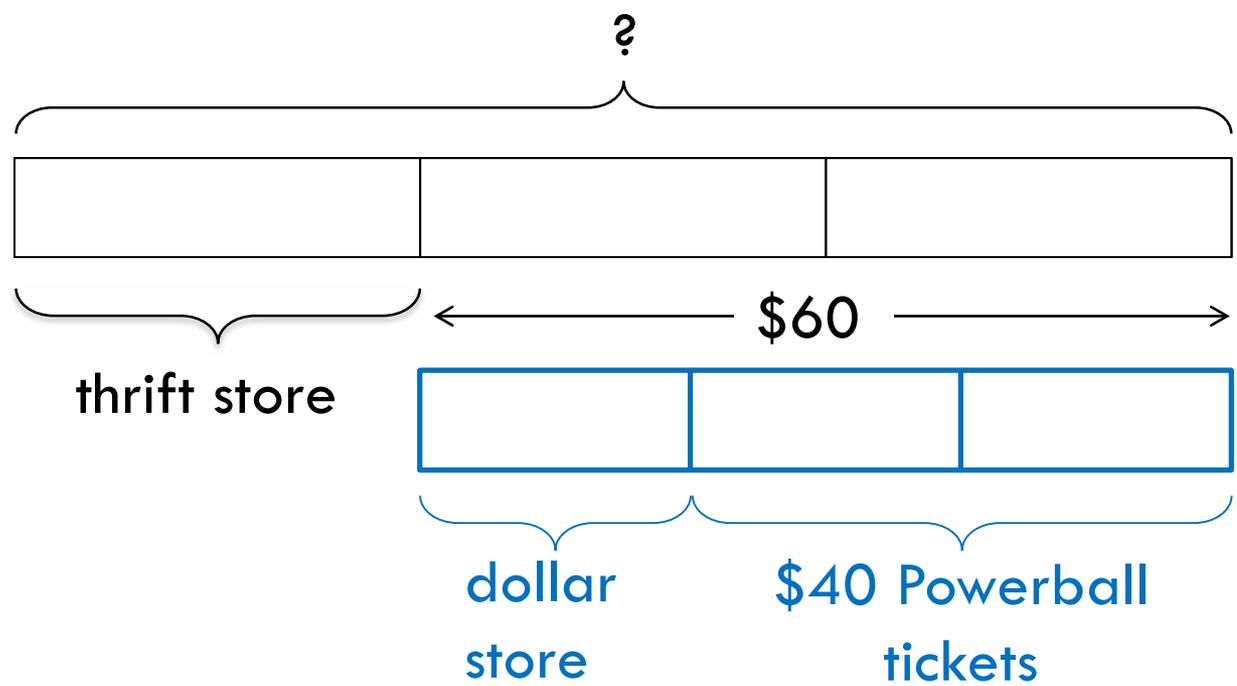
12 gallons

The wading pool can hold 32 gallons.

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?

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 24 blueberry jellybeans, how many jellybeans did he buy?

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?



2 → \$40
 1 → \$40 ÷ 2 = \$20
 3 → \$20 × 3 = \$60

2 → \$60
 1 → \$60 ÷ 2 = 30
 3 → \$30 × 3 = 90

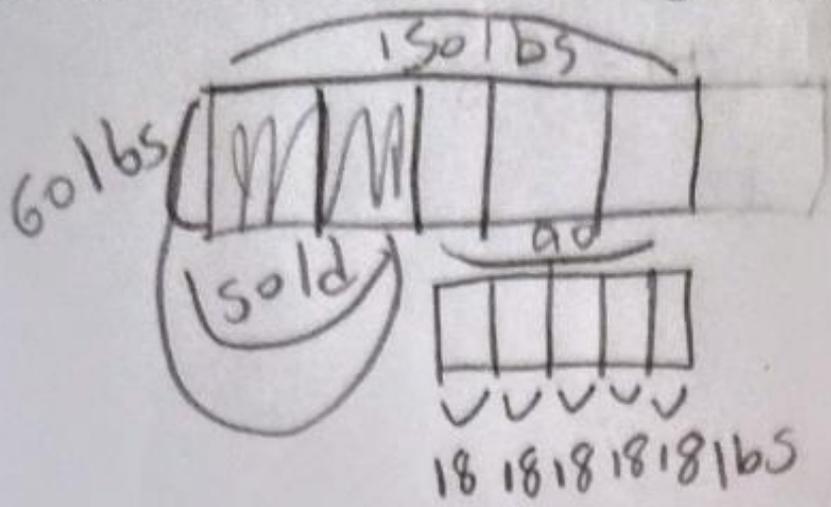
Mr. Turner had \$90 at first.

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.

From understanding...

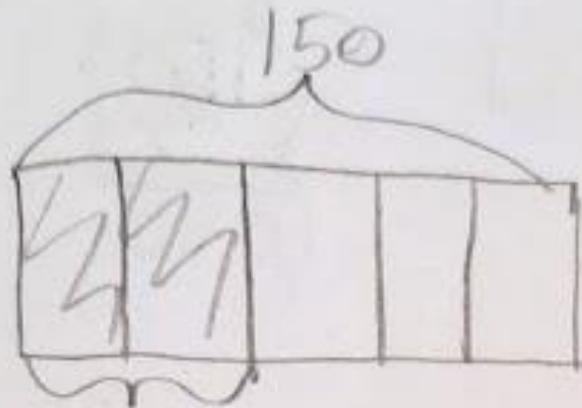
A shopkeeper had 150 lb of rice. He sold $\frac{2}{5}$ of it and packed the remainder equally into 5 bags. Find the weight of the rice in each bag.



$$\begin{array}{r} 18 \\ 5 \overline{) 90} \\ \underline{-50} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

18 lbs

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



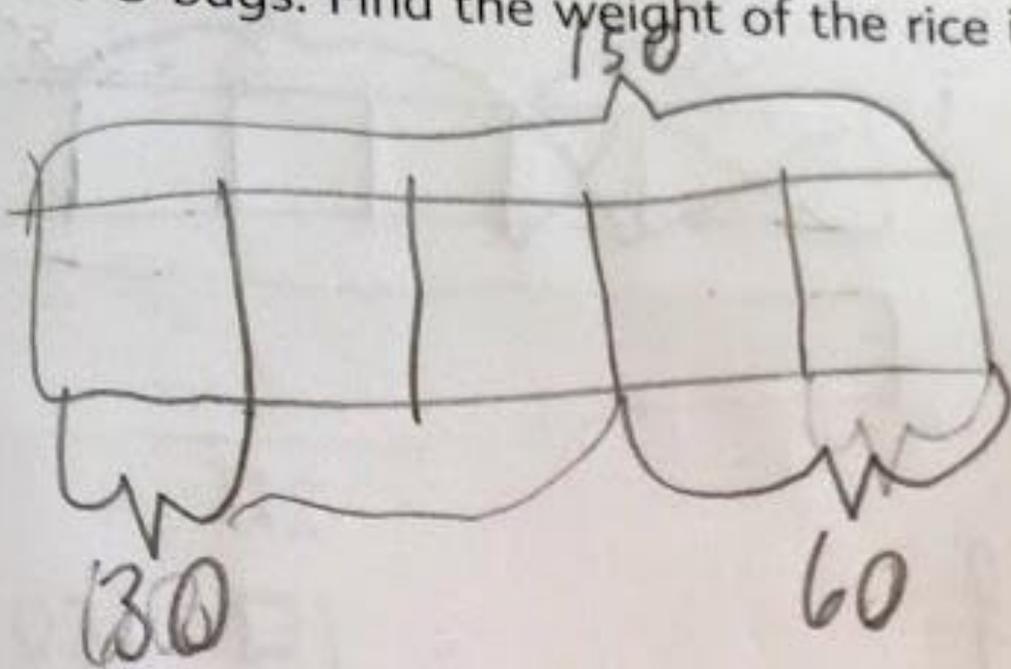
$$3 \times 30 = 90$$

$$5 \times 30 = 150$$

$$1 \times 30 = 30$$

The weight of each bag was 30 lb

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



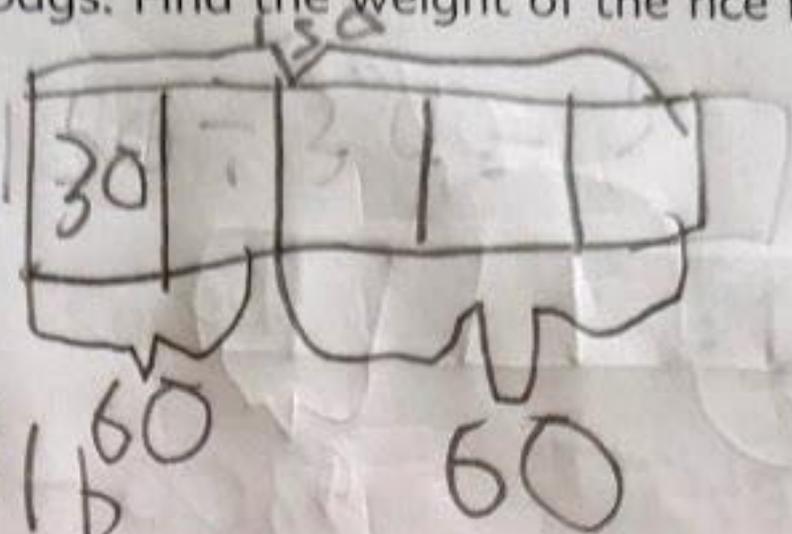
$$30 \square = 90$$

$$90 \div 5 = 18 \text{ lb}$$

In each bag was 18 lbs.

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

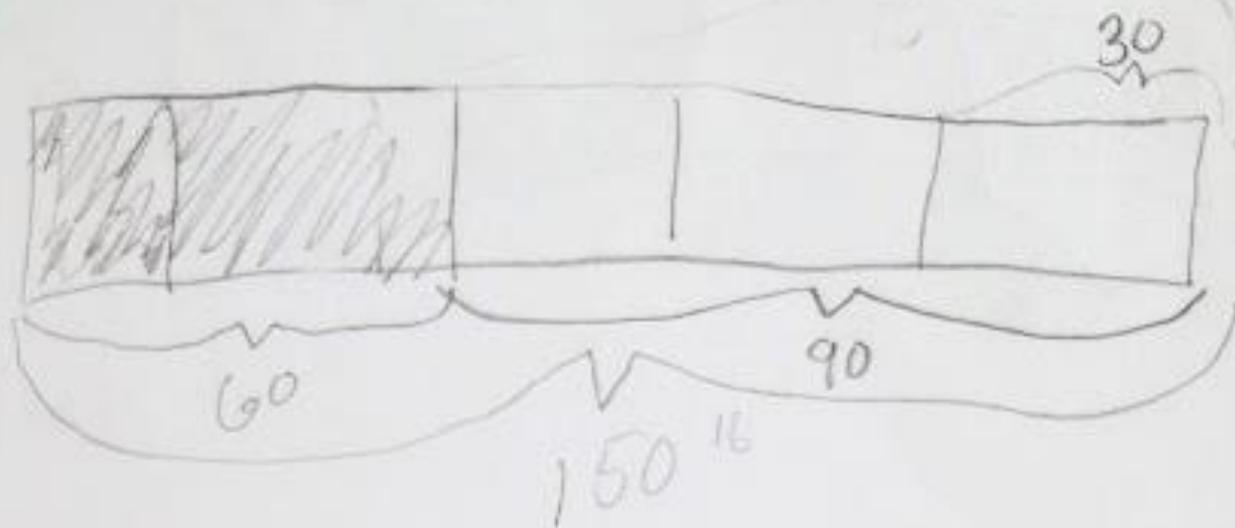
$$\frac{1}{5} = 30$$



$$90 \div 5 = 18 \text{ lb}$$

There are 18 lb in each bag.

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



$$5 \text{ D} = 150$$

$$1 \text{ D} = 30$$

$$2 \text{ D} = 60$$

$$3 \text{ D} = 90$$

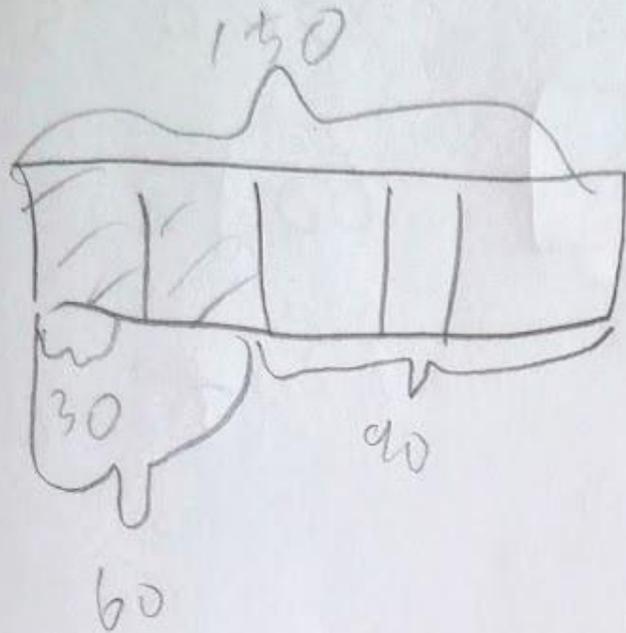
18

$$\begin{array}{r} 18 \\ 5 \overline{) 90} \\ \underline{5} \\ 40 \end{array}$$

18 lb were in each (of 5)

$$\begin{array}{r} 30 \\ 5 \overline{) 150} \\ \underline{15} \\ 00 \end{array}$$

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



$$150 \div 5 = 30$$

$$30 + 30 = 60$$

$$90 \div 5 = 18$$

...to mastery.

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

150 lbs of rice - $\frac{2}{5}$

$$\frac{1}{5} = 30$$

$$\frac{2}{5} = 60$$

$$90 \div 5 = 18$$

$$\begin{array}{r} 150 \\ - 60 \\ \hline 90 \end{array}$$

There was 18 lbs of rice in each bag.

Why Practice?

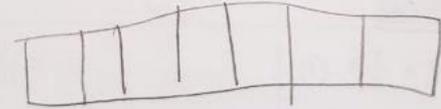
1. Huiling bought a pair of shoes for \$24.95.
She also bought a shirt for \$9.50.
She gave the shopkeeper \$50.
How much change did she receive?

$$\begin{array}{r} \$24.95 \\ + \$9.50 \\ \hline \$34.45 \\ \$50.00 \\ \hline \$15.55 \end{array}$$

- Sufen bought a ball and a bat.
The ball cost \$1.20.
The bat cost \$2.60 more than the ball.
How much did she spend altogether?

$$\begin{array}{r} \$1.20 \\ + \$2.60 \\ \hline \$3.80 \end{array}$$

4. Of a group of children, $\frac{4}{7}$ are boys. If there are 18 more boys than girls, how many children are there altogether?



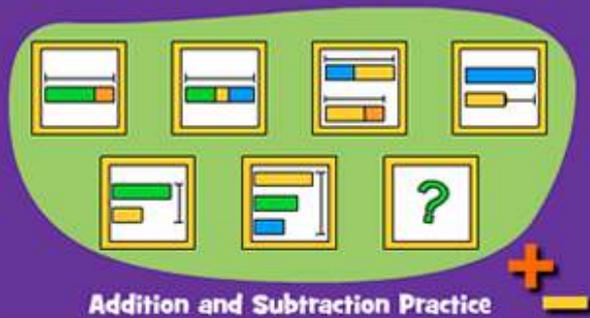
there are 126 people together?



Tools for Practice – Thinking Blocks

Thinking Blocks

Model and Solve Word Problems

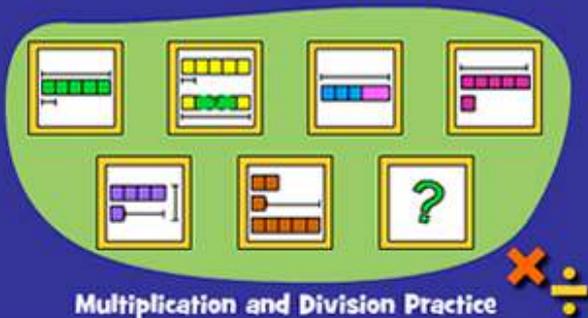


Addition and Subtraction Practice

Addition and Subtraction

Thinking Blocks

Model and Solve Word Problems



Multiplication and Division Practice

Multiplication and Division

Thinking Blocks

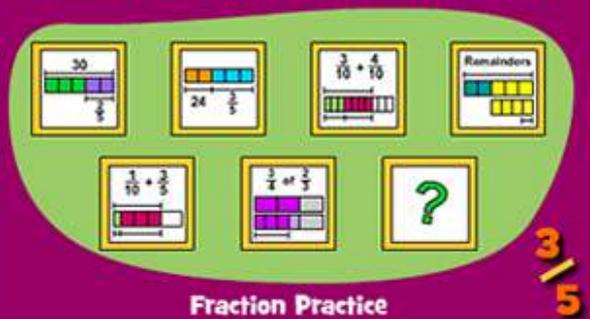


addition and subtraction
with small numbers

Thinking Blocks Junior

Thinking Blocks

Model and Solve Word Problems

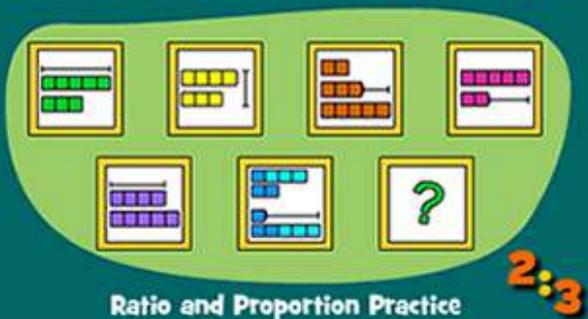


Fraction Practice

Fractions

Thinking Blocks

Model and Solve Word Problems



Ratio and Proportion Practice

Ratio and Proportion

Modeling Tool



- Addition
- Multiplication
- Fractions
- Ratios
- Percent
- Algebra

Modeling Tool

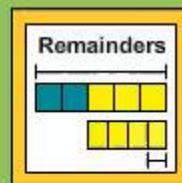
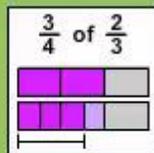
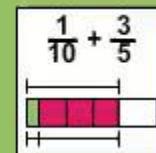
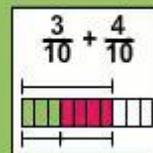
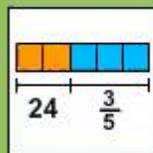
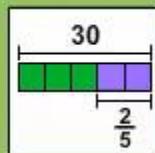
Thinking Blocks

Model and Solve Word Problems

Practice with Fractions

Models

Work with a Fraction of a Remainder



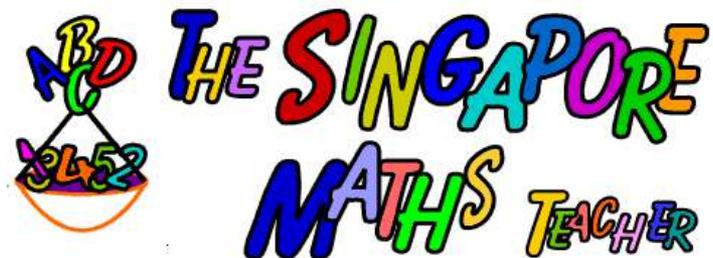
Full Screen Mode
OFF

Video Tutorials

View Progress

Start Modeling

Tools for Practice – The Singapore Maths



[OUR OBJECTIVE](#)

[INSTRUCTIONS](#)

[CONTACT US](#)

Model-Drawing for Maths

Primary 3	Primary 4	Primary 5	Primary 6
Level 1	Level 1	Level 1	Level 1
Level 2	Level 2	Level 2	Level 2
Level 3	Level 3	Level 3	Level 3
Enrichment	Enrichment	Enrichment	Enrichment

[Answers to Practice Problems](#)

[MODEL-DRAWING vs CONVENTIONAL METHODS](#)

[OTHER PROBLEM-SOLVING STRATEGIES](#)

[MORE PROBLEMS TO SOLVE](#)

Understanding word problems:
Read the following problem –

1. On Saturday, there were 4 128 visitors at a fun fair. 2 709 of them were adults and the rest were children. The first 2 890 visitors received gifts.

How many visitors did not receive gifts?

What do I need to find?
Do I need to know the number of children?
I note the data I need.

Click mouse to check if you have picked the correct data.

Click again for slide show.



Home



Tools for Practice – The Khan Academy

2-step word problems

Get 5 correct in a row

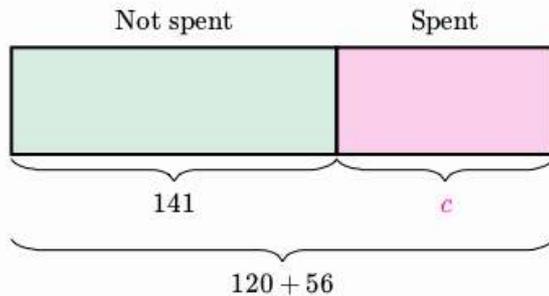


Solve two-step word problems with addition, subtraction, multiplication, and division. Some questions include estimation.

The cash register at the ice cream store started the day with \$120. During the day, the store earned \$56 selling ice cream. The manager also paid for a delivery out of the cash register. At the end of the day, the cash register had \$141.

How much did the delivery cost (c)?

\$



Answer

Check Answer

Show me how

I'd like a hint

Stuck? Watch a video.



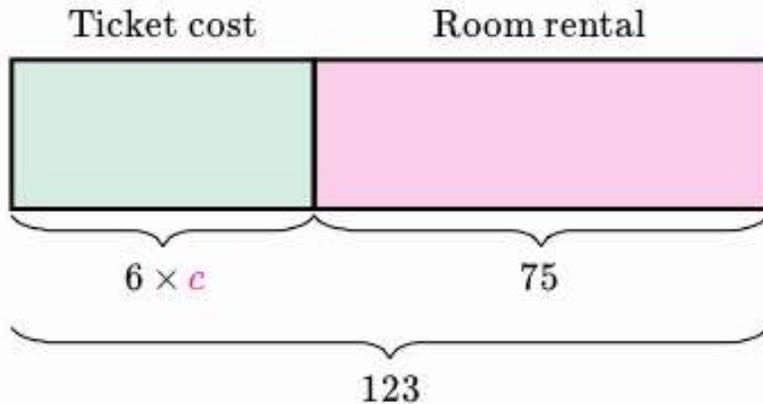
- 2-step estimation problem: marbles
- 2-step word problem: theater
- 2-step word problem: truffles

Tools for Practice – The Khan Academy

The total cost for Mabel's skating rink party was \$123. It cost \$75 to rent the party room plus the ticket cost for each of the 6 people at the party.

How much is the cost (c) of a ticket?

\$



The group cost is $123 - 75 = 48$ dollars.

Xyla and Yabu



Choose a set of numbers to explore.

Numbers to 20

Try many different ways to work with numbers.

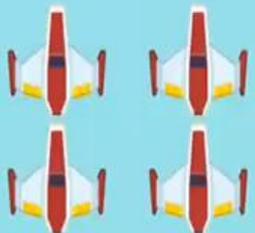
Numbers to 100

Use the same basic patterns with higher numbers.

Xyla and Yabu are friends who are fascinated by numbers.

They collect gems, stars, and other things, put them in groups, and trade them back and forth. (At the moment, they are very busy with gems.)

Yabu and Xyla see patterns in numbers. Solve problems with them by finding helpful and interesting patterns too!



iPad app: Xyla and Yabu





Visual Math

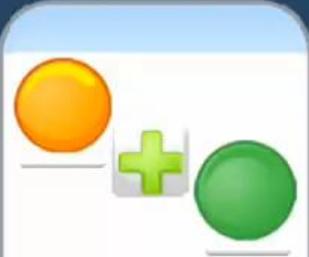
Grade 1-2

Word Problems

Animation • Step-by-Step Solutions



1 Simple Addition: Basics



2 Simple Addition: Number Sentence



3 Change Unknown: Basics



4 Change Unknown: Number Sentence



5 Start Unknown: Basics



6 Start Unknown: Number Sentence



7 Quiz: Practice, Practice & Practice

iPad app: Visual Math Word Problems



Questions?



Strongly
Disagree
0

Disagree
1

Agree
2

Strongly
Agree
3

Send your text message to this phone number: **37607**

poll code
for this session

580624

(1 space)

Speaker was engaging
and an effective
presenter (0-3)



(1 space)

Other comments,
suggestions, or
feedback (words)



(no spaces)

Speaker was well-
prepared and
knowledgeable (0-3)

Session matched title
and description in
program book (0-3)

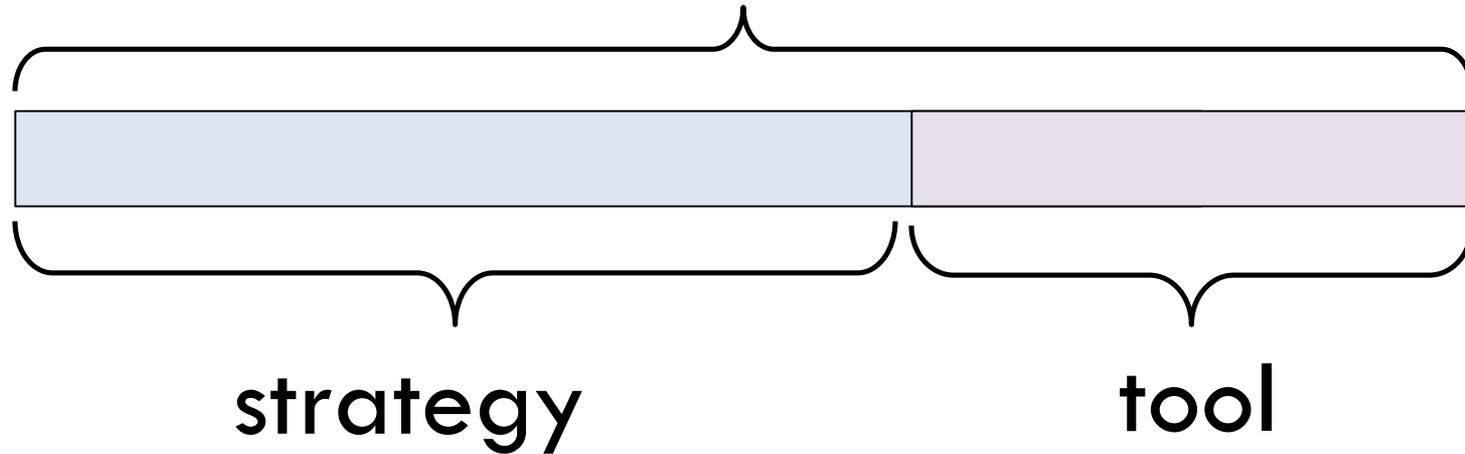
Example: **38102 333 Inspiring, Cassy rocks!**

Non-Example: 38102 3 2 3 Inspiring, good content

Non-Example: 38102 3-2-3 Inspiring, good content

Thanks!

Student understanding!



Thanks for coming!



Cassy Turner

Math Champions Professional Development

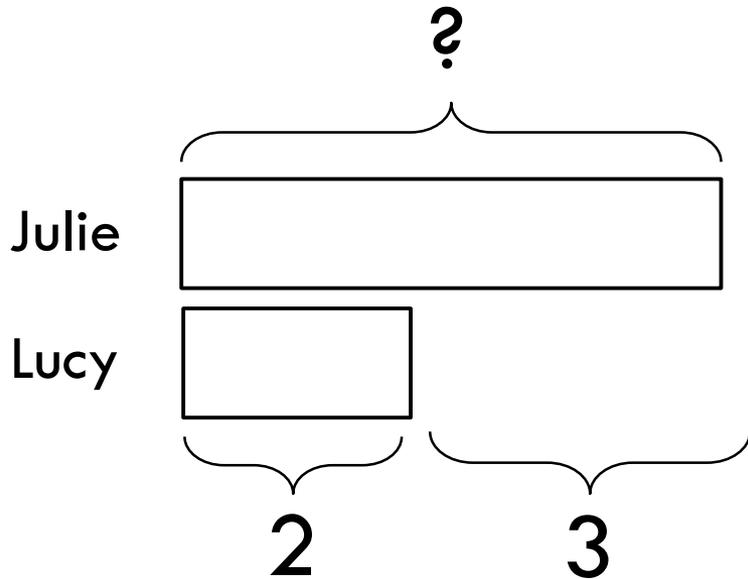
Cassy@SingaporeMathSource.com

Handout:

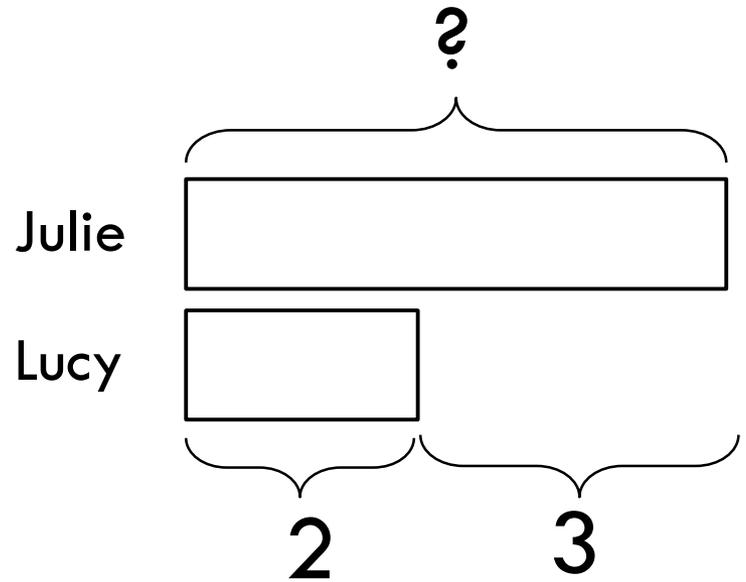
singaporemathsource.com/resources/handouts

Models for Compare: Bigger Unknown

Julie has **3 more** apples than Lucy. Lucy has 2 apples. How many apples does Julie have?

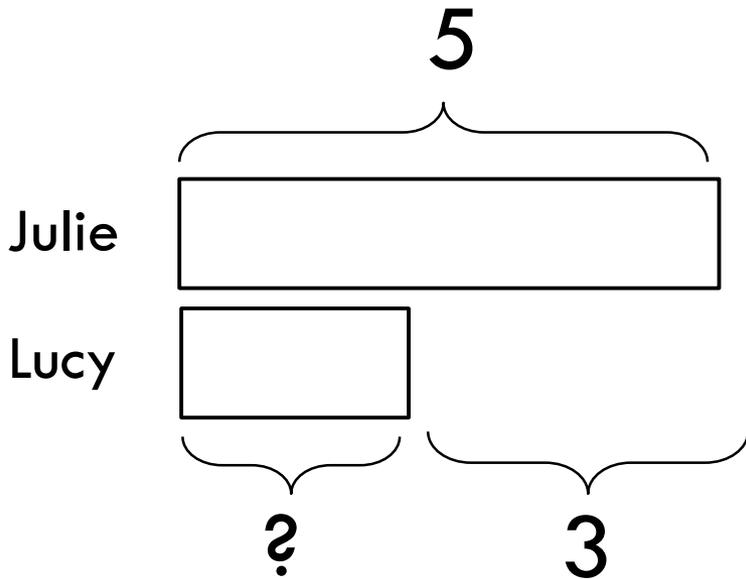


Lucy has **3 fewer** apples than Julie. Lucy has 2 apples. How many apples does Lucy have?



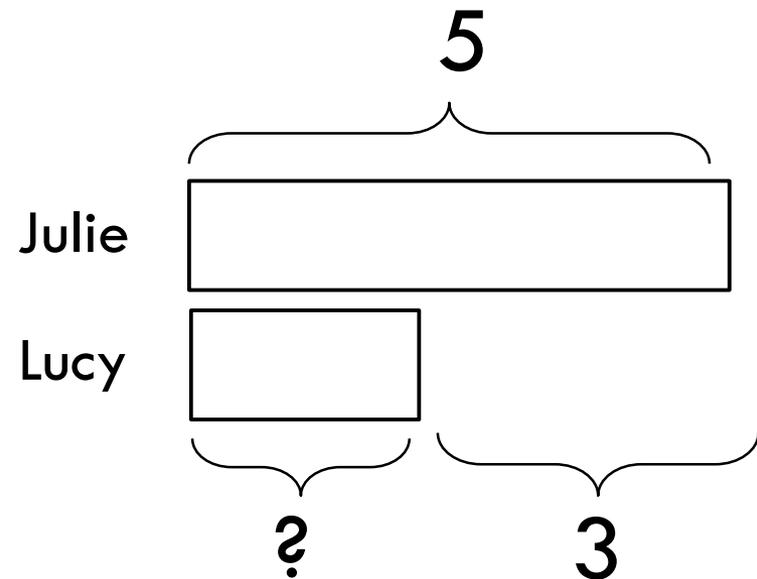
Models for Compare: Smaller

Julie has **3 more** apples than Lucy. Julie has **5** apples. How many apples does Lucy have?



Unknown

Lucy has **3 fewer** apples than Julie. Julie has **5** apples. How many apples does Lucy have?



SBAC Grade 3

A pencil has a mass of 25 grams. An apple has a mass that is 75 grams more than the pencil. What is the mass of the apple?

