

# Multiplicative Comparisons Instruction Using Bar Models

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#### **Lesson Objectives**

ccss 4.0.A.1: Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplicative equations.

Behavioral objective: Students are courteous and considerate when working with others.

#### Lesson Procedures

Activating Prior Knowledge: students think-pair-share what they remember about additive comparisons.

Example of additive comparison:

"If I have \$20, and Ms. Murphy has \$16, how many more dollars do I have than Ms. Murphy?" The students should be able to answer with \$4.

#### Introducing Multiplicative Comparisons:

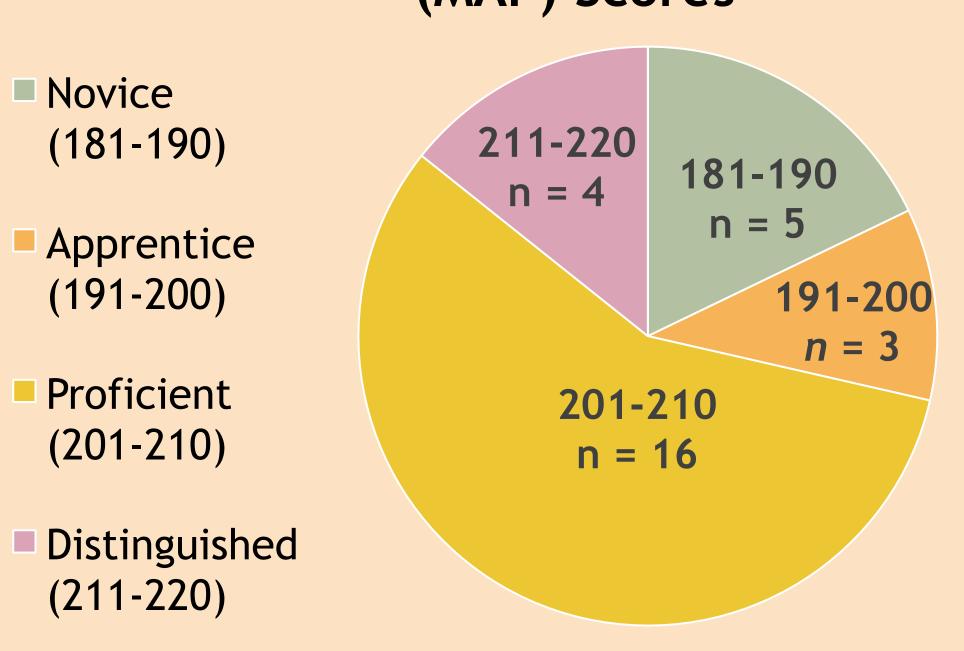
We are comparing two amounts by finding how many times larger one is than the other.

Eliciting real life examples: "When would we need to know how many times larger something is compared to something else?"

Examples include: size, height, weight, distance, etc. "For example, we could say that I ran five miles, and Trenton ran two times as far as I did."

Gradual Release of Responsibility: Teacher modeled and provided guided practice with whole class, then they worked in pairs, and finally each student completed individual work. During student work time, teacher used a rating scale to track students' progress on the behavioral objective.

# Students by Measure of Academic Progress (MAP) Scores



## Trifold Guided Notes with Differentiated Support

	FRONT	Low Sup	port	BACK	
Comparing by finding how many times one is than the other.  Example  When you compare the picture of 7 tiles to the picture of 35 tiles,	Used to represent two amounts so we can to find how many one is than the other  Continued from Example on page I  Dylan has 7 chips. Cadence has 5 times as many chips as Dylan. How many chips does Cadence have?	3. Whole Group Practice  #I. Bryson rides his bike 3 blocks to school. Michael rides his bike 2 times as far as Bryson. How far does Michael ride his bike to school?  Solve by using a bar model.	4. Partner Practice  #2 Payden has 6 pencils. Victoria has 4 times as many pencils as Payden. How many pencils does Victoria have?  Solve by using a bar model and write an equation.	5. Individual Practice  #4. McKenzie ate 4 Gushers.  Demarcus ate 3 times as many as  McKenzie. How many Gushers did  Demarcus eat?  Solve by using a bar model and write  an equation.	Multiplicative Comparisons 4.0AI
you can see that there are 5 times as many tiles in the picture of 35		Write an equation using the answer to #1.	#3. Camden has 5 blue paws. Kevin has 3 times as many as Camden. How many blue paws does Kevin have?  Solve by using a bar model and write an equation.	#5. Julius has 7 basketball cards. Cody has 3 times as many as Julius. How many basketball cards does Cody have?  Solve by using a bar model and write an equation.	Learning Goals  I can use a to represent a multiplicative comparison  I can write an for a situation involving a multiplicative comparison.

Used to represent two amounts so we can to find how many times one is than the other.    Lample		FRONT	Modera	ate Support
	finding how many times one is than the other.  Example  When you compare the picture of 7 tiles to the picture of 35 tiles, you can see that there are 5 times as many tiles in the picture of 35	Used to represent two amounts so we  can to find how many times  one is than the other  Continued from Example on page I  Dylan has 7 chips. Cadence has 5 times as many chips as Dylan. How many chips does Cadence have?  Dylan  Cadence	#I. Bryson rides his bike 3 blocks to school. Michael rides his bike 2 times as far as Bryson. How far does Michael ride his bike to school?  Solve by using a bar model.  Bryson  Michael  Write an equation using the answer to #I.	#2 Payden has has 4 times as a Payden. How ma Victoria have?  Solve by usin write a  #3. Camden has has 3 times as a How many blue have?  Solve by usin write a

4. Partner Practice	5. Individual Practice	Multiplicative
±2. Payden has 6 pencils. Victoria has 4 times as many pencils as Payden. How many pencils does Victoria have?	#4. McKenzie ate 4 Gushers.  Demarcus ate 3 times as many as  McKenzie. How many Gushers did  Demarcus eat?	Comparisons 4.OAI
Solve by using a bar model and write an equation.	Solve by using a bar model and write an equation.	
is times as many as	is times as many as	Date:
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is times as many as	is times as many as	I can write an for a situation involving a multiplicative comparison.

BACK

BACK

		FRONT	High	Support
Comparing _	nany times	2 Bar Model  Used to represent two amounts so we can to find how many times one is than the other	3. Whole Group Practice  #I. Bryson rides his bike 3 blocks to school. Michael rides his bike 2 times as far as Bryson. How far does Michael ride his bike to school?	4. P #2 Payo has 4 ti Payden. Victoria Solve
When you co 7 tiles to the you can see	Example  mpare the picture of picture of 35 tiles, that there are 5 my tiles in the picture	Continued from Example on page I  Dylan has 7 chips. Cadence has 5 times as many chips as Dylan. How many chips does Cadence have?  Dylan  Cadence  Lis times as many as	Solve by using a bar model.  Bryson  Michael	#3. Cam has 3 ti How ma have?
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4. Partner Practice	5. Individual Practice	Multiplicative
#2. Payden has 6 pencils. Victoria has 4 times as many pencils as	#4. McKenzie ate 4 Gushers. Demarcus ate 3 times as many as	Comparisons
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Victoria have?	Demarcus eat?	4.OA1
Solve by using a bar model and write an equation.	Solve by using a bar model and write an equation.	
		Name:
is times as many as	is times as many as	Date:
= x	= x	
#3. Camden has 5 blue paws. Kevin	#5. Julius has 7 basketball cards.	
has 3 times as many as Camden.	Cody has 3 times as many as Julius.	<u>Learning Goals</u>
How many blue paws does Kevin have?	How many basketball cards does Cody have?	I can use a
Solve by using a bar model and	Solve by using a bar model and	to represent a multiplicative
write an equation.	write an equation.	comparison.
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is times as many as	is times as many as	for a situation involving a
= x	= x	multiplicative comparison.

#### Differentiation

Due to the heterogeneous nature of the class, differentiated guided notes were created to meet the needs of students needing low, moderate, and high levels of support.

#### Identifying Key Information

Jess is 3 years old. Mary is four times

as old as Jess. How old is Mary?

is	times as many as

OR = _	X
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#### <u>Bar Model</u>

Jess	3			
Mary	3	3	3	3

# Writing an Equation

Mary is 12 years old

12 is 4 times as many as 3

 $12 = 4 \times 3$ 

## **Results**

Three of the 28 students chose to not use a bar model to represent the multiplicative comparisons as they could look at the two amounts and mentally multiply. However, 2 of these 3 students also failed to master writing a correct equation to represent the multiplicative comparison and instead wrote additive comparison equations (i.e.,  $10 = 7 \times 3$  instead of  $21 = 7 \times 3$ ).

To correct this, I would re-teach the bar model using simpler numbers and gradually make the numbers more complex so they see how important bar models are to comparing and finding the product.