Multiplication & Division

Word Problems

Grouped by Problem Type

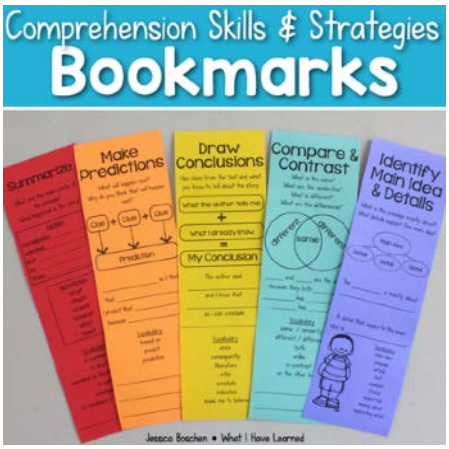


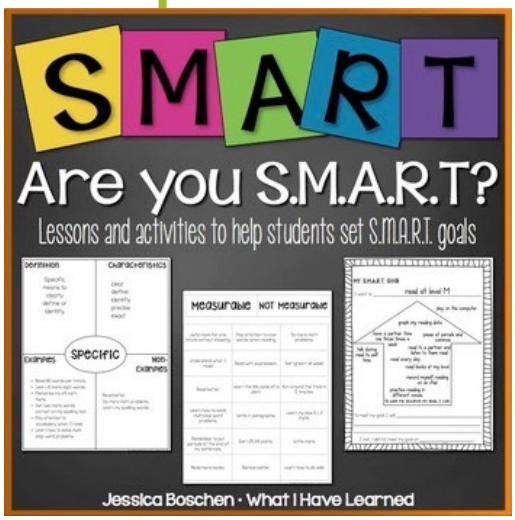
WHAT I have LEARNED

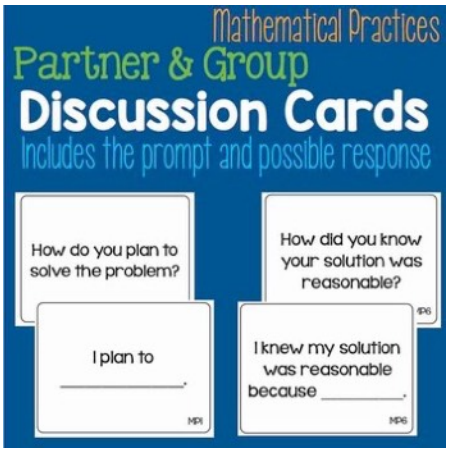
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If you have any questions, please email jessica@whatihavelearnedteaching.com. I'm happy to help.

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What's Included

- 7 different word problems for each type of multiplication and division problem type (9 problem types), including measurement problems with both customary and metric units.
- 27 multi-step word problems
- A total of 90 different word problems.
- Posters for procedures, models and strategies to use when solving the word problems
- Vocabulary cards for problem solving, models, and strategies
- Detailed explanation of the problem types
- Blank spaces in each problem to differentiate the numbers
- Suggestions for how to choose the problems and numbers
- Description of which Common Core Mathematical Practices align with these problems
- Five-point rubric
- Sort to distinguish Multiplication Compare and Addition Compare problems

Much of the work in this packet is generated from the research presented in these article:
http://scimathmn.org/stemtc/resources/mathematics-best-practices/modeling-word-problems
http://commoncoretools.files.wordpress.com/2011/05/ccss_progression_cc_oa_k5_2011_05_302.pdf

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A word about Problem Types

There are three basic classes of Multiplication and Division problem types: Equal Groups, Arrays / Area and Compare. Within each of those classifications are distinctions of which part of the problem is unknown, thus becoming a multiplication or division problem.

In equal groups, each factor has a different role, either the number of objects or the number of groups. In arrays, the roles of the facts do not matter.

Multiplication Compare situations are more complex than Equal Groups and Arrays, and must be distinguished from Addition Compare problems. I have included a sorting activity where students can identify the problem type. Multiplicative comparison start in fourth grade.

Measurement problems are more difficult because they do not focus on countable objects. Students should be introduced to the measurement problems after developing fluency with problems that include discrete, countable objects. Measurement problems are included for all problem types.

Along with the problem types, students should be developing a deeper understanding of the properties of multiplication and how they relate to the context of the problem. The properties of multiplication are not explicitly taught, but they are a strategy students can use to solve the problem. These problems can also be extended to develop understanding of patterns, factors, multiples, and prime and composite numbers.

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Problem Types

The following problem types represent common multiplication and division situations. The labels in parenthesis are the same labels on the bottom of each problem that you will print for students. You can use this page as a sort of key for the printed problems to identify problem type. The following page goes into more detail and gives examples for each problem type.

9 x 4 = ___	9 x __ = 36 or 36 ÷ 9 = __	__ x 4 = 36 or 36 ÷ 4 = __

Equal Groups

Equal Groups: Unknown Product (EG-UP)	Equal Groups: Group Size Unknown (EG-GSU)	Equal Groups: Number of Groups Unknown (EG-GU)

Arrays / Area Models

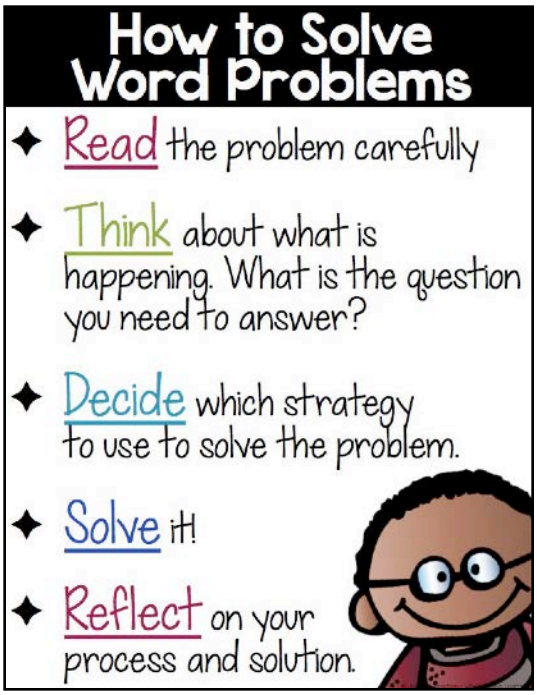
Arrays / Area Unknown Product (AA-UP)	Arrays / Area Group Size Unknown (AA-GSU)	Arrays / Area Number of Groups Unknown (AA-GU)

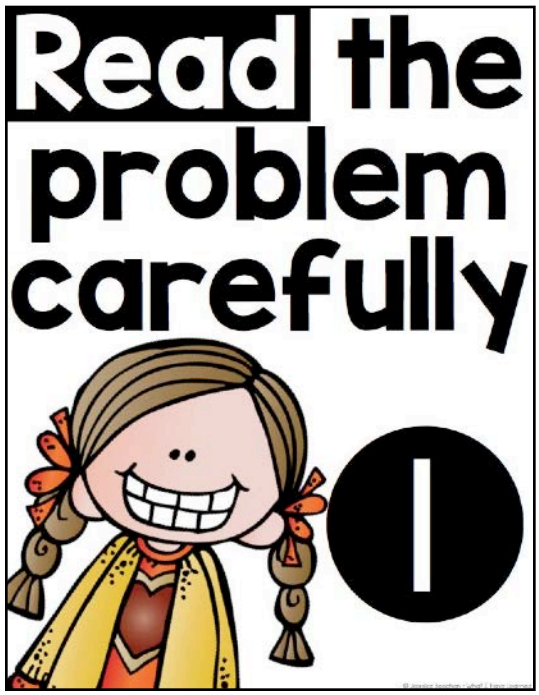
Compare

Compare: Unknown Product (C-UP)	Compare: Group Size Unknown (C-GSU)	Compare: Number of Groups Unknown (C-GU)

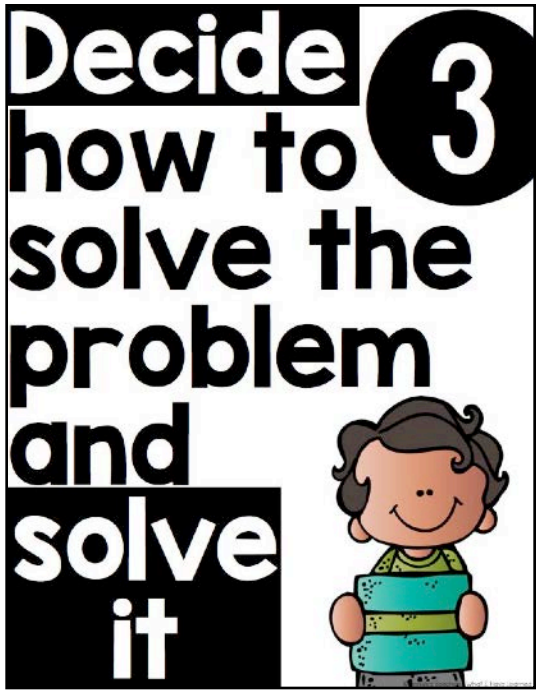
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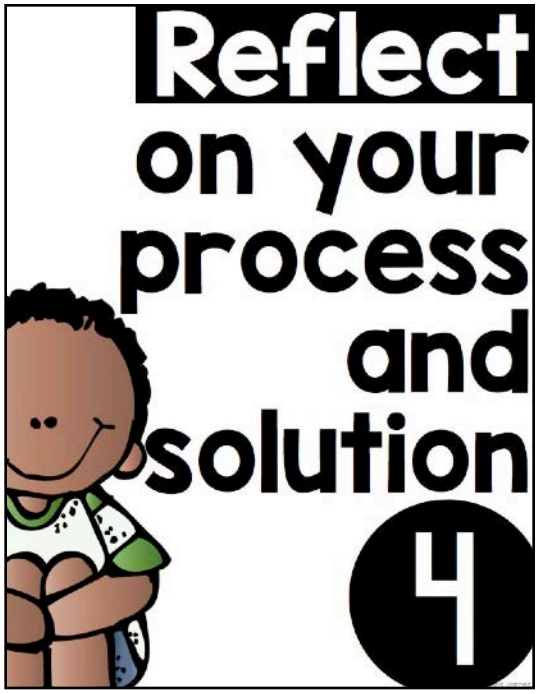
How to Solve Word Problems



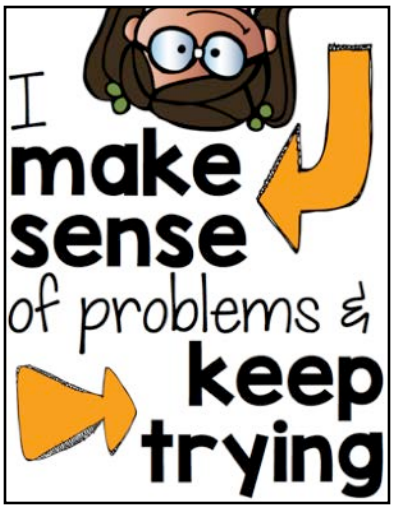


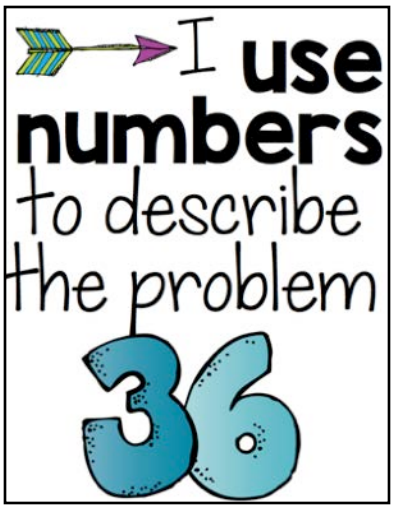


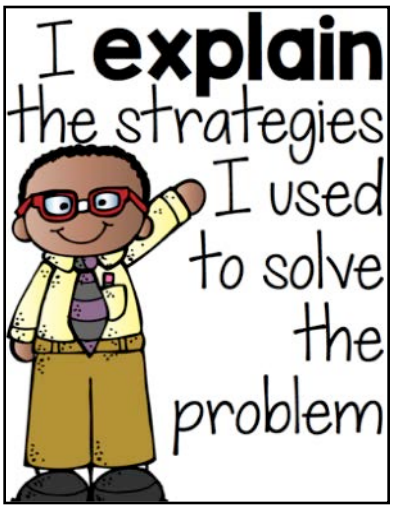


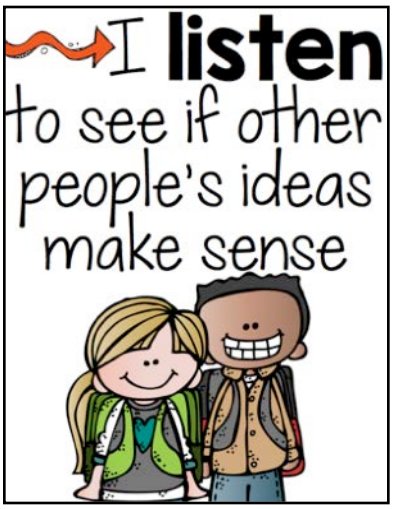


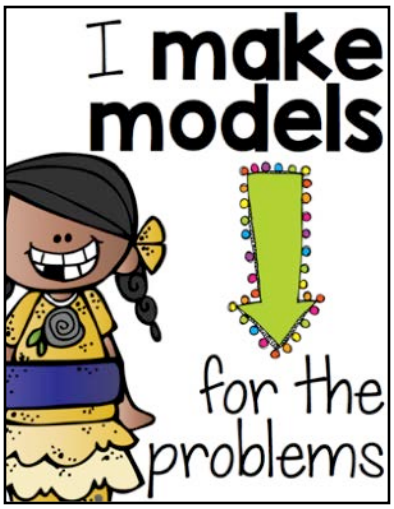
Mathematical Practice "I can" Statements

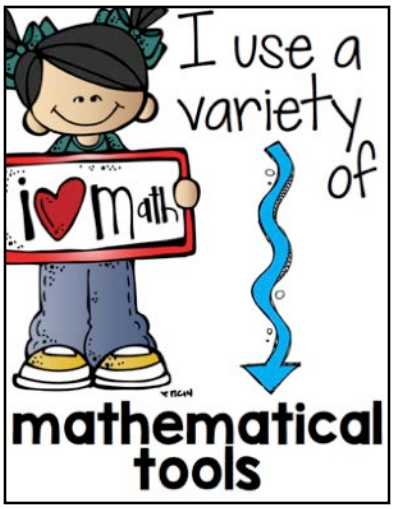


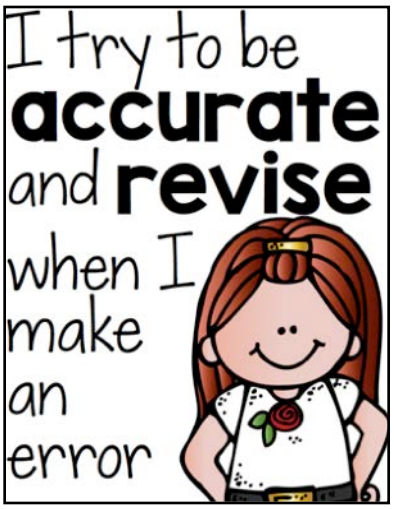


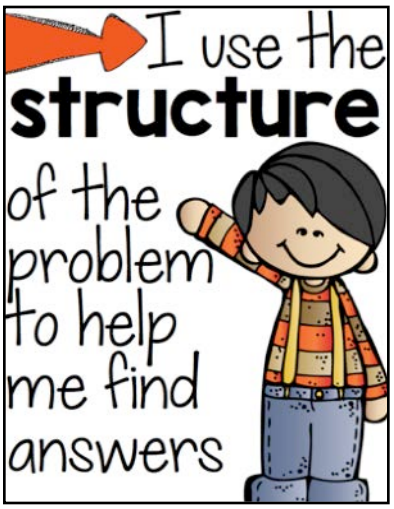


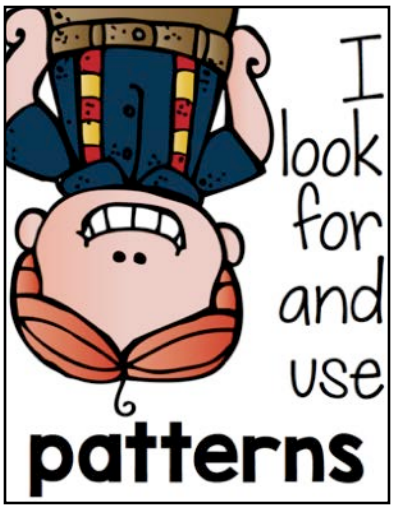










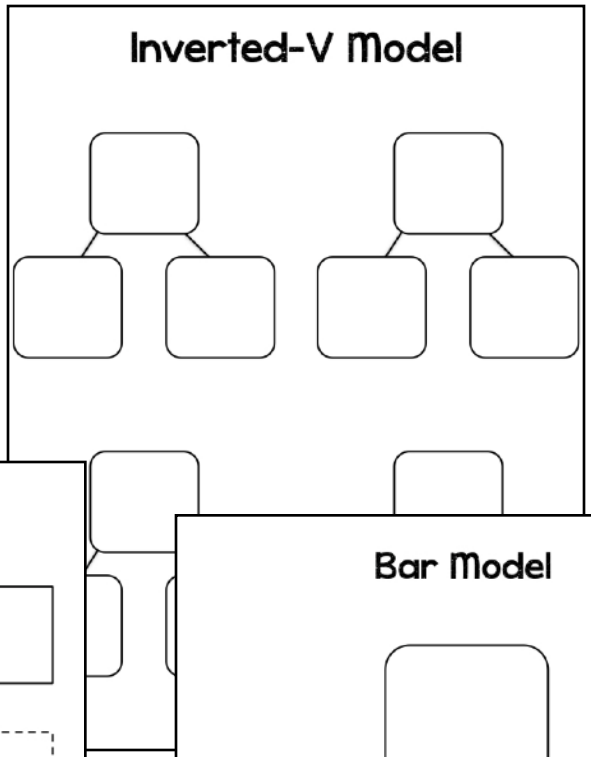


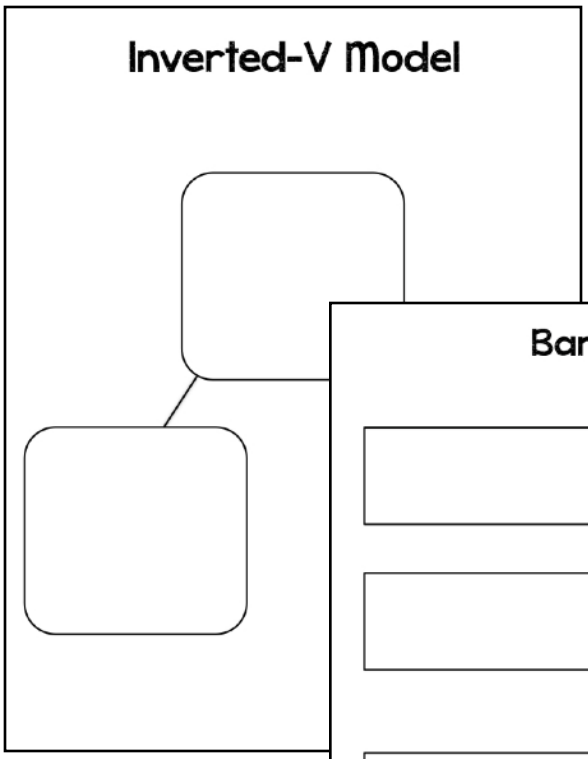
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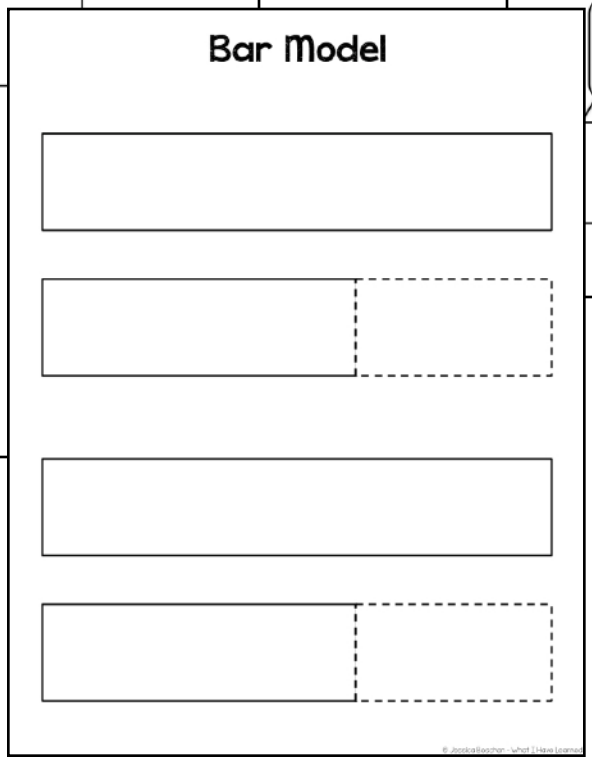
Vocabulary Cards

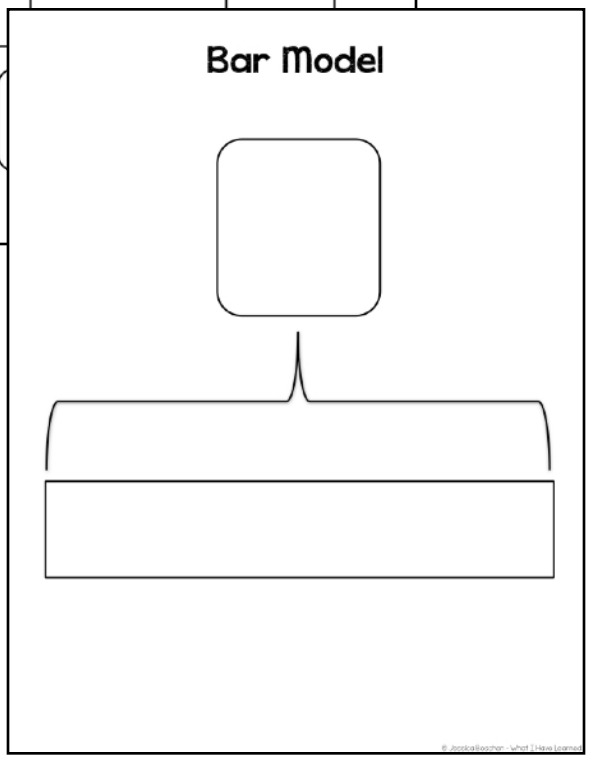
rows columns			
equation equal	product quotient	act it out draw it out	inverted V bar model
rate times as much	group size number of groups	array area model	use a number line break apart
array area	remander factor	number line equal groups	decompose diagram
associative property distributive property	dividend divisor	share objects	find a pattern
commutative property multiplicative identity property	compare unknown	repeated addition repeated subtraction	use an algorithm use a math fact

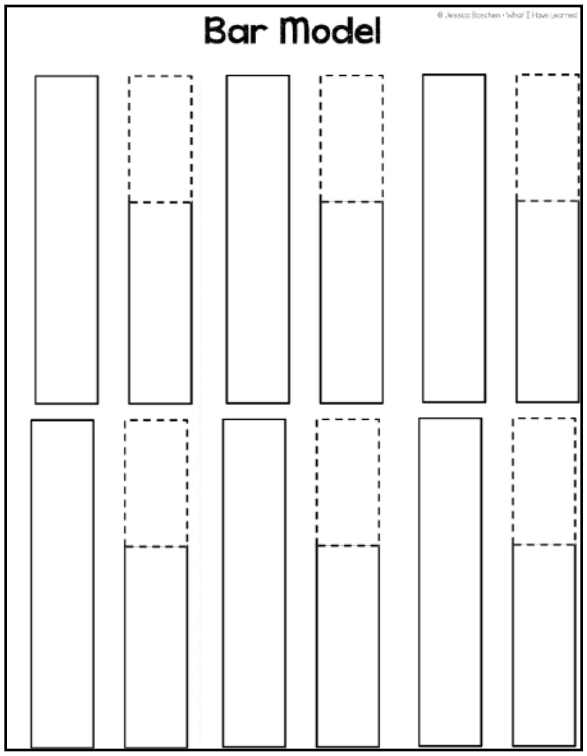
Models

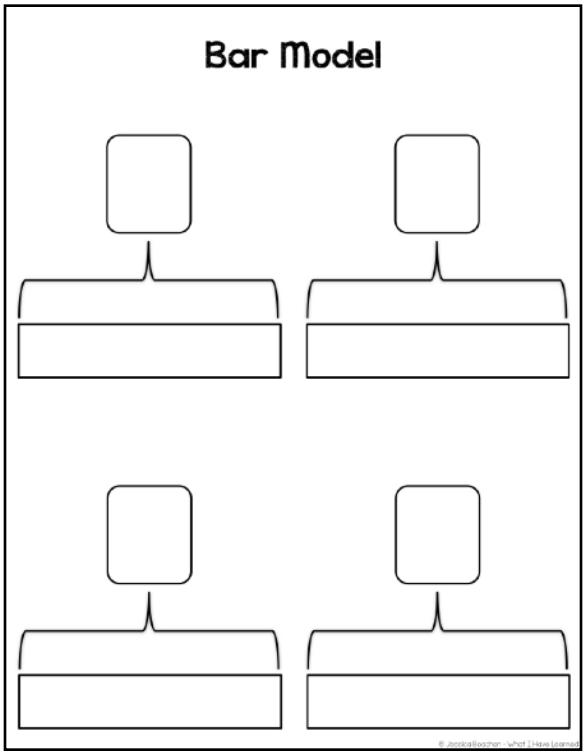

Inverted-V Model


Inverted-V Model


Bar Model


Bar Model


Bar Model


Bar Model

I can solve

Equal Groups	Unknown Product	Group Size Unknown	Number of Groups Unknown
Arrays / Area	Unknown Product		
Compare	Unknown Product		

I can . . .

5	I can use models and strategies that go with the problem and explain why I used that model and strategy.
4	I
3	I
2	I
1	

Sentence Frames

Equal Groups

____ are in ____ groups.
There are ____ in each group.
There are ____ groups.

Compare Problems

____ and ____ are being compared.
____ is more than ____.
____ is less than ____.
____ is ____ times more/ less than ____.
__ is __ times as much as ____.

Array / Area

There are ____ rows.
There are ____ objects in each row.
There are ____ columns.
There are ____ objects in each column.
There area is ____ square units.

Explain how you solv

I used a _____ model bec
I solved the problem by _
____.
I know my answer is corr
_____.

Mathema Practices

- I make sense of problems and keep trying.
- I use numbers to describe the
- I explain the strategies I used t
- I listen to see if other people's
- I make models for the problem.
- I use a variety of mathematical
- I try to be accurate and revise error.
- I use the structure of the prob answers.
- I look for patterns.

Math Journal

Name: _____



Name: _____

Glue the Problem

Name: _____

Glue the Problem

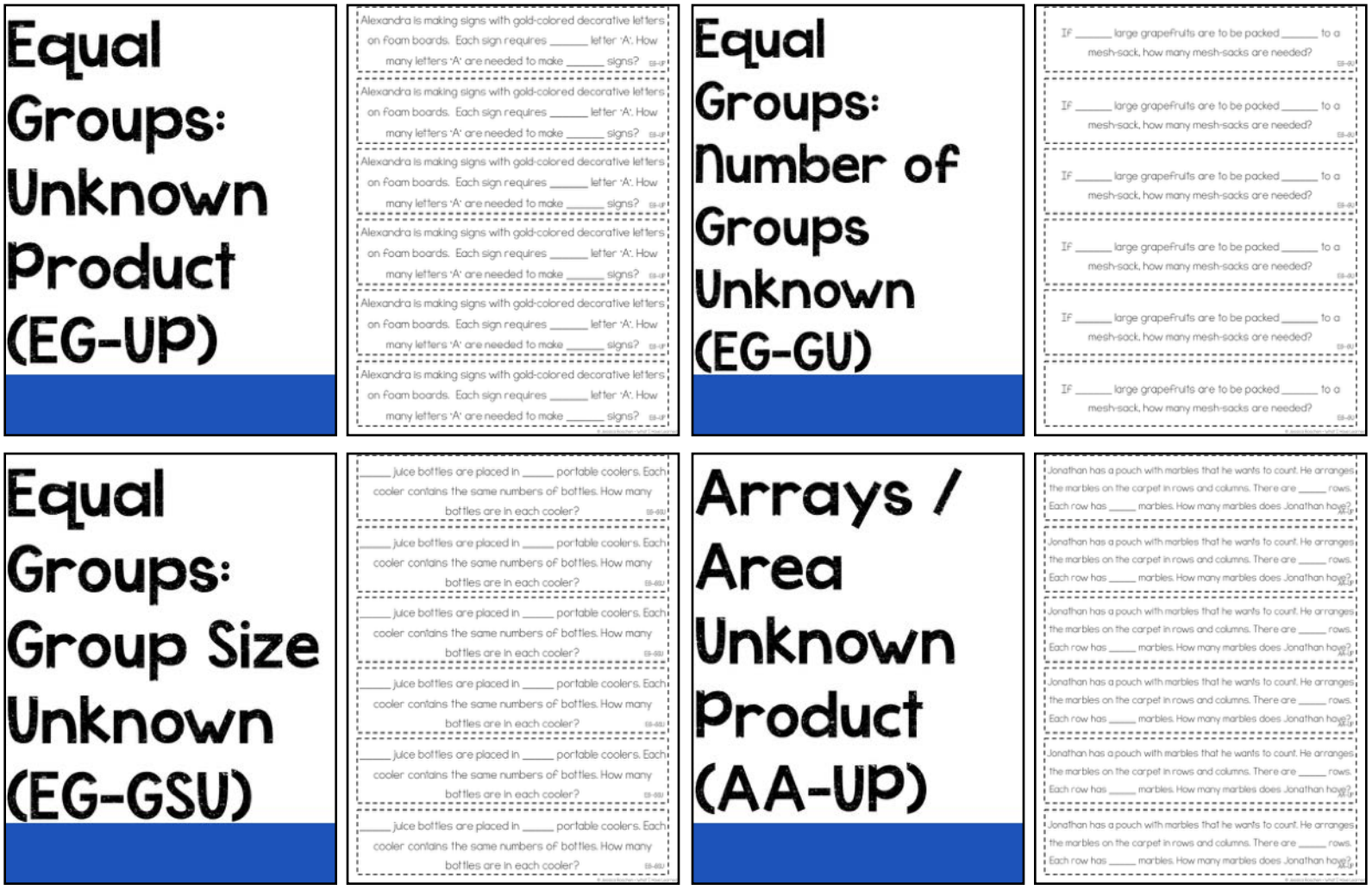
Glue the Pro

Problem Solving Name: _____

Glue the Problem

90 Different Problems by Problem Type with Blanks Spaces

in two formats for Classroom and Homeschool



Arrays / Area Group Size Unknown (AA-GSU)

A group of _____ soldiers is marching in rectangular formation. There are _____ rows. How many soldiers are in each row? AA-GSU

A group of _____ soldiers is marching in rectangular formation. There are _____ rows. How many soldiers are in each row? AA-GSU

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A group of _____ soldiers is marching in rectangular formation. There are _____ rows. How many soldiers are in each row? AA-GSU

Compare Group Size Unknown (C-GSU)

Peter has _____ marbles, which is _____ times more than Joseph has. How many marbles does Joseph have? C-GSU

Peter has _____ marbles, which is _____ times more than Joseph has. How many marbles does Joseph have? C-GSU

Peter has _____ marbles, which is _____ times more than Joseph has. How many marbles does Joseph have? C-GSU

Peter has _____ marbles, which is _____ times more than Joseph has. How many marbles does Joseph have? C-GSU

Peter has _____ marbles, which is _____ times more than Joseph has. How many marbles does Joseph have? C-GSU

Peter has _____ marbles, which is _____ times more than Joseph has. How many marbles does Joseph have? C-GSU

Arrays / Area Number of Groups Unknown (AA-GU)

Mrs. Smith has a small garden with tomato plants. She has _____ plants arranged into regular rows. There are _____ plants in each row. How many rows are there? AA-GU

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Compare Number of Groups Unknown (C-GU)

An advanced video game costs $_____. A basic video game costs $_____. How many basic video games can one buy for the price of one advanced video game? C-GU

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Compare Unknown Product (C-UP)

Joe has _____ blue marbles. He has _____ times more red marbles than blue marbles. How many red marbles does he have? C-UP

Joe has _____ blue marbles. He has _____ times more red marbles than blue marbles. How many red marbles does he have? C-UP

Joe has _____ blue marbles. He has _____ times more red marbles than blue marbles. How many red marbles does he have? C-UP

Joe has _____ blue marbles. He has _____ times more red marbles than blue marbles. How many red marbles does he have? C-UP

Joe has _____ blue marbles. He has _____ times more red marbles than blue marbles. How many red marbles does he have? C-UP

Joe has _____ blue marbles. He has _____ times more red marbles than blue marbles. How many red marbles does he have? C-UP

Multi-Step Problems

Her parents asked Andrea to prepare outgoing mail For their relatives overseas. She prepared ____ smaller envelopes which cost $____ each to mail. She also prepared ____ large envelopes which cost $____ each to mail. How much is the total postage to mail all these letters? MU-ES-UP

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