

DMT INSTITUTE

Developing Mathematical Thinking Institute (DMTI)



Professional
Development



Curricular
Resources



Assessment

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Problem Solving

EQUATIONS

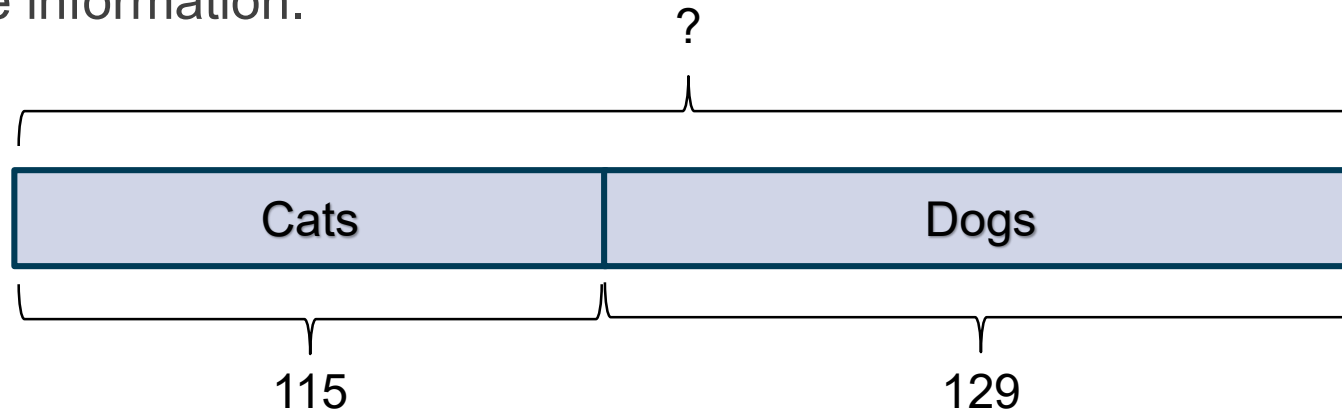
DMTI Varied Practice Worksheets

This PowerPoint or PDF displays the worksheets that have varied situations (context, visual, equations, and other mathematical models) for children to work on. By completing these worksheets, children increase their foundational skills in the topic, which will help them with these standards and future mathematical topics.

1. If using a journal, have children present the worksheet and complete all the problems.
2. Or print the 'Varied Practice Worksheet Slides' for them to work on. Then, you can return to the PowerPoint or PDF to look at the keys to check their work.

Problem Solving: Equations

We are going to be using bar models to represent different situations. Think about an equation that matches the bar model, then use the information in the bar model to write a story problem that matches the information.



Equation: $115 + 129 = a$

Possible story problem: There are 115 cats and 129 dogs. How many animals are there all together?

Problem Solving: Equations

How would the story about cats and dogs change with the model to the right?

Possible equations:

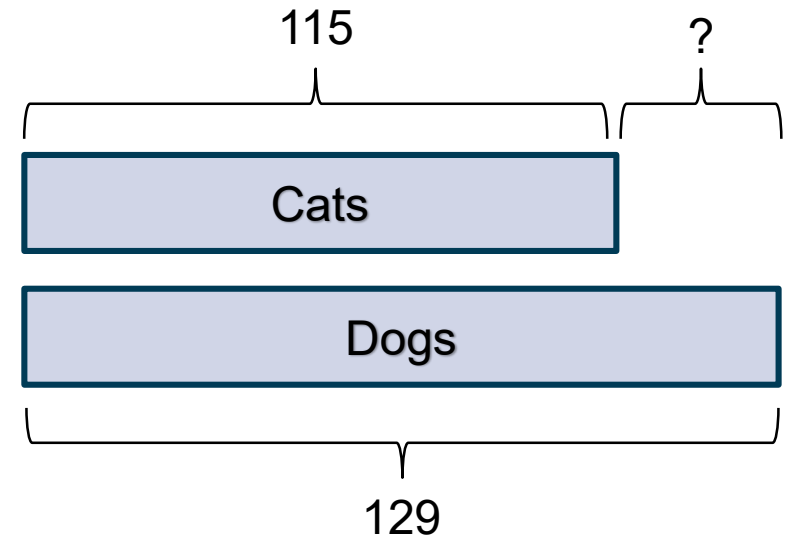
$$115 + n = 129$$

$$129 = 115 - n$$

Possible stories:

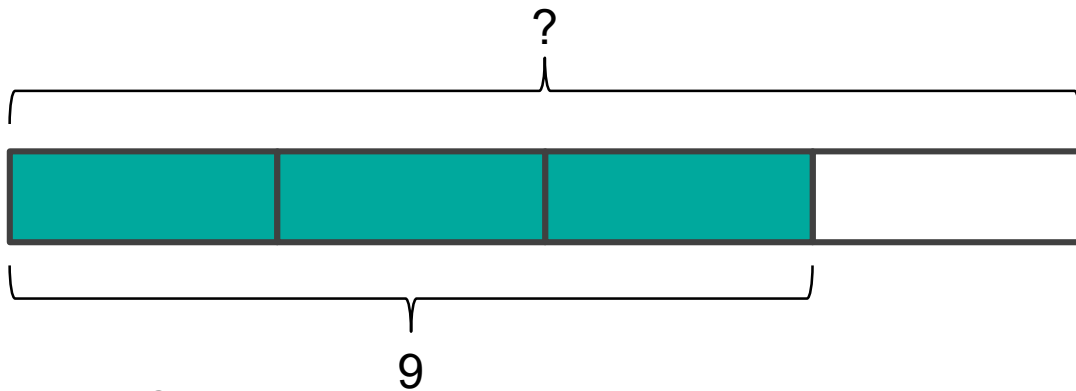
There are 129 dogs. There are 115 cats. How many more cats do you need to have the same number of dogs?

There are 129 dogs. There are 115 cats. How many more dogs are there than cats?



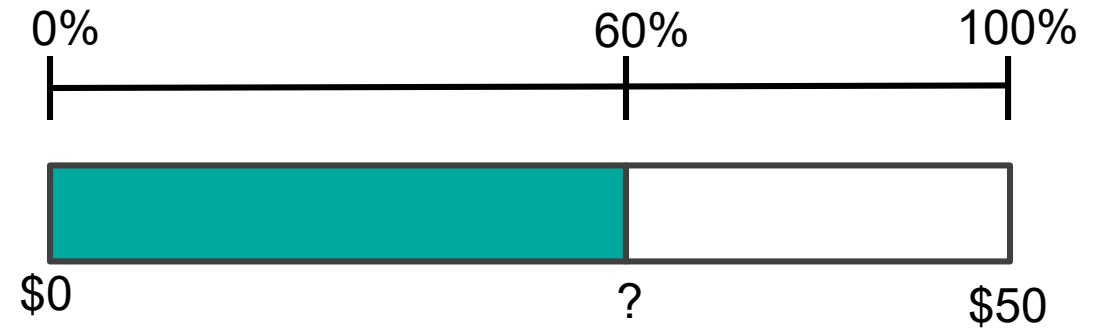
Problem Solving: Equations

We can also use bar models to represent problems involving fractions and percent. Some examples are included below.



I read $\frac{3}{4}$ of the book. It took me 9 hours. If I read the rest of the book at the same rate, how many hours will it take to read the entire book?

$$\frac{3}{4}b = 9$$



There was a dress that cost \$50. It was on sale for 60% of the original cost. How much is the sale price?

$$\begin{aligned} 60\% * \$50 &= \text{sale price} \\ .6 * 50 &= p \end{aligned}$$

Grade 6-8: Problem Solving - Equations

Materials Needed

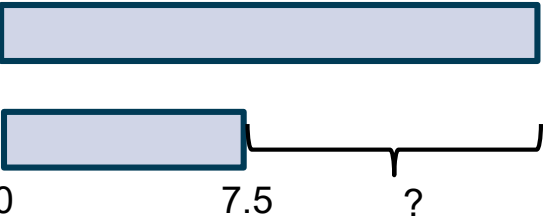
Printed copies of the Problem Solving Equations Worksheets

Instructions


Worksheet 1.1 & 1.2

- A) Each row should include a story problem, bar model, and equation that match. Use the provided one to generate the other two.
- B) Use the model or equation to solve the problem and write the answer in the final column.

Worksheet 1.1 – Problem Solving: Equations

Story problem	Bar model	Equation	Answer
<p>I have $5\frac{1}{4}$ feet of red ribbon and $2\frac{2}{3}$ feet of blue ribbon. How many feet of ribbon do I have all together?</p>			
	<p>0 Running (in kilometers) 16.2</p> 		
		<p>$6b = 84$ Shelves of books</p>	

Worksheet 1.1 – Problem Solving: Equations

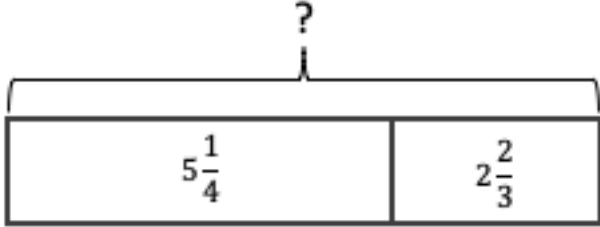
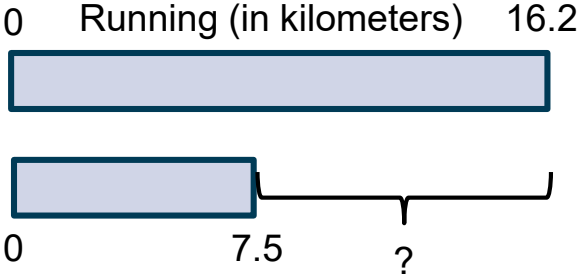
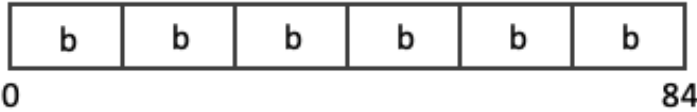
Story problem	Bar model	Equation	Answer
<p>Ethan bought an old bike for \$40, fixed it up and sold it for 220% of what he paid. What was the selling price?</p>			
			
		$5b - 3 = 19.50$ <p>Books and dollars</p>	

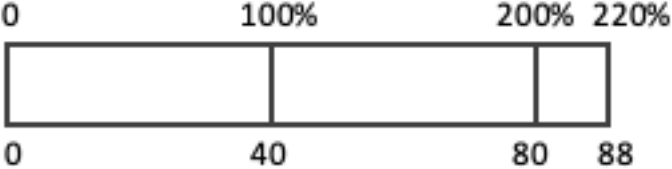

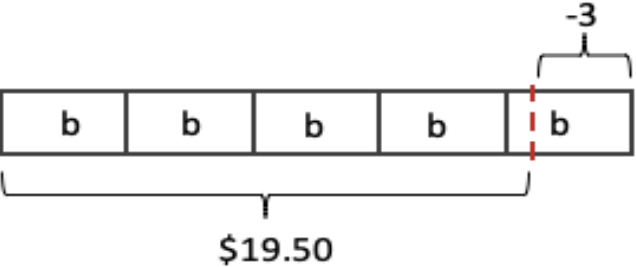


“The Developing Mathematical Thinking Institute (DMTI) is dedicated to enhancing students’ learning of mathematics by supporting educators in the implementation of research-based instructional strategies through high-quality professional development, curricular resources and assessments.”

For more information contact
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Story problem	Bar model	Equation	Answer
<p>I have $5\frac{1}{4}$ feet of red ribbon and $2\frac{2}{3}$ feet of blue ribbon. How many feet of ribbon do I have all together?</p>		$5\frac{1}{4} + 2\frac{2}{3}$	$7\frac{11}{12}$
<p>Whitney and James went for a run. James ran 7.5 kilometers and Whitney ran 16.2 Kilometers. How much farther did Whitney run than James?</p>		$16.2 - 7.5 = x$ $7.5 + x = 16.2$	8.7
<p>I have 84 books to equally distribute on 6 shelves. How many books will fit on each shelf?</p>		$6b = 84$ <p>Shelves of books</p>	14

Story problem	Bar model	Equation	Answer
<p>Ethan bought an old bike for \$40, fixed it up and sold it for 220% of what he paid. What was the selling price?</p>		$2.2(40)=x$	<p>\$88</p>
<p>I paid \$12.75 or 75% of the original cost for a t-shirt. How much was the original cost of the shirt?</p>		$0.75x = 12.75$	<p>17</p>
<p>I purchased 5 books that were all the same price. I applied a \$3 off coupon when I purchased and ended up paying \$19.50. How much was each book?</p>		$5b - 3 = 19.50$ Books and dollars	<p>\$4.50</p>