

Hello

I hope you are having a great day.

Please rip out lesson 26 Problem Set and Exit Ticket/Division of Fractions/Learnzillion: Staple them

together and hand them in my tray. **Make sure your name is on it.**

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Lesson 27: One-Step Equations—Multiplication and Division

Student Outcomes

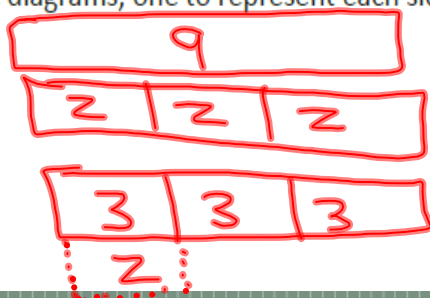
- Students solve one-step equations by relating an equation to a diagram.
- Students check to determine if their solution makes the equation true.

Classwork

Example 1

Solve $3z = 9$ using tape diagrams and algebraically and then check your answer.

First draw two tape diagrams, one to represent each side of the equation.



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If 9 had to be split into three groups, how big would each group be?

Demonstrate the value of z using tape diagrams.

How can we demonstrate this algebraically?

$$3z = 9$$

$$2.8 \cancel{\div 3} = 9 \div 3$$

$$z = 3$$

How does this get us the value of z ?

✓ How can we check our answer? $3 \cdot 3 = 9$
 $9 = 9$

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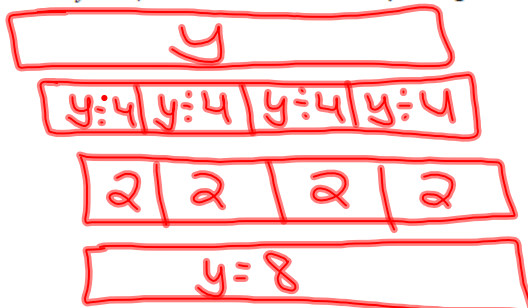
Example 2 (5 minutes)

Solve $\frac{y}{4} = 2$ using tape diagrams and algebraically. Then, check your answer.

First, draw two tape diagrams, one to represent each side of the equation.



If the first tape diagram shows the size of $y \div 4$, how can we draw a tape diagram to represent y ?



Draw this tape diagram.

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~~What value does each $y \div 4$ section represent? How do you know?~~

~~How can you use a tape diagram to show the value of y ?~~

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How can we demonstrate this algebraically?

$$y \div 4 = 2$$

$$y \div 4 \cancel{\div 4} = 2 \cdot 4$$

$$y = 8$$

$$y \cancel{\div 4} = 2$$

$$y \cancel{\div 4} \cancel{\div 4} = 2 \cdot 4$$

$$y = 8$$

How does this help us find the value of y ?

$$4 \overline{)8}$$

✓ How can we check our answer?

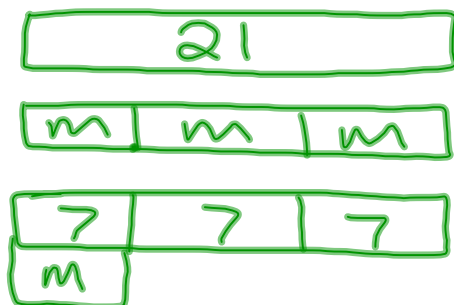
$$8 \div 4 = 2$$

$$2 = 2$$

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Exercises

1. Use tape diagrams to solve the following problem: $3m = 21$.



2. Solve the following problem algebraically: $15 = \frac{n}{5}$.

$$15 = \frac{n}{5}$$

$$5 \cdot 15 = \frac{n}{5} \cdot 5$$

$$75 = n$$

$$\checkmark 15 = \frac{75}{5}$$

$$15 = 15$$

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Now let's practice this on poster paper with our partner.

Set 1

$2a=16$

$b/3=4$

Set 2

$4xC=24$

$d/7=1$

Set 3

$5e=45$

$f/3=10$

Set 4

$9xG=54$

$2=h/7$

Set 5

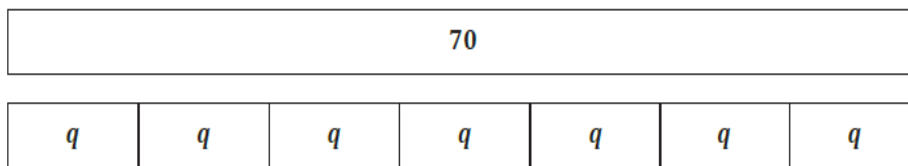
$50=10j$

$k/8=3$

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3. Calculate the solution of the equation using the method of your choice: $4p = 36$.

4. Examine the tape diagram below and write an equation it represents. Then, calculate the solution to the equation using the method of your choice.



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5. Write a multiplication equation that has a solution of 12. Use tape diagrams to prove that your equation has a solution of 12.

6. Write a division equation that has a solution of 12. Prove that your equation has a solution of 12 using algebraic methods.

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Problem Set

1. Use tape diagrams to calculate the solution of $30 = 5w$. Then, check your answer.
2. Solve $12 = \frac{x}{4}$ algebraically. Then, check your answer.
3. Use tape diagrams to calculate the solution of $\frac{y}{5} = 15$. Then, check your answer.
4. Solve $18z = 72$ algebraically. Then, check your answer.
5. Write a division equation that has a solution of 8. Prove that your solution is correct by using tape diagrams.
6. Write a multiplication equation that has a solution of 8. Solve the equation algebraically to prove that your solution is correct.

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7. When solving equations algebraically, Meghan and Meredith each got a different solution. Who is correct? Why did the other person not get the correct answer?

Meghan	Meredith
$\frac{y}{2} = 4$	$\frac{y}{2} = 4$
$\frac{y}{2} \cdot 2 = 4 \cdot 2$	$\frac{y}{2} \div 2 = 4 \div 2$
$y = 8$	$y = 2$

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Exit Ticket

Calculate the solution to each equation below using the indicated method. Remember to check your answers.

1. Use tape diagrams to find the solution of $\frac{r}{10} = 4$.

2. Find the solution of $64 = 16u$ algebraically.

3. Use the method of your choice to find the solution of $12 = 3v$.

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