Name _____   Date _____

One-Step Equations—Multiplication and Division

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 $\dfrac{r}{10} = 4$.

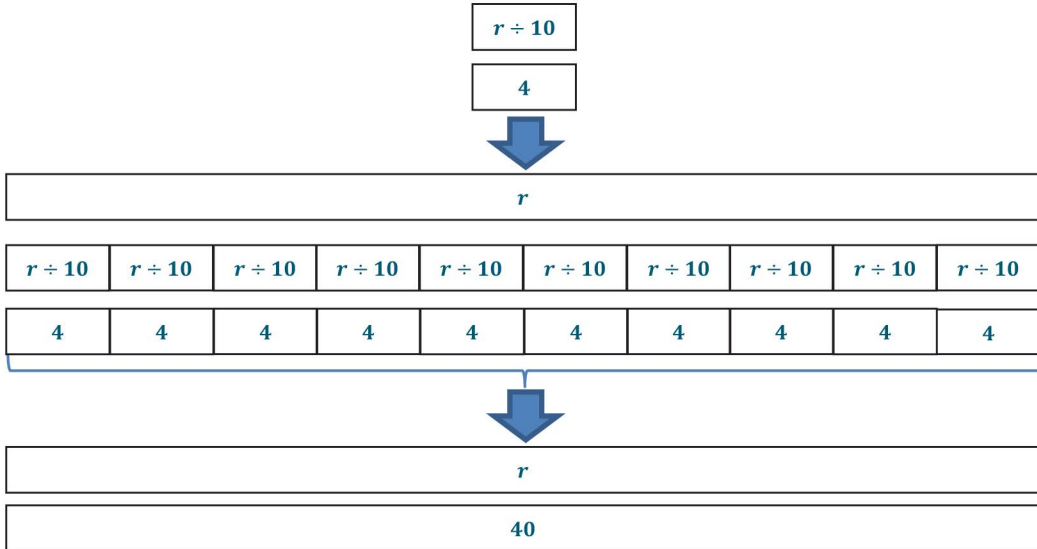2. Find the solution of $64 = 16u$ algebraically.

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

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.

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

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 $\frac{r}{10} = 4$.

$$\boxed{r \div 10}$$

$$\boxed{4}$$

r

$r \div 10$	$r \div 10$	$r \div 10$	$r \div 10$	$r \div 10$	$r \div 10$	$r \div 10$	$r \div 10$	$r \div 10$	$r \div 10$
4	4	4	4	4	4	4	4	4	4

r

40

Check: $\frac{40}{10} = 4$; $4 = 4$. This number sentence is true, so 40 is the correct solution.

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

$$64 = 16u$$
$$64 \div 16 = 16u \div 16$$
$$4 = u$$

Check: $64 = 16(4)$; $64 = 64$. This number sentence is true, so 4 is the correct solution.

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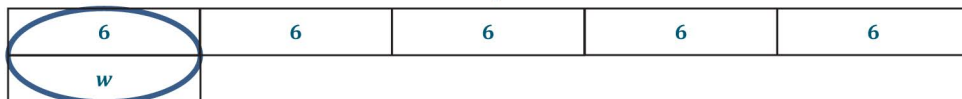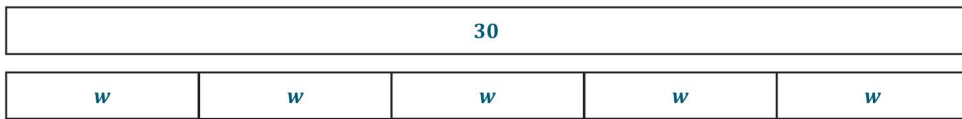
Tape Diagrams:

12

v	v	v

4	4	4
v		
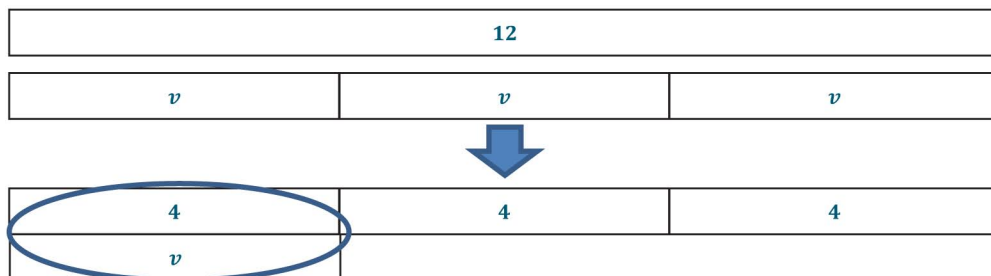
Algebraically:

$$12 = 3v$$
$$12 \div 3 = 3v \div 3$$
$$4 = v$$

Check: $12 = 3(4)$; $12 = 12$. This number sentence is true, so 4 is the correct solution.

1. Use tape diagrams to calculate the solution of $30 = 5w$. Then, check your answer.

30

w	w	w	w	w

6	6	6	6	6
w				

Check: $30 = 5(6)$; $30 = 30$. *This number sentence is true, so 6 is the correct solution.*

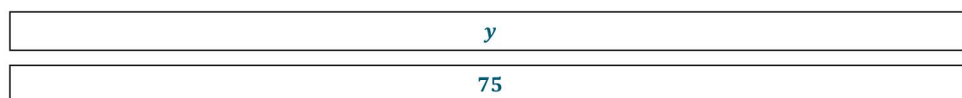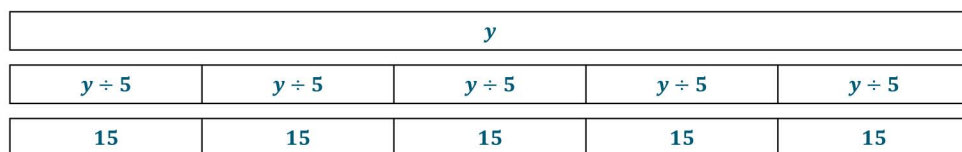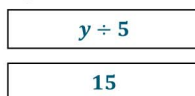2. Solve $12 = \frac{x}{4}$ algebraically. Then, check your answer.

$$12 = \frac{x}{4}$$
$$12 \cdot 4 = \frac{x}{4} \cdot 4$$
$$48 = x$$

Check: $12 = \frac{48}{4}$; $12 = 12$. *This number sentence is true, so 48 is the correct solution.*

3. Use tape diagrams to calculate the solution of $\frac{y}{5} = 15$. Then, check your answer.

$y \div 5$

15

y

$y \div 5$	$y \div 5$	$y \div 5$	$y \div 5$	$y \div 5$
15	15	15	15	15

y

75

Check: $\frac{75}{5} = 15$; $15 = 15$. *This number sentence is true, so 75 is the correct solution.*

4. Solve $18z = 72$ algebraically. Then, check your answer.

$$18z = 72$$
$$18z \div 18 = 72 \div 18$$
$$z = 4$$

Check: $18(4) = 72; 72 = 72$. This number sentence is true, so 4 is the correct solution.

5. Write a division equation that has a solution of 8. Prove that your solution is correct by using tape diagrams.

Answers will vary.

6. Write a multiplication equation that has a solution of 8. Solve the equation algebraically to prove that your solution is correct.

Answers will vary.

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
$\dfrac{y}{2} = 4$	$\dfrac{y}{2} = 4$
$\dfrac{y}{2} \cdot 2 = 4 \cdot 2$	$\dfrac{y}{2} \div 2 = 4 \div 2$
$y = 8$	$y = 2$

Meghan is correct. Meredith divided by 2 to solve the equation, which is not correct because she would end up with $\dfrac{y}{4} = 2$. To solve a division equation, Meredith must multiply by 2 to end up with y because the identity states $y \div 2 \cdot 2 = y$.