## Unit 2 Lesson 8: Which Variable to Solve for? (Part 1)

### 1 Which Equations? (Warm up)

#### Student Task Statement

1. The table shows the relationship between the base length, $b$, and the area, $A$, of some parallelograms. All the parallelograms have the same height. Base length is measured in inches, and area is measured in square inches. Complete the table.

| * $b$ (inches)
 | * $A$ (square inches)
 |
| --- | --- |
| * 1
 | * 3
 |
| * 2
 | * 6
 |
| * 3
 | * 9
 |
| * 4.5
 | *
 |
| * $\frac{11}{2}$
 | *
 |
| *
 | * 36
 |
| *
 | * 46.5
 |

1. Decide whether each equation could represent the relationship between $b$ and $A$. Be prepared to explain your reasoning.
	1. $b=3A$
	2. $b=\frac{A}{3}$
	3. $A=\frac{b}{3}$
	4. $A=3b$

### 2 Post-Parade Clean-up

#### Student Task Statement

After a parade, a group of volunteers is helping to pick up the trash along a 2-mile stretch of a road.

The group decides to divide the length of the road so that each volunteer is responsible for cleaning up equal-length sections.



1. Find the length of a road section for each volunteer if there are the following numbers of volunteers. Be prepared to explain or show your reasoning.
	1. 8 volunteers
	2. 10 volunteers
	3. 25 volunteers
	4. 36 volunteers
2. Write an equation that would make it easy to find $ℓ$, the length of a road section in miles for each volunteer, if there are $n$ volunteers.
3. Find the number of volunteers in the group if each volunteer cleans up a section of the following lengths. Be prepared to explain or show your reasoning.
	1. 0.4 mile
	2. $\frac{2}{7}$ mile
	3. 0.125 mile
	4. $\frac{6}{45}$ mile
4. Write an equation that would make it easy to find the number of volunteers, $n$, if each volunteer cleans up a section that is $ℓ$ miles.

### 3 Filling and Emptying Tanks

#### Student Task Statement

1. Tank A initially contained 124 liters of water. It is then filled with more water, at a constant rate of 9 liters per minute. How many liters of water are in Tank A after the following amounts of time have passed?
	1. 4 minutes
	2. 80 seconds
	3. $m$ minutes
2. How many minutes have passed, $m$, when Tank A contains the following amounts of water?
	1. 151 liters
	2. 191.5 liters
	3. 270.25 liters
	4. $p$ liters
3. Tank B, which initially contained 80 liters of water, is being drained at a rate of 2.5 liters per minute. How many liters of water remain in the tank after the following amounts of time?
	1. 30 seconds
	2. 7 minutes
	3. $t$ minutes
4. For how many minutes, $t$, has the water been draining when Tank B contains the following amounts of water?
	1. 75 liters
	2. 32.5 liters
	3. 18 liters
	4. $v$ liters



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