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

2. Decide whether each equation could represent the relationship between b and A. Be prepared to explain your reasoning.

    a. $b = 3A$

    b. $b = \frac{A}{3}$

    c. $A = \frac{b}{3}$

    d. $A = 3b$

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.

    a. 8 volunteers

    b. 10 volunteers

    c. 25 volunteers

    d. 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.

    a. 0.4 mile

    b. $\frac{2}{7}$ mile

    c. 0.125 mile

    d. $\frac{6}{45}$ 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?

   a. 4 minutes

   b. 80 seconds

   c. m minutes

2. How many minutes have passed, m, when Tank A contains the following amounts of water?

   a. 151 liters

   b. 191.5 liters

   c. 270.25 liters

   d. 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?

   a. 30 seconds

   b. 7 minutes

   c. t minutes

4. For how many minutes, t, has the water been draining when Tank B contains the following amounts of water?

   a. 75 liters

   b. 32.5 liters

   c. 18 liters

   d. v liters