

Activity 1: Using Different Strategies

Find the solution to the following problem before moving on.

Traveling at constant speed, Joe's car goes 100 miles for every 4 gallons of gas.

- How far will Joe be able to drive, if he has money for 20 gallons of gas?*
- How far can Joe drive on 15 gallons?*

1. Carefully read the following students' answers to part (a) of the problem. Be sure you understand the thinking behind each student's work. For each case, explain whether the student's approach is mathematically correct. Do NOT just state that the student gets the correct answer; explain why the approach gives the correct answer.

Student 1

"I know he can go 100 miles with 4 gallons, so I just kept adding on 100 miles and 4 gallons until I got to 20 gallons. Then I saw that I had 500 miles, so he will be able to drive 500 miles."

Miles	100	200	300	400	500
Gallons	4	8	12	16	20

Student 2

"20 gallons is 16 more than the 4 gallons that the car needs for every 100 miles. So he will be able to go 16 miles further than the 100."

$$4 \text{ gallons} + 16 \text{ gallons} = 20 \text{ gallons}$$

$$100 \text{ miles} + 16 \text{ miles} = 160 \text{ miles}$$

Student 3

"Since the ratio is 4 gallons for 100 miles, then I just set up the equation and find the answer using multiplication:

$$\frac{4}{100} = \frac{?}{20}$$

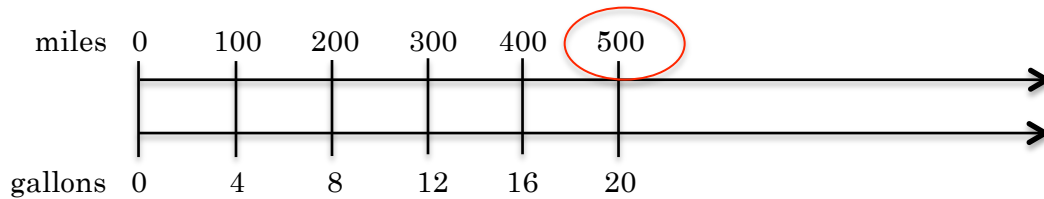
$$\frac{80}{100} = ?$$

$$0.80 = ?$$

so he will be able to drive 0.80 miles.

Student 4

“Because the car goes 100 miles every 4 gallons of gas, these should align on the number lines, another 200 miles will align with 8 gallons, and 300 miles aligns with 12 gallons, and so on all the way to 500 miles with 20 gallons.”



2. If each student used the same approach to answer part (b), write down how you think each answer would look like.
3. What are the commonalities and connections across these representations?
4. Is one approach better than another?
5. Which approach would you classify as the most efficient for this problem?
6. Which type(s) of problem(s) are best tackled with each representation?