

Problem Solving with PROPORTIONAL RELATIONSHIPS

Name: _____

Ms. Picasso, the art teacher, has a sink in her room. The students clean their paint brushes in the sink, and this morning Ms. Picasso noticed that the sink is clogged. To make the situation worse, the faucet is dripping at a constant rate. The sink can hold 200 liters. The plumber tells Ms. Picasso that at this rate, the sink will be full in 10 hours.

- A) How many liters will fill the sink per hour?
- B) How many liters of water will fill the sink after $2\frac{1}{2}$ hours? Show your work and explain your reasoning.
- C) Fill in the table below to find the amount of water that will drip from the faucet in a number of hours:

Number of hours	10	2 $\frac{1}{2}$	5	8	24	36 $\frac{3}{4}$
Amount of water (in liters)	200				180	325

- D) Mr. Galileo has a sink in his room that is also clogged. The faucet in his room is dripping at a constant rate. Mr. Galileo observed that in 10 minutes, two and a half liters of water were in the sink. Whose sink is filling faster, Ms. Picasso or Mr. Galileo? Explain.
- E) Mr. Galileo had to wait for the plumber to finish working in Ms. Picasso's room. When the plumber arrived, Mr. Galileo found that there were $67\frac{1}{2}$ liters of water in the sink. How long did Mr. Galileo have to wait for the plumber? Show your work.
- F) Before unclogging the sink, the plumber had to empty the water from the sink. The plumber used a bucket that could hold $3\frac{3}{4}$ liters. If there are $67\frac{1}{2}$ liters of water in the sink, how many times did the plumber have to fill the bucket to empty the sink?
- G) The graph to the right represents how much the plumber earns while working. How much will he earn after working $21\frac{1}{4}$ hours? Justify your answer.
- H) The plumber would like to know his earnings (e) for any number of hours (h). Write an equation to find his earnings for any number of hours.

