

Your team has successfully built the first three houses in the development. You have received a lot of praise for the work you have done, and you have many more prospective clients for the neighborhood.

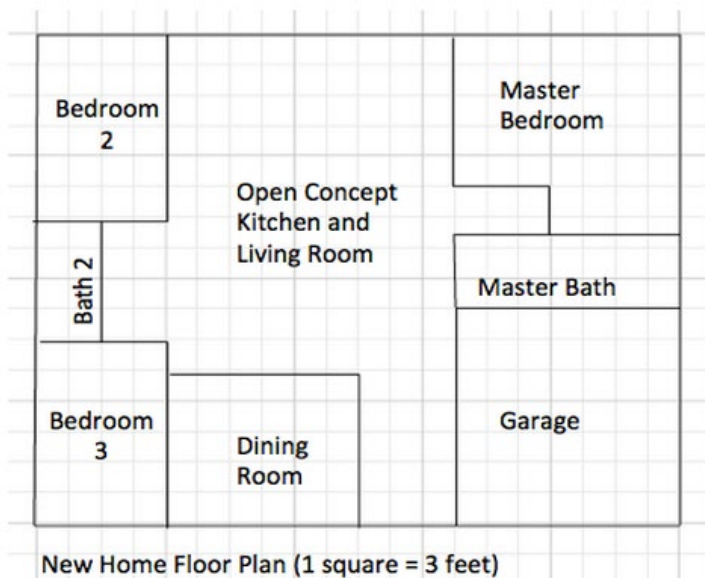
Name:

Concept to Creation

Your team's next client, Client D, has done some work drawing his own plans. He also started researching construction workers, appliances, and fixtures for his home. You anticipate this will be a more difficult client to please, but you are ready for the challenge.

Question 1

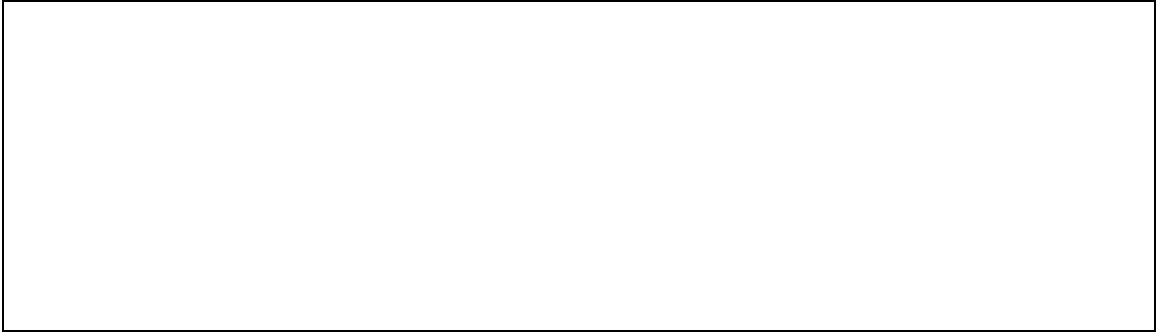
Your client drew the following floor plan.



If the home has the same size foundation as the previous homes, 68 feet by 48 feet, will the client's floor plan fit the foundation? Explain why or why not. Show or explain how you found the answer.

Question 2

You show the client the plan you drew earlier, but he does not like the plan. Draw a new floor plan for a 68-foot x 48-foot home. Use the scale, 1 square = 2 feet x 2 feet. Label the dimensions of each room. Label the area of each room.

**Question 3**

Re-draw the same floor plan using the scale, 1 square = 4 feet x 4 feet. Label the dimensions of each room. Label the area of each room.

Question 4: Supplies

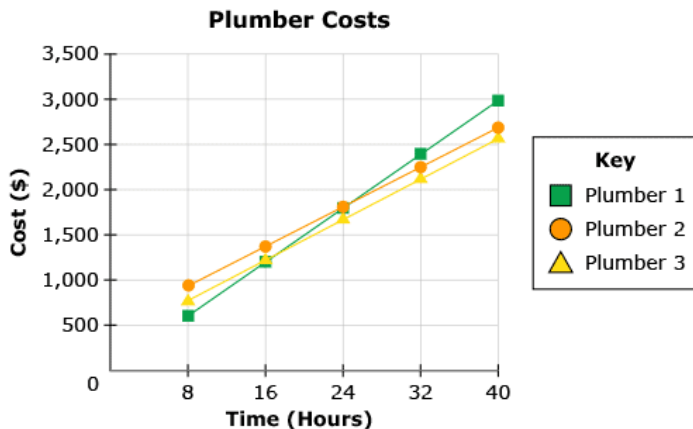
Your construction team is in charge of constructing the framing, floors, and walls. You pay each person on your team \$7.50 per square foot of the house.

- a) Write an equation to show what you pay a construction worker, where x = the number of square feet and y = total money earned.

- b) Explain in words how you developed the equation.

Question 5

You have three choices for plumbers. Plumber 1 charges \$75 per hour. Plumber 2 charges \$500 to come to the jobsite and then \$440 per day. Plumber 3 charges \$350 to come to the jobsite and then \$55 per hour. The graph shows the cost of each plumber.



- a) What is the proportional relationship of the costs between Plumber 2 and Plumber 3 after 8 hours? Show or explain how you found the answer.

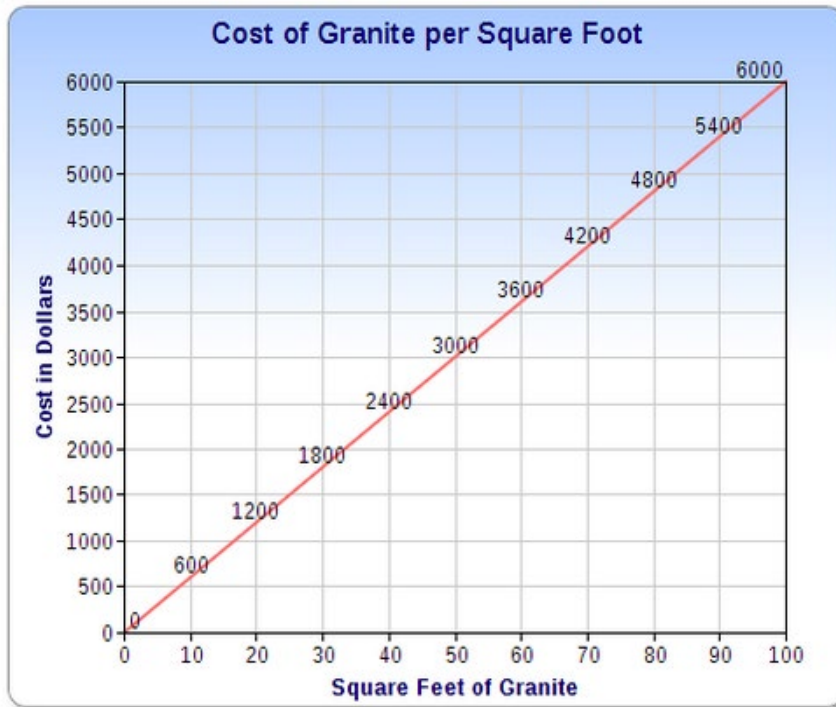
- b) What is the proportional relationship of the costs between Plumber 1 and Plumber 3 after 8 hours? Show or explain how you found the answer.

- c) Which plumber charges a fee proportional to the number of hours worked? How do you know?

Question 6

The walls, wires, pipes, and all of the basics are done. It is time to put some detail into the home. Your client made some decisions about the kitchen, and now you need to purchase the fixtures, cabinets, and appliances.

Your client chose to install granite countertops. The Granite Guys have the highest-quality granite for the best price. They provide the following graph to show the cost for countertops.



- a) Using a proportion, calculate the price per foot of granite based on the price for 100 square feet of granite.

- b) Using a proportion, calculate the price per foot of granite based on the price for 40 square feet of granite.

- c) Is the cost per foot the same no matter how many feet of granite you buy? Explain why or why not and use data to prove your point.

Question 7: Bathroom

Your client found an inexpensive supplier of bathroom light fixtures. The supplier, Fixture World, sells 3 fixtures for \$249. Your client thinks that is a better deal than your supplier. Your supplier, Land of Fixtures, sells 4 fixtures for \$324.

- a) Use proportions to calculate the per fixture price for each vendor. Show your work.

Question 8

Your client ordered 4 bathroom light fixtures to be installed. You ask a new electrician how many fixtures he can install in $\frac{1}{3}$ of an hour. He says that he can install $\frac{1}{2}$ of a fixture in a $\frac{1}{3}$ of an hour. How long will it take him to install all 4 fixtures? Show or explain how you found the answer.

Question 9

For the bathroom drawer and cabinet handles, you have a contractor deal at a local hardware store. The prices of the handles the client chose are in the chart below.

a) Calculate the price per handle for each quantity and enter it in the chart.

Quantity of Handles	Total Price	Price per Handle
1	\$3.25	
5	\$16.26	
10	\$32.00	
15	\$48.00	
20	\$63.00	
25	\$78.75	

- b) Is the price per handle proportional for all of the quantities listed? Explain why or why not.

- c) What is the cost for 40 handles if the cost is proportional to the cost for 15 handles? Show or explain how you found the answer.

Question 10: Kitchen

You purchase the kitchen appliances at Appliance World. The refrigerator is normally \$1399.99. Today only, Appliance World is offering a 20% discount. You then pay a 5% sales tax.

- a) What will you pay for the refrigerator with sales tax? Show or explain how you found the answer.

b) What percentage of the original price did you actually pay?

Question 11

The demand for stainless steel appliances has increased. Appliance World increased the cost for their stainless steel dishwasher by 7.5%. Originally, the dishwasher cost \$475.00.

With 5% sales tax, what will you pay for the dishwasher after the price increase? Show or explain how you found the answer.