Name: _____ Date: Oct 22 Hour: ____Alg 1__

Unit 3a Day 1: Constant Rates of Change

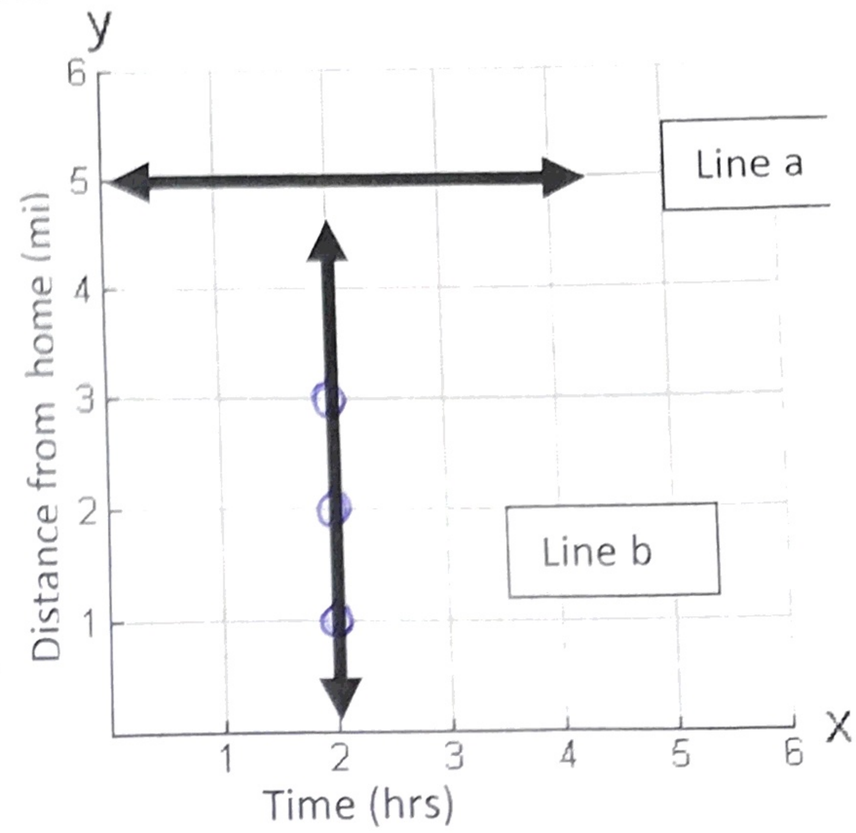
Focus Question: What is a rate of change?

A. The Constant Function

Use the following two graphs

1. Write the equation of each line.

   Line a: y=5 Line b: x=2



2. Line b is NOT a function. In this situation it means a person is 1, and 2, and 3 miles from home at the same time! This speed (rate) is impossible so its rate is ∅ (undefined).

3. Line a IS a function. Write the equation for the function in function notation. f(x)=5

4. To describe the function we would say that as the time increases, the distance from home remains constant. That's why this is called a **constant function**. What exactly is remaining constant?

   ↳ the distance (D.V) position

5. When you look at the equation, give another reason that this would be called a constant function.

   the 5 is a # with no variable / constant

6. At what speed is the person driving in the constant function? Explain.

   0 mph b/c their position is not changing

7. Speed is an example of a rate of change (or rate for short). What other rates can you think of?

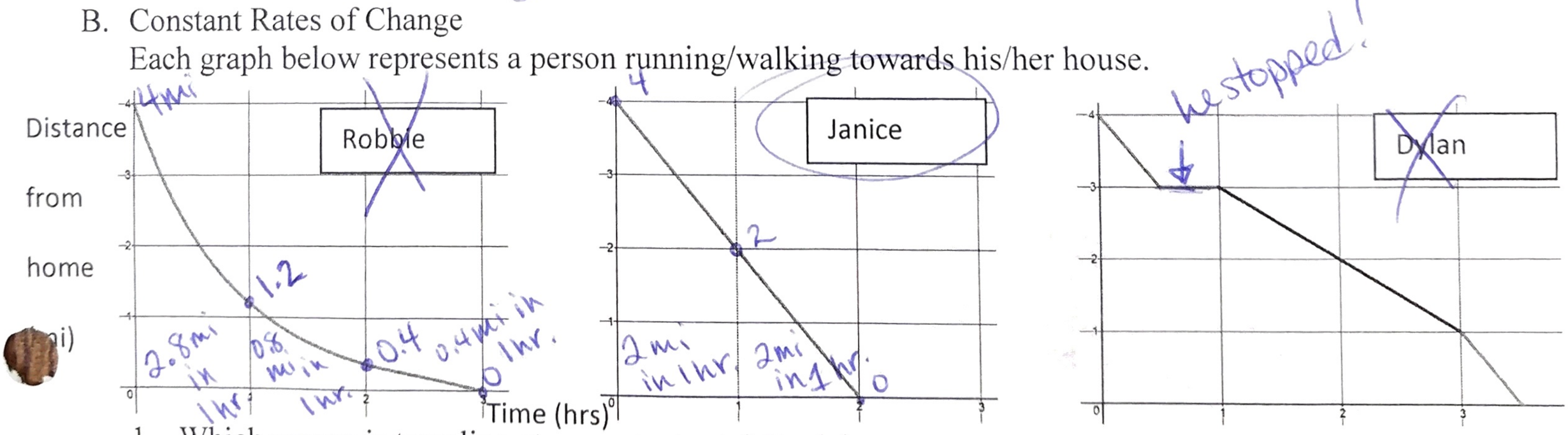
   miles per hour words per minute cost per person
   times per day feet per second family per house

8. What did all of your rates have in common?

   "per" involving 2 variables

B. Constant Rates of Change

Each graph below represents a person running/walking towards his/her house.

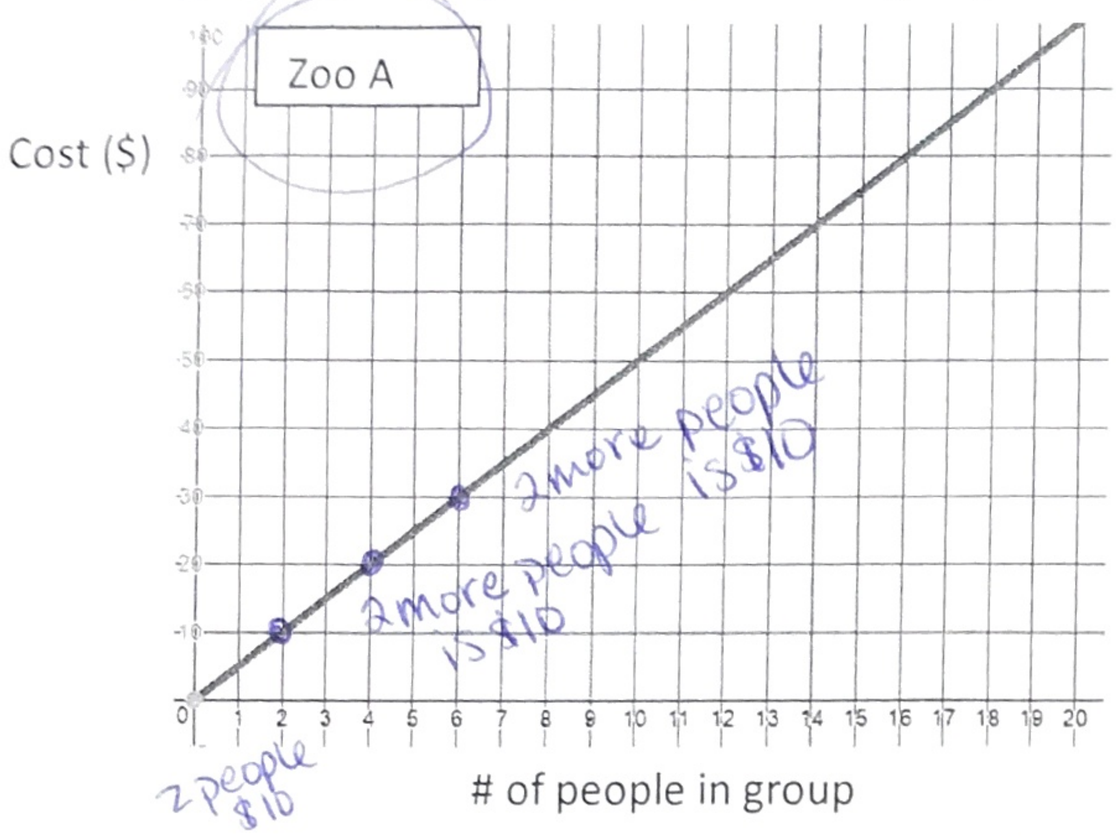


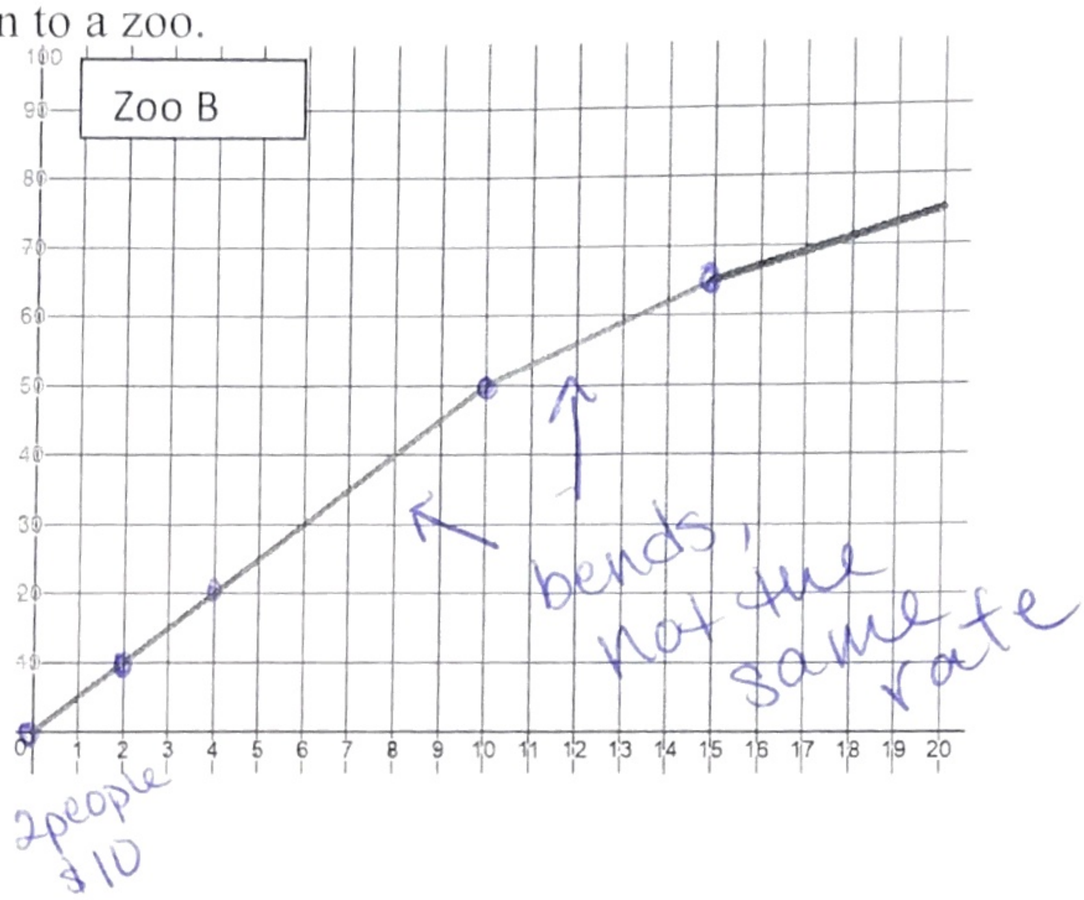
1. Which person is traveling at a constant rate? Explain.

   Janice b/c it was 2mi per hr.

mi / hr.

Each graph below represents the cost of group admission to a zoo.

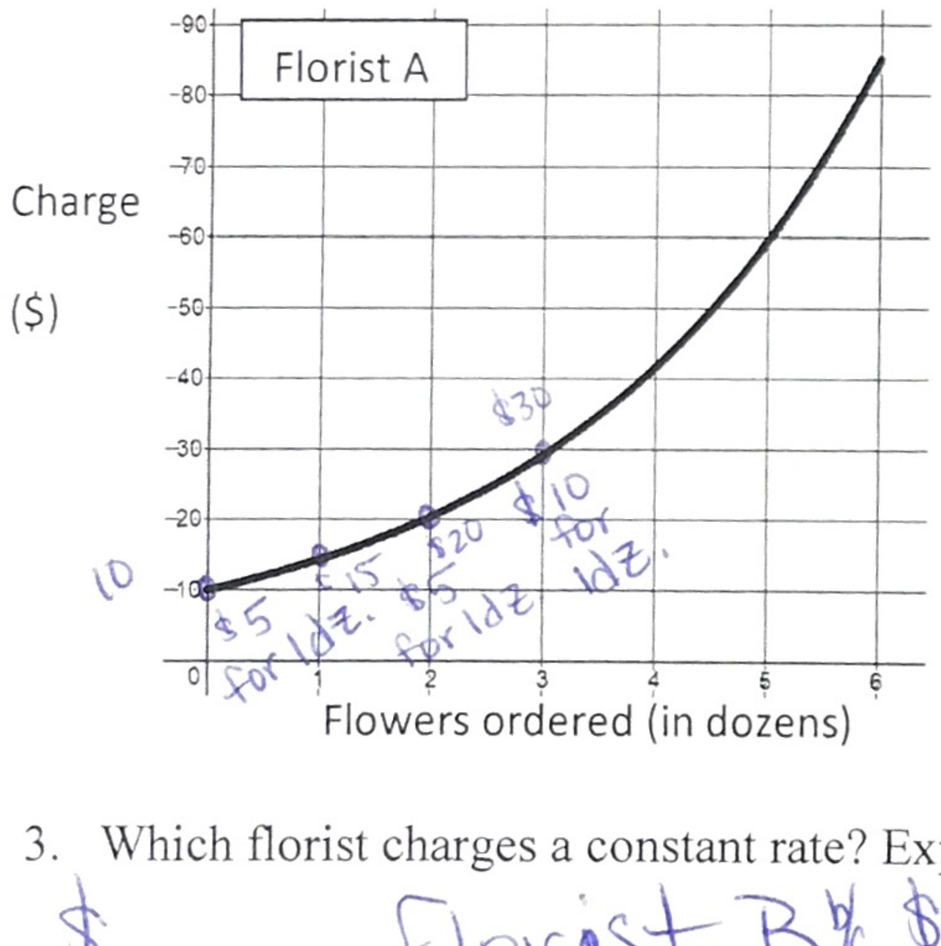


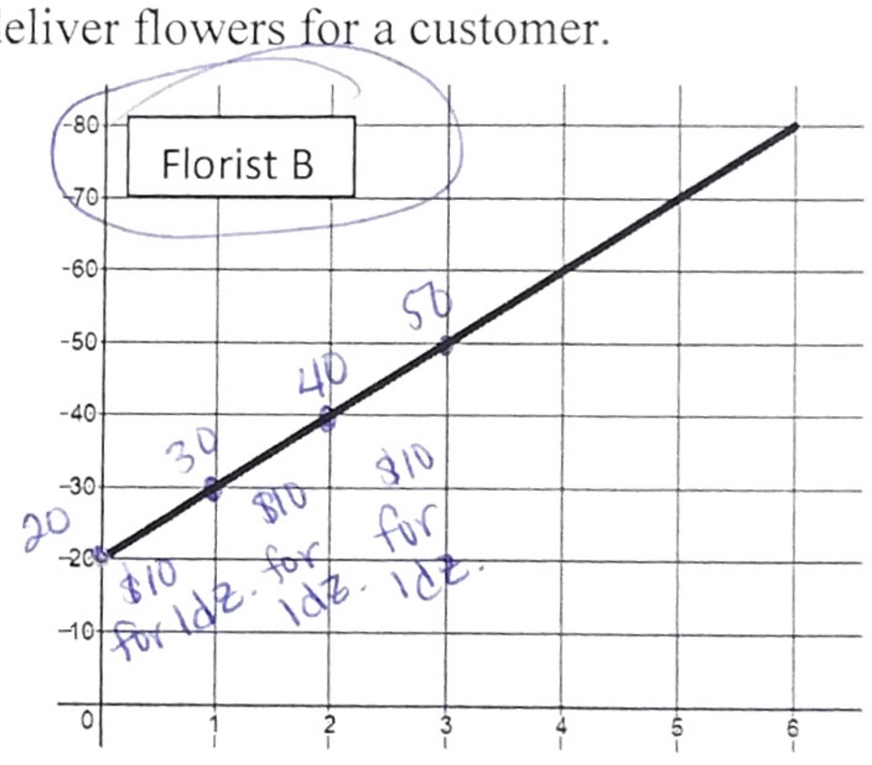


2. Which zoo charges a constant rate? Explain.

$\frac{\text{Cost}}{\text{person}}$ Zoo A b/c its always $10 for 2 people

Each graph below represents a florist charges to purchase and deliver flowers for a customer.





3. Which florist charges a constant rate? Explain.

$\frac{\$}{\text{dozen}}$ Florist B b/c $10 per dozen.

4. What do the graphs you chose for #1 - 3 have in common?

They are linear (perfect correlation)

5. When you look at your explanations, you should have included a rate of change (also called a rate or ratio). Write down your three ratios and then label each part as the independent variable or the dependent variable.

$\frac{\$}{dz}$ D.V. / I.V. $\frac{\text{cost}}{\text{person}}$ D.V. / I.V. $\frac{\text{mi}}{\text{hr.}}$ D.V. / I.V.

6. Using your answer to number #5, when we talk about rate of change in this unit, what rate are we referring to?

The ratio of the D.V. to the I.V.