NAME:
WARM UP

Consider this scenario:

You go to buy apples at the bodega. You buy 5 apples and the cashier tells you it costs $2.50.

A) What is the unit rate for this scenario? **SHOW WORK TO JUSTIFY YOUR ANSWER.**

- This question is asking, "What is the price *per* apple?"

The price *per* apple is _____ which means that is the cost of one apple.

Consider this scenario:

You go to buy oranges at the bodega. You buy 5 oranges and the cashier tells you it costs $3.75.

B) What is the unit rate for this scenario? **SHOW WORK TO JUSTIFY YOUR ANSWER.**

- This question is asking, "What is the price *per* orange?"

The price *per* orange is _____ which means that is the cost of one apple.

C) Make a rule for finding the "unit rate" of a scenario.

Part I Directions:

1: Log into Google Classroom and click on the assignment "PhET Simulation: Unit Rate"

2: Click on the image that says **Shopping (not Shopping Lab)**

3: Play around with the simulation (aka sim) and write down some of your observations

Observations:

- What are different ways the sim shows us rates?
- What information does the double number line give you?
- What are the differences between the apple, carrot, and candy scenes?
  - What other items can you buy in the apple scene?
  - What other items can you buy in the carrot scene?
  - What other items can you buy in the candy scene?
- What does the gray  button do? What does the orange  do?

Part II Directions:

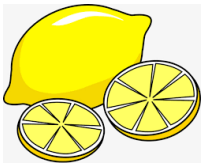
1: In the **Shopping screen,** go to the apple scene and choose Lemons.
2: Drag **1 bag of lemons** on the scale. Then drag the next bag of lemons and the last bag.
3: Observe how the double number line above the scale changes.
4: Then, answer the Questions to the right of the shopping screen.

Do not move on to the questions below UNTIL you get all the questions right in the shopping screen!!!

Part III: Buying Lemons

A) What is the unit rate for this scenario? **SHOW WORK TO JUSTIFY YOUR ANSWER.**

- This question is asking, "What is the price *per* lemon?"



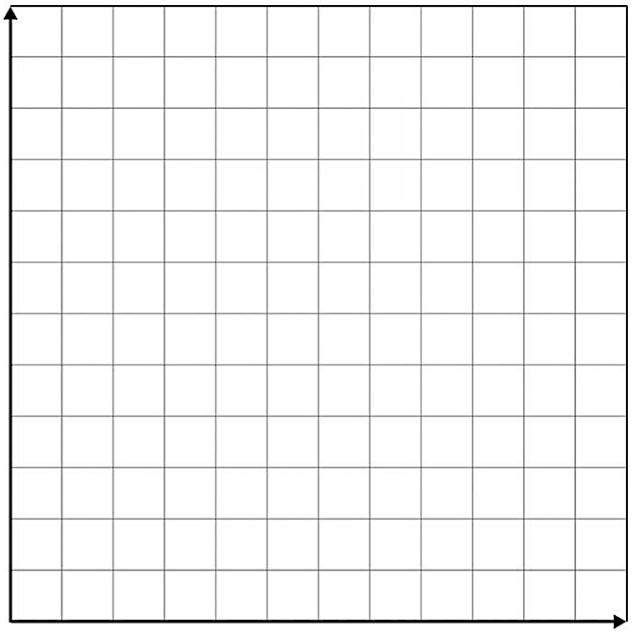
B) Using the information in the scenario and your answer to part A), complete the table below.

Number of Lemons	Total Cost ($)
0	0
1	
2	
3	
4	
5	1.25

C) Make an equation for the table:

Total cost ← **C(x) = _____ x** → Number of lemons
(unit rate)

D) Label the x and y-axis.
Graph the table in part B) on the axes below.



E) Using the equation, table and graph answer the following questions.

i. What is the input in the scenario? _____

ii. What is the output in the scenario?_____

iii. Make a sentence about the slope/unit rate of the table or graph by filling in the blanks below:

the unit rate is the _____ per _____.
Output input

iv. The y-intercept of the scenario is the _____ when the _____ is zero.
Output input

Part III Directions:

1: In the **Shopping screen,** go to the carrot scene and choose tomatoes.
2: Drag **1 bag of tomatoes** on the scale. Then drag the next bag of tomatoes & the last bag.
3: Observe how the double number line above the scale changes.

A) What is the difference when you add the bags of tomatoes compared to when you add the bags of lemons to the scale? Will this affect how you find the unit-rate?

4: Answer the Questions to the right of the shopping screen.

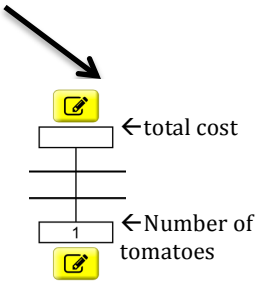
A) Show your work for you found the unit rate for the tomatoes.

B) Ask someone else in your group how they found the unit rate for the tomatoes? Describe how your strategies were similar/different.

5: Using your unit rate in 4A) create a table for the cost per tomato.
*To check that your values are correct, input your values into the **double number line tool**

A) Does the relationship in the table represent a constant rate of change? How do you know?

Number of tomatoes	Total Cost ($)
0	0
1	
2	
3	
4	1.20
5	
6	
7	
8	2.40



B) Make an equation for the table. Check that your equation is correct by comparing the table above to the table in your calculator for that equation.

<u>Part IV Directions:</u> Using what you have learned about unit rate answer the questions below.

1. Six pineapples costs **$6.30** and a bag of **9 kiwis** costs **$6.75.**
Which fruit has a cheaper unit rate? How do you know?

2. Make a table for the cost per fruit for each fruit.

Number of pineapples	Total Cost ($)
0	0
1	
2	
3	
4	
5	
6	6.30
7	
8	
9	
10	

Number of kiwis	Total Cost ($)
0	0
1	
2	
3	
4	
5	
6	
7	
8	
9	6.75
10	

A) Make an equation for each table. Label what each part of your equation represents.

<u>Pineapple equation</u>

$P(x)=$_____ ___

<u>Kiwi Equation</u>

$K(x)=$_____ ___

a) What is the unit rate/slope of the pineapple equation?

b) What is the unit rate/slope of the Kiwi Equation?

c) What is the y-intercept of both equations?

Part V: Interpreting Function Notation

Evaluate your pineapple function and kiwi function.
Then interpret what the notation means in the context of the "shopping" scenario.

1) Evaluate $P(0)$. What does $P(0)$ mean in the context of the pineapple scenario?

2) Evaluate $P(10)$. What does $P(10)$ mean in the context of the pineapple scenario?

3) Evaluate $P(15)$. What does $P(15)$ mean in the context of the pineapple scenario?

4) Evaluate $K(5)$. What does $K(5)$ mean in the context of the kiwi scenario?

5) Evaluate $K(12)$. What does $K(12)$ mean in the context of the kiwi scenario?

6) Evaluate $P(3)–K(3)$. What kind of question could you ask using this evaluation?