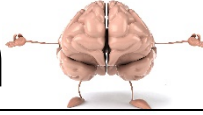


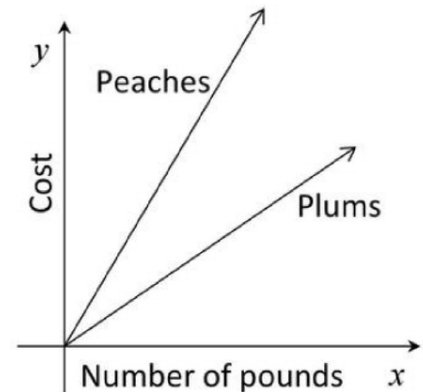
Mind Stretch



By the Pound

1. List at least one fact or idea suggested by this graph.

The graph shows the relative costs of peaches and plums by the number of pounds. For a given number of pounds, peaches cost more than plums, as shown by the steeper slope of the line for peaches. That is the same as saying that the unit cost for peaches is greater than for plums.



2. Complete the following sentences. Be sure to explain your thinking.

a. For \$5, I can buy more pounds of plums.

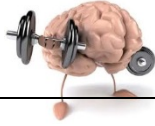
b. I know this because... **Plums cost less than peaches. At \$5, or at any point along the cost axis (the y-axis), the line for plums will extend farther along the x-axis, showing that you will be able to buy more pounds of plums than peaches for that price.**

3. What do you think about the student work your teacher showed you? The line for peaches goes up faster (i.e., has greater slope) than plums. What does that mean?

The line for peaches goes up faster because peaches cost more per pound. Therefore, the slope of the peaches line is greater than the slope of the plums line. You can also see the same thing in the tables of the student work that were shown in the PowerPoint slides.

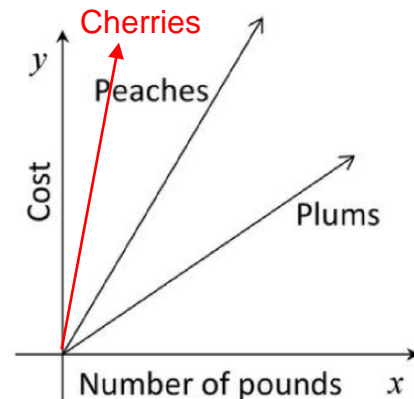
¹**Inspiration for Task:** By the Pound tasks and challenge have been adapted from Illustrative Mathematics materials, particularly [Peaches & Plums](#) and [Coffee by the Pound](#) tasks originally accessed on 5/1/2014, and are licensed by [Illustrative Mathematics](#) under [CC BY-NC-SA 4.0](#).

Workout



Cherries cost more by the pound than peaches or plums.

1. Draw a line on the graph used for peaches and plums to represent the cost of cherries by the pound. Remember, **cherries cost more** by the pound than peaches or plums.



2. Describe in writing what you notice in this graph about the cost of cherries, peaches, and plums.

The graph shows that cherries have a greater cost per pound than peaches or plums. The slope for cherries is steeper because for any number of pounds, the cost for cherries will be greater than for peaches, which in turn have a greater **cost per pound** (i.e. steeper slope) than plums.

3. Create tables and/or equations that you believe represent the same information shown in the graph. (One possible interpretation follows. Note: 1) Zero pounds should cost zero for each fruit; 2) the cost of cherries should rise faster and the coefficient of x for this equation should be larger than the values or coefficients, respectively, of either peaches or plums; 3) the cost of peaches should rise faster

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and the coefficient of x for this equation should be larger than the values or coefficients, respectively, of plums).

Pounds	Cherries	Peaches	Plums
0	0	0	0
1	3	2	1
2	6	4	2
3	9	6	3
4	12	8	4

$$y_{ch} = 3x$$

$$y_{peach} = 2x$$

$$y_{plum} = 1x$$

According to this table (and the equations) peaches cost two times as much as plums, with cherries costing a 50% more than peaches, or three times the cost of plums.

4. After looking at other students' work, explain, in writing, why you think **your** tables and/or equations are accurate. Use evidence from the graph, table, and/or equation(s) to support your answer.




According to this table (and the equations) peaches cost two times more than the plums. The cherries cost more than the peaches and the plums. The equations show this same thing (i.e., the slope of cherries is more than the slope of the peaches which is more than the plums).

Check Your Pulse

Compare your answers with a partner. Discuss where you agree or disagree.

1. In a few words, explain what part(s) were difficult for you?

Circle the thumb that best describes how you are feeling:

	I have lots of questions, I need help.		Almost got it, but need practice.		Got it. I can explain this to a classmate.	
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Final Lift



By the Pound

Sara paid \$4.00 for a 2-pound box of strawberries.
Matt paid \$7.00 for a 5-pound box of mangos.

1. What is the unit rate, or cost per pound for strawberries?

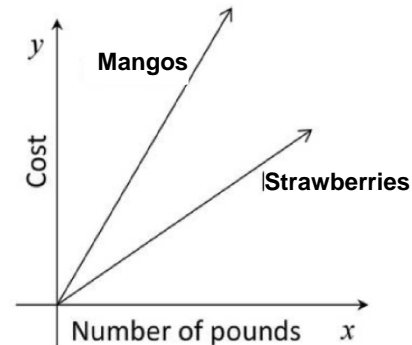
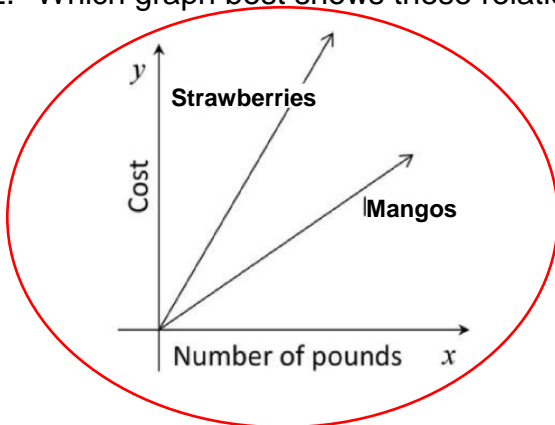
$$\text{Strawberries} = \$4 / 2 \text{ pounds} = \$2 \text{ per pound}$$

For mangos?

$$\text{Mangos} = \$7 / 5 \text{ pounds} = \$1.40 \text{ per pound}$$

[Note: You can encourage students to use a range of strategies or representations to answer this question. Highlighting different approaches may promote a “fruitful” discussion.]

2. Which graph best shows these relationships? (Circle one)



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3. Complete the following sentence. **Be sure to describe the meaning of the lines in the graph in your response.**

I know this is the correct graph because....

Both lines begin at the origin, showing that there is no cost for 0 pounds of either fruit, and that the cost for either fruit rises in proportion to the number of pounds of fruit purchased. The line for strawberries has a steeper slope than the line for mangos, showing that strawberries cost more per pound than mangos.

Last year the cost of oranges rose from \$2 per pound to \$4 per pound and the cost of pineapples rose from \$8 per pound to \$11 per pound.

4. What is the ratio of the **new price** of oranges to the **previous price** of oranges?

The ratio of is 4:2, $\frac{4}{2}$ or $\frac{2}{1}$

5. What is the ratio of the **new price** of pineapples to the **previous price** of pineapples?

The ratio of is 11:8 or $\frac{11}{8}$.

6. Are the ratios **proportional**? If not, which ratio is larger? Explain your thinking.

The ratios are not proportional because $\frac{4}{2} \neq \frac{11}{8}$. The ratio (cost increase) for oranges is larger.

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Challenge

7. What is the **percent increase** in the cost of **oranges**?

The percent increase is $\frac{4-2}{2} = \frac{2}{2} = 100\%$

8. What is the **percent increase** in the cost of **pineapples**?

The percent increase $\frac{11-8}{8} = \frac{3}{8} = .375 = 37.5\%$

9. Do you think either of these two values would be a good measure of inflation overall? Why or why not?

These increases may not represent how much of everything that people buy. Maybe the increase is caused by drought, freezing or the time of the year when oranges don't grow in the area. The two increases are very different so it might be better to include other things people buy.

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