

LESSON

• Coordinate Graphs and Slope

A. Show a projection of the graphs at right.

Notice that each graph relates the number of grams, for some kind of food, and the number of calories they provide.

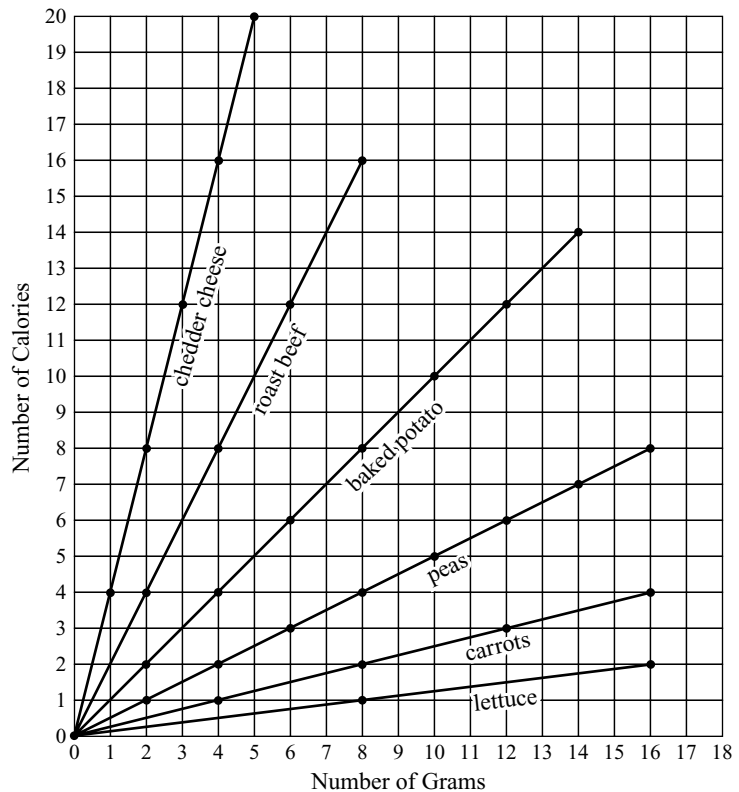
B. Common sense tells us that these relations are continuous and constant.

Explain that they are continuous because every possible amount of a certain food is related to a number of calories. There are no gaps between data points. This is represented visually using solid (not dotted) graphs.

It is also obvious that each relation is a constant rate: The number of calories per ounce is the same for any amount of the food.

Students should automatically associate this kind of rate with graphs which are lines.

C. Now associate the relative steepness for the graphs, with the nutrition values for the foods. We see that foods which have greater numbers of calories per gram, have steeper graphs.



Continued on next page.

D. Next, use information from each graph to express the relation (which is being represented by that graph) as a rate.

Then translate each rate into a unit rate of calories per gram.

Examples:

i. lettuce 8 grams provide 1 calorie

1 calorie per 8 grams

$\frac{1}{8}$ calorie per gram

ii. peas 6 grams provide 3 calories

3 calories per 6 grams

$\frac{1}{2}$ calorie per gram

iii. cheese 2 grams provide 8 calories

8 calories per 2 grams

4 calories per gram

E. Now review the graphic meaning of slope using these unit rates.

Ask: How many units up (number of calories) correspond to each unit forward (grams)?

Food	Unit Rate in Context	Unit Rate Graphically	Slope
lettuce	$\frac{1}{8}$ calorie per gram	$\frac{1}{8}$ unit <u>up</u> per unit <u>forward</u>	$\frac{1}{8}$
peas	$\frac{1}{2}$ calorie per gram	$\frac{1}{2}$ unit <u>up</u> per unit <u>forward</u>	$\frac{1}{2}$
cheese	4 calories per gram	4 units <u>up</u> per unit <u>forward</u>	4

F. a. What is the slope of the graph for carrots?

b. What is the slope of the graph for roast beef?

c. If Harry ate 120 grams of peas, how many calories would he consume?

d. If Harry ate x grams of peas, how many calories would he consume?

e. How many calories are in a 112-gram serving of roast beef?

f. How many calories are in a slice of roast beef which weighs j grams?