

# Lesson 9 Reteach

## Direct Variation

When two variable quantities have a constant ratio, their relationship is called a **direct variation**.  
The constant ratio is called the **constant of proportionality**.

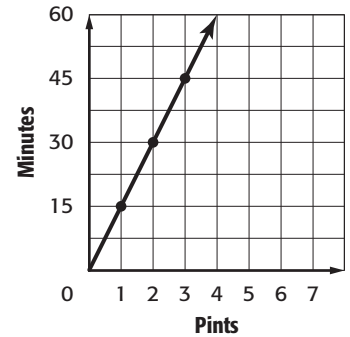
### Example 1

The time it takes Lucia to pick pints of blackberries is shown in the graph. Determine the constant of proportionality.

Since the graph forms a line, the rate of change is constant. Use the graph to find the constant of proportionality.

$$\frac{\text{minutes}}{\text{number of pints}} = \frac{15}{1} \quad \frac{30}{2} \text{ or } \frac{15}{1} \quad \frac{45}{3} \text{ or } \frac{15}{1}$$

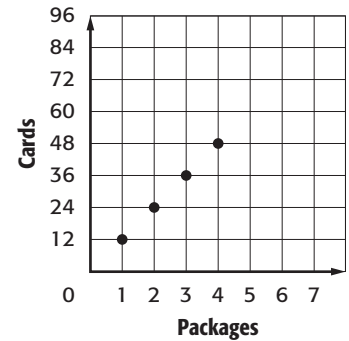
It takes 15 minutes for Lucia to pick 1 pint of blackberries.



### Example 2

There are 12 trading cards in a package. Make a table and graph to show the number of cards in 1, 2, 3, and 4 packages. Is there a constant rate? a direct variation?

<b>Numbers of Packages</b>	1	2	3	4
<b>Number of Cards</b>	12	24	36	48



Because there is a constant increase of 12 cards, there is a constant rate of change. The equation relating the variables is  $y = 12x$ , where  $y$  is the number of cards and  $x$  is the number of packages. This is a direct variation. The constant of proportionality is 12.

### Exercises

- SOAP** Wilhema bought 6 bars of soap for \$12. The next day, Sophia bought 10 bars of the same kind of soap for \$20. What is the cost of 1 bar of soap?
- COOKING** Franklin is cooking a 3-pound turkey breast for 6 people. If the number of pounds of turkey varies directly with the number of people, make a table to show the number of pounds of turkey for 2, 4, and 8 people.