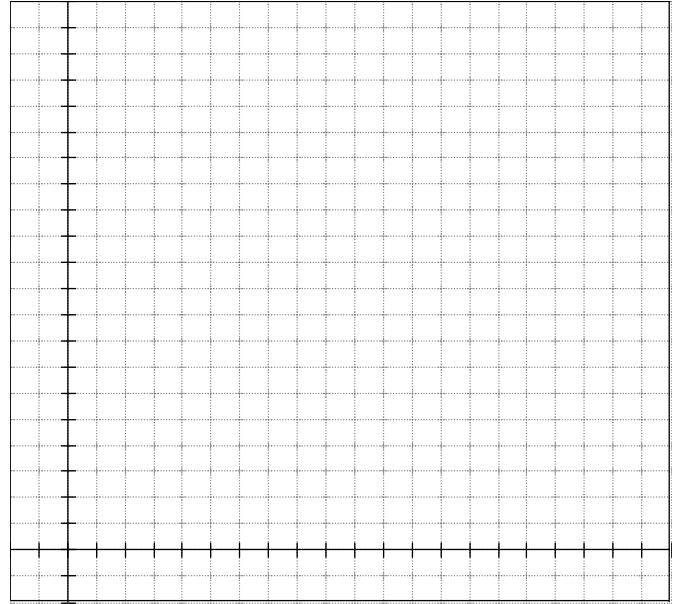


Real Life Situations and Restrictions

Example 1:

You decide to get a part-time job working at Vincenzo’s in Waterloo. The store pays \$10 per hour as a starting wage.

- a) What are some realistic values for the number of hours worked? for the amount earned?
- b) Create a table of values (with at least 3 x-values) for the **amount earned (y)** and **number of hours worked (x)**. Then graph the relationship.



- c) Write an equation to represent the relationship between **amount earned (y)** and **number of hours worked (x)**.
- d) What do the slope and y-intercept represent?

- e) How would the graph change if you had to pay \$40 for a uniform before starting the job and made \$15 per hour. Graph the new line.
- f) What does the point of intersection mean? Which job option would you take and why?
- g) What are some “restrictions” (limits) for this situation?

Example 2: Textbook p.128 #11

Mohammed makes bicycle tires and is paid according to $y = 1.25x$, where y is his earnings and x is the number of tires he makes.

- a) Find the slope of the line and interpret its meaning.
- b) Find the y-intercept of the line and interpret its meaning.
- c) What restrictions (limits) can you put on x and y for this situation?

Example 3: Textbook p.320 #7a

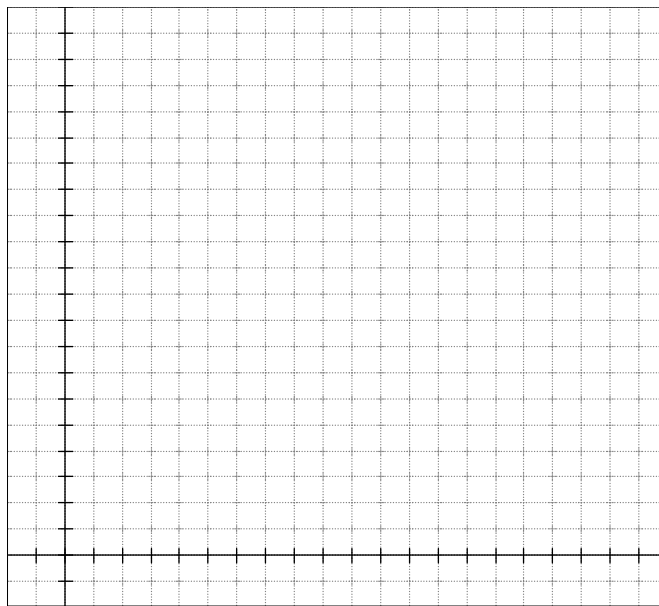
Determine the equation of the linear relation being described. Graph each equation and explain the significance of the slope and the intercepts (x and y) in each case:

- a) Tiffany lends Rob \$50, and Rob pays her back by giving her \$5 every day until the debt is repaid.

Write an equation for the situation and graph it.

Explain the significance of slope and the intercepts.

Identify any restrictions on y or x.

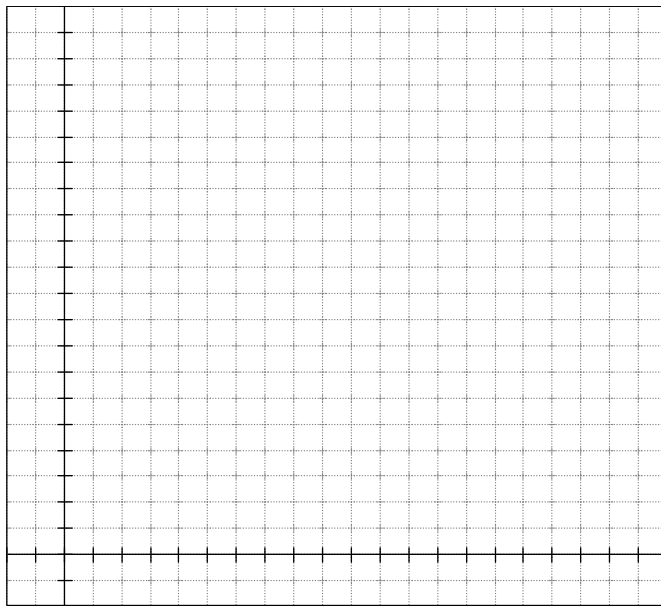


Example 4:

A group has budgeted \$5000 for a party. Which hotel offers the better deal, and under what conditions?

- Waverly Inn: \$200 plus \$40 per guest
- Hotel Niagara: \$10000 plus \$30 per guest

For a full solution, write the equations for each scenario and create a graph of both lines.



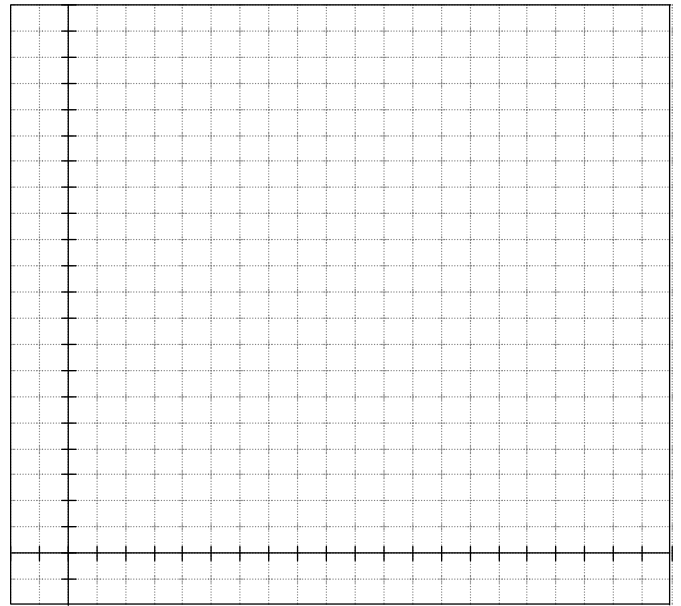
Example 5: Textbook p.320 #9

Aline has written a multiple choice test. She receives one point for each correct answer, but loses $\frac{1}{4}$ point for each incorrect answer. No marks are deducted for a question not answered. She answered 41 questions and received a score of 34.75.

a) Write an equation that expresses her score in terms of **correct** and **incorrect** answers

b) Graph this equation.

c) Write an equation that represents her **total questions answered**.



d) Graph this equation on the same grid as the graph in (b).

e) Locate the point of intersection and record its coordinates.

f) Describe the meaning of these coordinates in this situation.

g) Express both equations in standard form AND slope, y-intercept form.

STANDARD FORM:

SLOPE/Y-INTERCEPT FORM:

Direct and Partial Variation**DIRECT VARIATION:**

This happens when a straight line has a y-intercept of 0 (the line goes through the origin).

PARTIAL VARIATION:

This happens when a straight line has a y-intercept that is **not** 0 (the line does not go through the origin).

Example 1:

Look at Example 1 on page 1. Label each situation below as direct variation or partial variation.

You get a job at Vincenzo's but pay \$40 for a uniform before starting the job and make \$12 per hour. y-intercept: _____
Variation: _____

You decide to get a part-time job working at Vincenzo's in Waterloo. The store pays \$10 per hour as a starting wage. y-intercept: _____
Variation: _____

You get a job at Vincenzo's and are given a \$20 bonus for getting the job and make \$10 per hour. y-intercept: _____
Variation: _____

Example 2:

Nick has \$900 in his bank account. He takes \$100 out of his account every week.

- Write an equation to represent this situation.
- Is this an example of direct or partial variation? Explain how you know.
- How much is left in Nick's account after 6 weeks?

Example 3:

An author earns a royalty of \$0.50 for each book sold.

- Write an equation to represent this situation.
- Is this an example of direct or partial variation? Explain how you know.
- How many books need to be sold for the author to earn \$200,000?