Instructional Design Project

Linear Relationships



Designed by Erica Laughlin

Rationale

 When students learn mathematics, they should be offered a variety of ways to learn the concepts. Students should not have to ask the million dollar question, “Why do we have to learn this”. If students are exposed to practice problems and real life situations, then students should be able to see the connection and the reason why they are learning the material. Throughout this unit, students will encounter activities based on real life situations to help show relevance to the material they are learning.

 Throughout the unit, I will be following the basic lesson plan model and a blended method (behaviorist and constructivist) of theories of teaching and learning (Chiarelott, 2006). I will have ongoing assessments to measure if students are adequately learning through activities and the teaching models are increasing student achievement. During the unit, I will continually reflect upon student learning. Students will be assessed through a variety of methods that allow me to measure their performance.

 This unit reviews students’ previous knowledge about how to use tables and graphs but also introduces the students on how to use these tools to determine linear relationships. This unit exposes students to tables, graphs and equations to show them how linear relationships are expressed in different ways. Students seem to understand how to use a tool better when real life data is used. During this unit students will be asked to use different data they collect to determine whether a linear relationship exists or not, using a variety of tools.

 This unit asks students’ to showcase their ability to think critically and problem solve by looking at different situations such as, two students walking rates, finding when two companies charge the same amount, balancing two equations and interpreting different starting points (y-intercepts) and rates of change (slope). This unit also uses authentic assessments, problem-based methods, self-directed and cooperative learning that align with contextualized teaching and learning practices which can be linked to John Dewey and Elliot Aronson (Chiarelott, 2006). This unit is aligned with the Mathematics Ohio Academic Content Standards.

 Students will learn concepts, skills and strategies that will enhance the students understanding of linear relationships and their applicability to the real life situations. I strongly believe that students need to be provided with tools for them to be continuous learners.

Unit Intended Learning Outcomes

*Subunit Topic: How to determine if linear relationship exists*

* Students will be able to calculate their walking rates and describe the pattern of change occurring (knowledge)
* Students will be able to identify the information the variables and numbers represent to determine a linear relationship (knowledge, application)
* Given an equation, table or graph, students will be able to explain if the relationship is linear and why (evaluation)

*Subunit Topic: Tools to show linear relationships*

* Students will be able to construct tables, graphs and equations to represent patterns of change (application)
* Students will be able to develop an equation to represent a linear relationship (application)
* Students will be able to compare the solutions to an equation by using a table and/or graph (evaluation)

*Subunit Topic: Connections*

* Students will be able to identify the y-intercept on a table, graph and equation (knowledge)
* Students will be able to determine the connection between a table and graph to identify the rate of change and y-intercept (knowledge)
* Students will be able to use the graph, tables or equations to solve real life problems (application)
* Students will be able to show the connection of why the starting point is the same as the y-intercept and rate of change as the slope (analysis)

*Subunit Topic: Solving*

* Students will be able to identify the point of intersection (knowledge)
* Students will be able to determine solutions to a problem using a table, graph and equation (application)
* Students will be able to develop strategies to solve linear equations (application)
* Students will be able to demonstrate properties of equalities to solve equations (application)
* Students will be able to explain what information the point of intersection tells about the linear relationship (analysis)

Pre-Assessment of Linear Relationships

Directions: Check the box (es) that shows your understanding of the vocabulary words.

 I can define it I can give examples I have no idea

Constant Rate

Independent Variable

Dependent Variable

Table

Graph

Equation

Point of Intersection

y-intercept

Slope

**Directions:** Answer each question to the best of your ability. Be sure to show your work to support your answers.

1) To encourage new customers, a new movie theater is offering memberships. The membership costs $75 a year plus $2 per movie. For non-members, the cost of a movie is $5.75.

a) Make a table that shows the number of movies, *r* and the cost members, *m* and non-members, *n*. Use 0, 1, 2, 3, 4, and 5 for number of movies.

b) On ONE graph, graph the points from the table in part a. See attached paper.

c) Write an equation to show the cost, for members of the movie theater and non-members of the movie theater.

Cost for members:

Cost for non-members:

d) What is the slope of **EACH** equation in part c?

e) What information does the slope of each line represent in this story problem?

f) What information does the y-intercept of each line represent in this story problem?



This page was taken from the teachers’ resources book in the Moving Straight Ahead from the Connected Mathematics Series 2.

Describe how to find slope:

3) Using a graph \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) Using a table \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) Using an equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using the graph below,

6) Find the horizontal distance and the vertical distance between the two points.

7) What is the slope of the line?

Solve for x in each equation.

8) 12 – 5x = 7x 9) 2x – 3 = 5x + 12

x = \_\_\_\_\_\_\_\_\_\_\_\_ x = \_\_\_\_\_\_\_\_\_\_\_\_

10) 2x + 25 = 7x 11) 3(x + 1) = 12

x = \_\_\_\_\_\_\_\_\_\_\_\_ x = \_\_\_\_\_\_\_\_\_\_\_\_

Using the points (0, -5) and (-2, -3),

12) Plot the points on a graph and connect them (carefully)

13) Find the slope of the line \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14) Find the y-intercept. Explain how you found the y-intercept

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15) Write an equation to represent your line \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16) List another point that would be found on this line \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lesson Plan~ Determining Linear Relationships

* Lesson intended for 8th grade math students (60 minutes)

Objectives:

* Students will be able to calculate their walking rates and describe the pattern of change occurring (knowledge)
* Students will be able to identify the information the variables and numbers represent to determine a linear relationship (knowledge, application)
* Given an equation, table or graph, students will be able to explain if the relationship is linear and why (evaluation)

Concepts/Skills:

* Exploring linear relationships
* Decide how to determine a linear relationship

Materials:

* Math Binders
* SMARTboard lesson
* Worksheet A
* Practice problems in sleeves
* Dry erase markers/socks for erasers
* Additional Practice Worksheet

Procedures:

 Introduction Activity: (10 minutes)

* Discuss with students what they already know about the word linear.
* Talk with students about what rates are and how to write them.

 Developmental Activity: (40 minutes)

* **Activity**: Have students pair up with a partner. “You and your partner will be going outside to measure your walking rates. Using the pre-marked 10 meters, record both your walking rates in meters per second.”
* When we return from outside, use your rates to answer the following questions
	+ What is your walking rate (be sure to use labels)?
	+ How long would it take to walk 500 meters?
	+ Describe in words the distance (in meters) you could walk in any number of seconds.
* Using the SMARTboard, have students show their work for question 2. Discuss how to answer the questions.
* Answer the worksheet with a partner. (see worksheet A)

 Conclusion Activity: (5 minutes)

* Given a table or graph determine whether a relationship is linear. These problems will be in plastic sleeves that students can answer with dry erase markers.

Evaluation:

* Exit Slip (10 minutes): Describe to your neighbor how to tell if a relationship is linear using a graph? Table?
* Homework: Complete additional practice worksheet

Linear Relationships (Worksheet A)

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_

Directions: Answer each question using the table.

|  |  |
| --- | --- |
| **Name** | **Walking Rate** |
| Alana | 1 meter per second |
| Gilberto | 2 meters per second |
| Leanne | 2.5 meters per second |

1) Complete the tables below.

Alana Gilberto Leanne

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Time (seconds) | Distance (meters) | Time (seconds) | Distance (meters) | Time (seconds) | Distance (meters) |
| 0 |  | 0 |  | 0 |  |
| 1 |  | 1 |  | 1 |  |
| 2 |  | 2 |  | 2 |  |
| 3 |  | 3 |  | 3 |  |
| 4 |  | 4 |  | 4 |  |

2) Using a piece of graph paper, graph EACH person’s data (use a different colored pencil for each person)

3) How can you determine if these relationships are linear or not?



This page was taken from the teachers’ resources book in the Moving Straight Ahead from the Connected Mathematics Series 2.

Lesson Plan~ Tools to show Linear Relationships

* Lesson intended for 8th grade math students (60 minutes)

Objectives:

* Students will be able to construct tables, graphs and equations to represent patterns of change (application)
* Students will be able to develop an equation to represent a linear relationship (application)
* Students will be able to compare the solutions to an equation by using a table and/or graph (evaluation)

Concepts/Skills:

* Develop equations from tables or graphs
* Explain advantages and disadvantages of using a table, graph or equation to represent linear relationships

Materials:

* Math Binders
* SMARTboard lesson
* Graph paper
* Colored pencils
* T-Shirt Shop (Worksheet B)
* Skills Practice Worksheet

Procedures:

 Introduction Activity: (10 minutes)

* Ask the students to identify the walking rates in the following problem:

“In Ms. Chang’s class, Emile found out that his walking rate is 2.5 meters per second. When he gets home from school, he times his little brother Henri as Henri walks 100 meters. He figured out that Henri’s walking rate is 1 meter per second.”

* Answer the question: “After 20 seconds, which brother is ahead?”
* Discuss how to answer the question by showing work.

 Developmental Activity: (30 minutes)

* (15 minutes) Using the information from the introduction problem, create a table to show the time and distance for EACH brother. Then create a graph with the same data from the table. Use the table or graph to answer the following questions. When finished show me the completed work, then pair up with someone else who is finished and compare answers. If different answers, explain how you got your answers and try to come to an agreement.
	+ Question 1: When does each brother’s graph cross the y-axis?
	+ Question 2: What information do these points tell you?
	+ Question 3: What does it mean when the two lines cross (meet) each other?
* (15 minutes) Using the SMARTboard, have students show their work for each question. Discuss how to answer the questions.

 Conclusion Activity: (20 minutes)

* Answer the worksheet with a small group. (see worksheet B) Have the groups put their answers on poster paper. Then each group must “present” their answers.

Evaluation:

Homework: Complete skills practice worksheet

T-Shirt Shop

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section \_\_\_\_\_\_\_ Date \_\_\_\_\_\_



Directions: Use the story problem above to answer the questions.

1) For each equation, explain what information the y-intercept represents.

 Mighty Tee:

 No-Shrink Tee:

2) For each company, what is the cost of 20 t-shirts?

Mighty Tee:

 No-Shrink Tee:

3) Bryan has $120 to spend on t-shirts. From which company will $120 buy the most t-shirts? Be sure to show your work.

4) a) For what *number of t-shirts* will the cost of the two companies be the same? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 What is the cost of the t-shirt? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Be sure to show/explain your work!***

Skills Practice

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section \_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_

1) A cab ride costs $0.40 plus $0.15 per mile.

a) Construct a **table** that shows the cost for 0-5 miles.

b) Use your table to **graph** the points.

c) If the cab charges $0.70 for a ride, how many miles did they travel? Be sure to show/explain your work.

d) How much will the cab charge if they travel 8 miles? Be sure to show/explain your work.

2) A school committee is assigned the task of selecting a DJ for the end of the year party. Ashley obtains three quotes for DJ’s.

T-Tunes charges $60 per hour

S-Sounds charges $100 plus $40 per hour

L-Plastic charges $175 plus $30 per hour

a) What information does the y-intercept represent?

b) Suppose the DJ will need to work eight and half hours. What is cost of each DJ? Be sure to show/explain your work.

c) If the committee has only $450 to spend on a DJ. For how many hours could each DJ play?

Lesson Plan~ Connections

* Lesson intended for 8th grade math students (60 minutes)

Objectives:

* Students will be able to identify the y-intercept on a table, graph and equation (knowledge)
* Students will be able to determine the connection between a table and graph to identify the rate of change and y-intercept (knowledge)
* Students will be able to use the graph, tables or equations to solve real life problems (application)
* Students will be able to show the connection of why the starting point is the same as the y-intercept and rate of change as the slope (analysis)

Concepts/Skills:

* Identify y-intercept as the starting point
* Identity rate of change as the slope
* Solve real life problems using any “tool” they choose

Materials:

* Math Binders
* SMARTboard lesson
* Finding Slope Worksheet
* Skills: Finding Slope Worksheet

Procedures:

 Introduction Activity: (5 minutes)

* Ask the students that when climbing stairs do you go up then over or over than up? Refer to this as a way to think of slope. Also known as rise over run.
* So far we have called the co-efficient the rate of change, from this point on we will call this number **slope**.
* Give and show examples to have students put in the vocabulary section of their binder.
	+ Slope: $\frac{vertical change}{horizontal change}$ = $\frac{rise}{run}$

 Developmental Activity: (45 minutes)

* (15 minutes) Show a picture (graph) of positive slope. Using the graph ask the students to identify the two points and write these as a table. Use the formula to find the slope using the graph and table. Show a picture (graph) of negative slope. Using the graph ask the students to identify the two points and write these as a table. Use the formula to find the slope using the graph and table.
* (30 minutes) Have students break into pairs. In groups, have students answer Finding Slope worksheet. Using the SMARTboard, have students show their work for each question. Discuss how to answer the questions.

 Conclusion Activity: (5 minutes)

* (5 minutes) Clarify that we will use y-intercept in place of starting point. Talk about and give examples of how to identify the y-intercept in a table, graph and equation. Put these examples in vocabulary section of binder.
	+ Table: the y-value when x = 0
	+ Graph: the point on the line that crosses (touches) the y-axis
	+ Equation: the value being added/subtracted (not attached to the variable)

Evaluation:

Homework: Complete skills practice worksheet

Finding Slope

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section \_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_

Directions: Find the slope and y-intercept for each problems. Use this information to write an equation.



This page was taken from the teachers’ resources book in the Moving Straight Ahead from the Connected Mathematics Series 2.





This page was taken from the teachers’ resources book in the Moving Straight Ahead from the Connected Mathematics Series 2.

Lesson Plan~ Solving, pt. 1

* Lesson intended for 8th grade math students (60 minutes)

Objectives:

* Students will be able to determine solutions to a problem using a table, graph and equation (application)
* Students will be able to develop strategies to solve linear equations (application)
* Students will be able to demonstrate properties of equalities to solve equations (application)

Concepts/Skills:

* Develop method to solve equations
* Solve equations with variables on both sides of equal sign

Materials:

* Math Binders
* SMARTboard lesson
* Coin and Bags Worksheet
* Skills: Solving Linear Equations

Procedures:

 Introduction Activity: (5 minutes)

* “How can we write 85 in terms of an addition problem?”
	+ 85 = 70 + 15
* “if I want to maintain equality on both sides of equal sign, what do I need to do?”
	+ Whatever you do to one side you must do the same on the other, for example, if you subtract 15 on right side, you must subtract 15 on left side.

 Developmental Activity: (45 minutes)

* (20 minutes) Give the students the coins and bags worksheet. Allow them to solve each problem. Have students put the answers on the SMARTboard and explain their methods.
* (5 minutes) Have students practice solving equations on their own.
	+ 5x + 10 = 20
	+ 10 – 5x = -20
	+ 9x + 10 = 19
* (20 minutes) “What if we have variables on both sides of the equal sign?”
	+ Combine all variables on one side and constants on the other side
* Practice the following problems as a class, remember to maintain equality
	+ 4x + 9 = 7x
	+ 4x – 9 = 7x + 13
	+ 5x – 10 = -7x + 1
* Review distributive property, aka “sharing property”. The number on the outside of parenthesis must be multiplied by each “part” on the inside. Practice the following as a class
	+ 3(x+2) = 21
	+ -3(x - 5) = 2x
	+ 5(x+2) = 6x + 3

 Conclusion Activity: (5 minutes)

Exit Slip:

* Does it matter what letter we use to represent the unknown value?
* Solve the following problems and explain/show your steps
	+ 3x = 12
	+ 2x + 5 = 19
	+ 4x + 5 = 2x + 19

Evaluation:

Homework: Complete skills practice worksheet

Coins and Bags

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section \_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_

**Directions:** Figure out how many coins are in ONE bag. You may use any method as long as you maintain equality.

1) one bag has \_\_\_\_\_ coin(s)



2) one bag has \_\_\_\_\_ coin(s)



3) one bag has \_\_\_\_\_ coin(s)



4) one bag has \_\_\_\_\_ coin(s)



Explain what you did to find the number of coins in EACH bag.



This page was taken from the teachers’ resources book in the Moving Straight Ahead from the Connected Mathematics Series 2.



This page was taken from the teachers’ resources book in the Moving Straight Ahead from the Connected Mathematics Series 2.

Lesson Plan~ Solving, pt. 2

* Lesson intended for 8th grade math students (60 minutes)

Objectives:

* Students will be able to identify the point of intersection (knowledge)
* Students will be able to determine solutions to a problem using a table, graph and equation (application)
* Students will be able to explain what information the point of intersection tells about the linear relationship (analysis)

Concepts/Skills:

* Explain point of intersection meaning in relationship to problems
* Refer points of intersection and breaking even points as the same thing

Materials:

* Math Binders
* SMARTboard lesson
* Graph paper
* Breaking Even Point Worksheet

Procedures:

 Introduction Activity: (5 minutes)

* “What does it mean when two lines cross on a graph?”
	+ This point of intersection tells us that the two equations are equal to each other
* “When would this piece of information be important for us to know?”

 Developmental Activity: (50 minutes)

* (20 minutes) Give the following problem (work on as a class):
	+ “At a local bakery, the expenses to make x cupcakes per month is calculated by e = 825 + 3.25x. The income to sell x cupcakes per month is i = 8.20x.”
	+ 1) What do the y-intercept and slope represent?
		- **y-intercept**: Expenses: 825 is the additional cost to make the cupcakes, Income: there is no y-intercept
		- **slope**: Expenses: 3.25 is the amount it cost to make each cupcake, Income: 8.20 is amount the bakery sells each cupcake for
	+ 2) If the breaking even point is when the expenses equal the income, how can we determine the breaking even point using graphs, tables and equations? (demonstrate each of these for students to put in their math binders)
		- **Using a graph**: graph each equation and find where the two lines cross. At the point that they meet is how many cupcakes it takes to break even
		- **Using a table**: set up two tables (one for expenses, one for income) Find when the tables have the same cost and the number of cupcakes is the breaking even point
		- **Using equations**: set the expenses equal to income (825+3.25x = 8.20x) then solve for x. This is the number of cupcakes it takes to break even.
	+ 3) If Stella sells 100 cupcakes, what are her expenses and income?
		- **Expenses**: e = 825 + 3.25(100), e = $1150
		- **Income**: i = 8.20(100), i = $820
	+ 4) Does Stella make a profit or does she have a loss?
		- Since her expenses are more than her income, she has a loss
	+ Ask students if they have any questions. They will use our class example to answer another problem with a partner.
* (20 minutes) Give the following problem (work on with a partner):
	+ “A school is selling t-shirts with their logo on them. The cost to make the t-shirts is c = 535 + 4.50x. The school will sell the t-shirts for 12 a piece (i = 12x), x is the number of t-shirts.” Answer the following questions.
	+ 1) What do the y-intercept and slope represent?
	+ 2) How many t-shirts must be sold for the school to break even? *Hint: use any of the methods from our class example, question 2.*
	+ 3) If 50 shirts are sold, does the school make a profit or a loss? Show your work
* (10 minutes) Discuss the answers to the problem the students worked on with a partner. Answer any questions the students had while answering the problem.

 Conclusion Activity: (5 minutes)

* Using the information from the t-shirt problem, determine the breaking even point using a different method than you used with your partner.

Evaluation:

Homework: Finding Breaking Even points Worksheet

Determine Breaking Even Points

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section \_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_

Directions: Using the example from class and the one you worked on with a partner, answer the following problems.

1) The International long-distance company charges no monthly fee but 18 cents per minute for long-distance calls. The World long distance company charges $50 per month plus 10 cents per minute for long-distance calls. You must show all your work!

 a) Write an equation for the International long-distance company and for the World long-distance company to show the cost for any number of minutes

b) What do the y-intercept and slope for EACH equation represent?

c) How many minutes must the phone call last for the two companies cost to be the same? *Hint: use the class and partner examples for help.*

2) Students at Port Clinton Middle school are raising money for the school fundraiser. They are selling “warm fuzzies”. The students can buy the “warm fuzzies” for 50 cents. They also need $60 for fuzzy stickers to decorate the notes. The students sell the “warm fuzzies” for $1.30. *Hint: expenses = 60 + .50x and income = 1.30x*

 a) What do the y-intercept and slope represent?

 b) How many “warm fuzzies” must the students sell to break even?

 c) If the students sell 200 “warm fuzzies” will they have money to give to the fundraiser?

Post-Assessment of Linear Relationships

Directions: Check the box (es) that shows your understanding of the vocabulary words.

 I can define it I can give examples I have no idea

Constant Rate

Independent Variable

Dependent Variable

Table

Graph

Equation

Point of Intersection

y-intercept

Slope

**Directions:** Answer each question to the best of your ability. Be sure to show your work to support your answers.

1) To encourage new customers, a new movie theater is offering memberships. The membership costs $75 a year plus $2 per movie. For non-members, the cost of a movie is $5.75.

a) Make a table that shows the number of movies, *r* and the cost members, *m* and non-members, *n*. Use 0, 1, 2, 3, 4, and 5 for number of movies.

b) On ONE graph, graph the points from the table in part a. See attached paper.

c) Write an equation to show the cost, for members of the movie theater and non-members of the movie theater.

Cost for members:

Cost for non-members:

d) What is the slope of **EACH** equation in part c?

e) What information does the slope of each line represent in this story problem?

f) What information does the y-intercept of each line represent in this story problem?



This page was taken from the teachers’ resources book in the Moving Straight Ahead from the Connected Mathematics Series 2.

Describe how to find slope:

3) Using a graph \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) Using a table \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) Using an equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using the graph below,

6) Find the horizontal distance and the vertical distance between the two points.

7) What is the slope of the line?

Solve for x in each equation.

8) 12 – 5x = 7x 9) 2x – 3 = 5x + 12

x = \_\_\_\_\_\_\_\_\_\_\_\_ x = \_\_\_\_\_\_\_\_\_\_\_\_

10) 2x + 25 = 7x 11) 3(x + 1) = 12

x = \_\_\_\_\_\_\_\_\_\_\_\_ x = \_\_\_\_\_\_\_\_\_\_\_\_

Using the points (0, -5) and (-2, -3),

12) Plot the points on a graph and connect them (carefully)

13) Find the slope of the line \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14) Find the y-intercept. Explain how you found the y-intercept

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15) Write an equation to represent your line \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16) List another point that would be found on this line \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_