



SMALL GROUP COLLABORATION (SGC)

INDEPENDENTLY, READ THIS PAGE WHILE YOU'RE WAITING FOR YOUR GROUP.

INTRODUCTION

SKILL 228

SKILL OVERVIEW

This skill is about representing linear relationships in tables, equations, and graphs in the first quadrant of the coordinate plane.

LEARNING GOAL

Your goal is to create a new cell phone texting plan and represent the relationship between cost and number of texts in a table, equation, and graph.

WHY IS THIS LEARNING GOAL IMPORTANT?

This learning goal is important because many relationships between cost and services or products are linear and representing those relationships in multiple ways helps you better understand them.



MATERIALS: PEN/PENCIL ONLY

DO NOW: PRACTICE QUESTION

Complete the table:

$$y = 2x - 5$$

x	y
0	
1	
2	
3	
4	

VOCAB

What mathematical vocabulary is important for this activity?

Linear Equation

An equation with two variables (x and y) that takes on the general form $y = mx + b$, where m is the slope of the line and b is the y-intercept

Quadrant

On a coordinate graph, one of the four regions created by the intersection of the x-axis and the y-axis

Table

A collection of data arranged so that the information can be easily seen



Too Many Texts

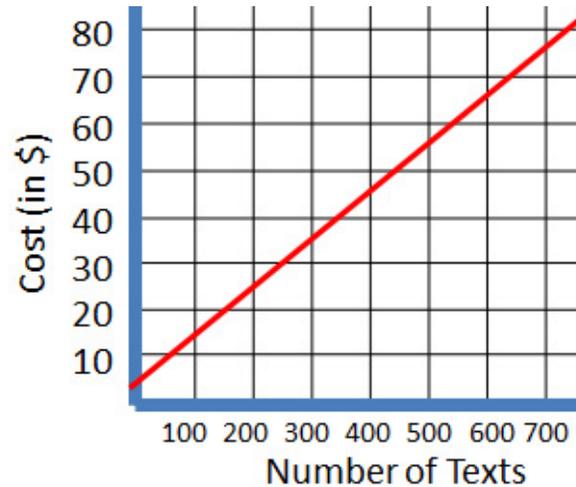
INDEPENDENTLY, READ THE INFORMATION BELOW OR ONE PERSON CAN READ ALOUD.

INFORMATION

Fantastic Phone company is offering a new text messaging plan to its customers. Each month, customers pay a \$5 fee to have their cell phones enabled for texting. Then, customers are charged \$10 for every 100 text messages sent. The table, equation, and graph below show the relationship between the number of texts a customer sends and how much money that customer pays each month.

Number of texts (x)	0	100	200	300	400	500	600	700
Amount of money (y)	\$5	\$15	\$25	\$35	\$45	\$55	\$65	\$75

Equation: $y = 10x + 5$



<5 min



REMEMBER

Even if a customer does not send texts, she or he must pay \$5 each month.

VOCAB

Enabled
working; allowed to use



WHOLE GROUP

TALK ABOUT IT: If a customer sent 300 texts in a month, how much money would s/he owe Fantastic Phone company?

QUICK CHECK: I have read the information on this page with my group.



Text Message Model

INDEPENDENTLY, READ THE INFORMATION BELOW OR ONE PERSON CAN READ ALOUD.

CHALLENGE GOAL

GROUP CHALLENGE GOAL

Your job is to create a texting plan for a new cell phone company, Terrific Texts. You will determine a fee that customers will pay per month just for having a text-enabled cell phone and also how much money the company will charge for sending different numbers of text messages. Then, you will represent the relationship between cost and number of texts in a table, equation, and graph. Finally, you will share the plan you created with the other small thinking team(s) and together decide which plan offers customers the best value.

IN YOUR OWN WORDS: What **final decision** will your group need to make at the end of this activity?



SMALL TEAM

SMALL TEAM BREAK-OUT: Break into two **smaller thinking teams** to complete this activity. The whole group will reconvene for page six.

Who will be in your small team for the work on pages four and five?
Write their names below.



<5 min

QUICK CHECK

I understand what I need to do for the challenge!



REMEMBER

For the work on pages 4 & 5, you'll be in small teams.

VOCAB

Reconvene
get together again

QUICK CHECK: We've divided up into small thinking teams.



Terrific Texts Plan

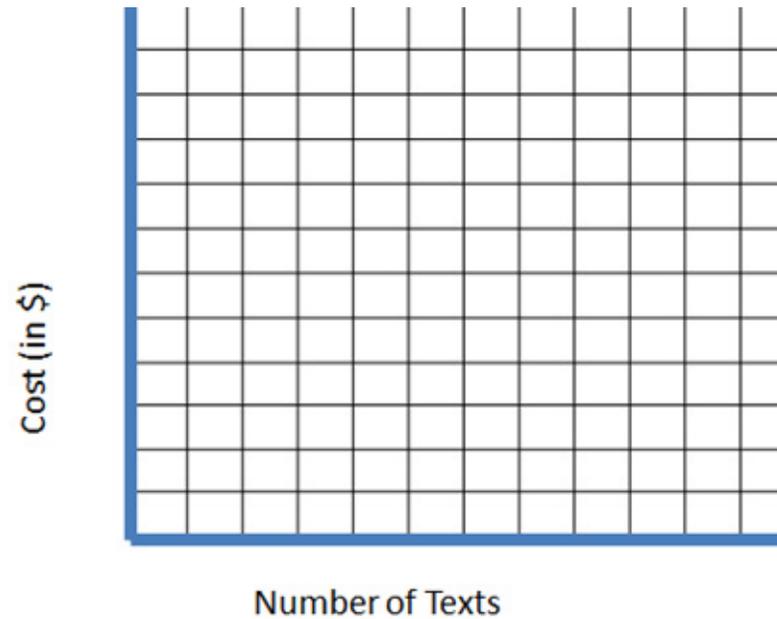
SOLVE THIS PART WITH YOUR SMALL TEAM OR INDEPENDENTLY.

PART A: SMALL TEAM

Monthly fee for having a texting-enabled cell phone: \$_____ (This is the amount a customer pays even if s/he sends zero text messages.)

Number of texts (x)	0						
Amount of money (y)							

Equation: _____



10 min



HINT

Remember to add the monthly fee to the fee for a certain number of texts to determine the amount of money paid for sending a certain number of texts.

HINT

Because the relationship is linear, your graph should look like a line.

QUICK CHECK: If I substitute a value of x and y from my table into my equation my equation is true.



SMALL TEAM

Terrific Texts Plan

SOLVE THIS PART WITH YOUR SMALL TEAM OR INDEPENDENTLY.

PART B: SMALL TEAM

Compare your plan for the Terrific Texts company with that of the Fantastic Phones company.

If a customer sends fewer than one hundred text messages in a month, which plan would you recommend to him/her? ___Terrific Texts ___Fantastic Phones Explain your reasoning.

If a customer sends more than 1,000 text messages in a month, which plan would you recommend to him/her? ___Terrific Texts ___Fantastic Phones Explain your reasoning.



SMALL TEAM

TALK ABOUT IT: Each person should be prepared to share something with the whole group. Think about how you created your table, equation, and graph.

One thing I plan to say is _____

One question I might want to ask another team about their work is:



10 min



HINT

Refer to page 2 for information on the Fantastic Phones company

QUICK CHECK: Our small team is ready to share with the whole group. Other teams are ready to reconvene



Discuss and Decide

AS A WHOLE GROUP, DISCUSS AND ANSWER THE CHALLENGE GOAL QUESTION.

PART C: WHOLE GROUP

SHARE-OUT PROCEDURE



10 min

- **30 seconds:** One person talks – everyone else respectfully listens.
Does anyone have questions about what they just heard?
30 more seconds to answer questions if needed.
- **Repeat** until everyone has shared.
- **5 minutes:** Anyone can ask questions or speak about the topic.
Discuss & answer the Group Challenge question below.

CHALLENGE GOAL: Final Decision

Based on your group’s learning and discussion, which cell phone plan have you decided offers customers the best value? _____

Did you consider all types of cell phone customers, or just those who send a lot of texts or very few texts? _____

Why? _____

Would your decision have been different if you were considering only a certain type of customer (like a customer who barely texts at all)? YES _____ NO _____

Explain your reasoning. _____

- QUICK CHECK:** *Everyone* in the group had a chance to speak.
- Everyone* in the group helped complete the Group Challenge.



Reflection

INDEPENDENTLY, COMPLETE THE REFLECTION

REFLECTION

Were you able to create a table, equation, and graph to represent the relationship between cost and number of texts?

CIRCLE ONE:

I completed the table, equation and graph *I partially completed these* *I did not complete these*

Explain your choice:

Was your input about which texting plan gave customers the best value used in the group's final decision?

CIRCLE ONE:

My input was very valuable *My input was used some* *My input was not used at all*

Explain your choice:

In your own words, what is a linear relationship?



5 min

SKILL CHECK

On a scale of 1-5, how well do you understand finding volume and surface area of prisms?

1 = low
5 = high

QUICK CHECK: I've answered these questions thoughtfully.



Ending Problem

INDEPENDENTLY, SOLVE THE PROBLEM

ENDING PROBLEM

A taxi cab driver charges customers rates shown in the table below. Which equation could be used to calculate the amount of money a taxi driver will earn for a trip?

Number of miles driven (x)	0	1	2	3	4
Cost (y)	\$3	\$7	\$11	\$15	\$19

- a) $y = 4x$
- b) $y = 4x + 3$
- c) $y = 3x + 4$
- d) $y = 3x + 1$

Show all your work below or explain how you know your answer is correct.

REFERENCES:
Microsoft Word Clip Art



<5 min



HINT

This question is similar to the types of questions you'll see on your skill assessment.

QUICK CHECK: I've cleaned up my working space and put all materials away.