Beyond Button Pushing

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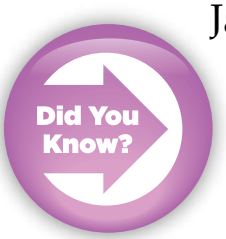
Jennifer M North Morris
Jennifer@north-morris.net

Activity	CCSS	SMP
What's My Rule?	Algebra: Creating Equations	1: Make sense 5: Appropriate tools
Texts: Too Many?	Algebra: Reasoning with Equations & Inequalities	2. Reason abstractly & quantitatively 8. Look for regularity
Make It Dynamic!	Functions: Interpreting Functions	5. Appropriate tools 8. Look for regularity
What's In a Picture?	Functions: Linear, Quadratic, & Exponential Models	4. Model 6. Attend to precision
Guess My Age	Statistics: Interpreting Categorical and Quantitative Data	1. Make sense 3. Construct viable arguments

Investigation 5.2: **Text Messaging**



The first text message was sent by Neil Papworth to Richard Jarvis the first week of December 1992 in Newbury, England. The message simply said, "Merry Christmas". In 2007, one expert estimated people sent between two and three trillion text messages that year! Can you imagine how many more have been sent this year?

Reference: www.nytimes.com/2007/12/05/technology/05iht-sms.4.8603150.html?pagewanted=1&_r=1

TextCo, Inc. offers many different text messaging plans. TextCo customers can send and receive text messages to and from others using TextCo services for no charge. However, TextCo customers that are interested in sending text messages to others outside of the TextCo network, (for example, to an AT&T wireless customer), should consider one of the following text messaging plans:

TEXTCO TEXT MESSAGING PLANS	
Pay per Message	10¢ per message
250 Messages Plan	$5.00 for up to 250 messages plus 10¢ for each extra message
500 Messages Plan	$10.00 for up to 500 messages plus 10¢ for each extra message
Unlimited Messages	$20.00 for unlimited messages

Let's investigate the different TextCo text messaging plans. Since TextCo customers can exchange messages with others in the TextCo network for free, the cost of the text messaging plan is determined by the number of messages to be exchanged with others not in the TextCo network. Let's work to help TextCo customers understand which of the text messaging plans would be least expensive for them.

TEXT MESSAGING (CONTINUED)

A What are the important factors to consider when choosing between these text messaging plans?

B Use the table to determine the cost of each text messaging plan as a function of the number of text messages sent or received from outside of the TextCo network.

C If a customer generally sends or receives a total of 400 messages each month, which plan would you suggest she/he choose? Explain.

D For what number of text messages is it best to just pay the 10 cents per message? Explain.

E Use the table to write algebraic equations for the cost of each of the text messaging plans as a function of the number of text messages.

F Determine the slope and y-intercept of each function. What are the real-world meanings of the slopes and the y-intercepts of the functions?

G Graph all of the equations. What domain, range, and scaling factors work well?

H Parts of some of the graphs of the text messaging plans are parallel. Why are the graphs parallel?

I Write a statement explaining to your aunt which of the text messaging plans she should choose. Be specific in your explanation.

Text Messaging

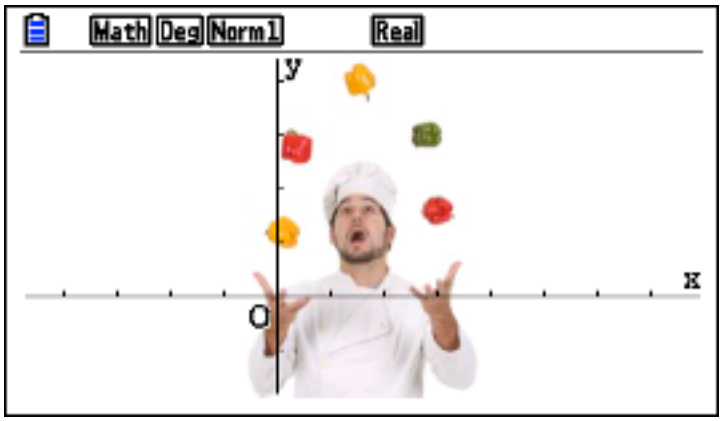
Complete the table to determine the cost of each text-messaging plan as a function of the number of text messages sent or received.
Sprint's current plans are:

1. 20 cents per message
2. $5 for 300 messages; 20 cents each additional
3. $10 for 1000 messages; 20 cents each additional
4. $20 for unlimited messages

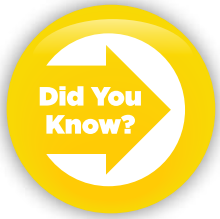
Number of Text Messages	20 cents per message	300 messages plan	1000 messages plan	Unlimited Messages Plan
0				
50				
100				
150				
200				
250				
300				
350				
400				
450				

You've Got To Move It!!

Search through the g3p files on the PRIZM and explore the mathematical possibilities inherent in each image. How many different ways can you find an equation to represent the image? Open the picture file as a background in the Graph menu and find an equation that will fit the juggled fruit. As an extension, try other menus and different methods.



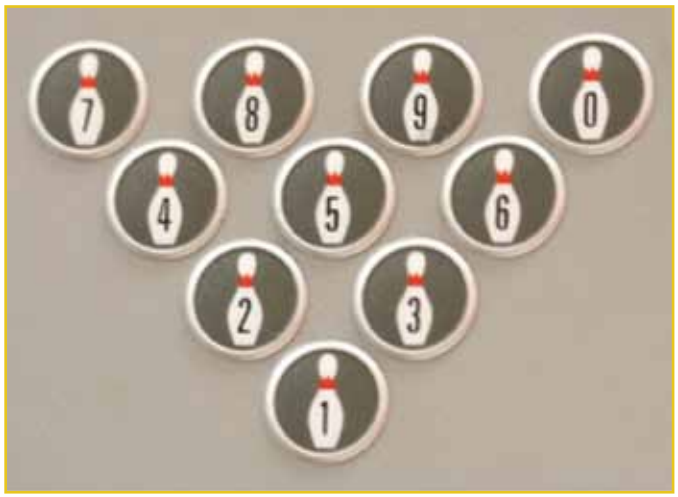
Investigation 3.6: **Scaled Bowling**



Bowling is good exercise! Bowling works 134 different muscles, yet it does not require a lot of strength to be a good bowler.

Reference: www.okaloosa.k12.fl.us/destin/bowlfacts.htm

Consider the following picture that shows how bowling pins are set up.



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Source: http://www.topendsports.com/sport/tenpin/dimensions.htm

The center of each bowling pin is 12 inches away from the center of each adjacent bowling pin.

A What type of triangle do the pins form? Explain.

B Determine the scale that is used in this picture. Explain your process.

C Find the slopes of the lines through the centers of the 1 and 10 pins; the 2 and 9 pins, and the 4 and 8 pins. What do you notice?

D Based on your findings in part c, what would you expect to find for the slopes of the lines through the centers of the 1 and 7 pins, the 3 and 8 pins, and the 6 and 9 pins? Verify this conjecture.

Who's the Best Guesser?

Name	Actual	Estimate		
JACK NICKLAUS				
TIM TEBOW				
NORAH JONES				
KATY PERRY				
BRETT FAVRE				
BARACK OBAMA				
WYNONNA JUDD				
MICHAEL JORDAN				
TIGER WOODS				
MERYL STREEP				
CHRIS HEMSWORTH				
BOB DYLAN				
LEBRON JAMES				
JORDIN SPARKS				