

ATTENTION STUDENTS:

For School Spirit Day, Your class has been asked to determine what will be needed to create a proposal for creating four different messages in the front yard of the school using students standing to create the letters. Each message is to be photographed for 'School Spirit' posters. For instance: one message could be: "We Are Family" that is found in the school creed, that is one idea.

What you are being asked to do is to create a proposal to present to the principal for approval.

You will need to:

1. Separate into four teams and decide on the message that your team believes would clearly state our school spirit.
2. Determine the exact number of students that would be needed to create each of the four messages.
3. Figure out how much twine you will need to mark the actual graph on the school lawn, and how much that amount of twine will cost.
4. List the ordered pairs/coordinates where each student will need to stand for each message.
5. Once you are in your teams, you will need to choose people in your group to be responsible for collecting the data; checking each other's work; and to be a representative/ spokesperson for your team. These jobs can be rotated.

If you want to view the short video showing how college students at Virginia Tech. created a message that said: *VT Thanks You!* you can go to this webpage:

<http://glovis.geog.vt.edu/hokiesthanktheworld/ThanksTimelapse.mov>

On the next page are sample photographs as well.

Here are some examples of how other messages were created by groups of people standing in a specific order.



<http://glovis.geog.vt.edu/hokiesthanktheworld/>
http://www.alfredny.biz/sportsmen/images/9-11_spelled_out_by_marines.jpg

Student Tasks - overview:

As an entire class, you will create a proposal that includes:

- Four different positive, school-spirit messages that could be created,
- The exact number of students that will be needed to stand in the yard for each of these messages,
- A list of all the ordered pairs/coordinates where each student will need to stand - Also for each separate message. Remember that the graph is a four-quadrant Cartesian graph. Be sure to use proper conventions (x,y) and double check that all coordinates are listed as $(+)$ or $(-)$ when applicable.
- And, you will also need to determine the cost of the twine that will be needed to mark off the grid/graph in the school yard. For this you will need to figure out the approximate amount in feet and inches, and then factor the number of total rolls.

FIRST DAY – task details:

1. Choose the people in your team to be responsible for collecting the data; drawing checking each other's work; and to be a representative/spokesperson and scribe for your team. (remember, more than one person can be a scribe, data collector and work checker!)
2. Now, as a team, use the attached Pros and Cons organizer and list/brainstorm as many factors (positive and negative) that your team can think of that the principal should know about that might affect how well this activity will work. (i.e. weather, the amount of time it will take). Order them by the most important to least important and then be sure to include them in your proposal, along with brief suggestions of what can be done.
3. Next, brainstorm some ideas of what message you want to create.
 - Once you have some ideas, be sure to think about how big your letters will need to be, how many letters you can fit in the space provided, how close you want each student to stand from each other and so on.
 - Use your aerial photographs of the school yard with a Cartesian graph on it to help you. There are several provided in your packet, and if you need more you may ask for them.
 - Decide on which message your team wants to include as one of the four for the class proposal.
4. Plot your points
 - Look at the discussion questions on the top of the page to be used to write down the coordinates. Take some time as a team to discuss them and have a scribe in your group write down some of the thoughts.
 - Draw a neat sample on one of the aerial photographs as a sample to include in the proposal
 - Decide as a team how many points (students) each letter is going to need and where those points are on the graph.
 - Mark and begin to write down the ordered pairs in proper format (x,y) (be sure to check your work for accuracy!)

END OF LESSON ON DAY ONE

Before packing up – please take five minutes to write in your Activity Reflection Journals. Include what you think and feel about what we did for this lesson so far.

DAY TWO:

1. Continue to write out the coordinates (ordered pairs) on your list if you haven't completed that part. Some teams chose longer phrases than others and may need to plot more points. Be sure to have your work-checkers check the accuracy of your team's work.
2. When you have completed plotting your points, discuss as a team the problem of how to figure out how much money the principal will need to spend on twine to make the graph on the school yard. One spool of twine is provided; you may go to the school yard with the twine if your team wants to, just let the teacher know.
3. Work together as a team to write your draft proposal. Be sure to include the data and important information you have gathered that will help the principal make sure everything will be ready when the photographer comes to take the pictures.
4. When you are done, share your proposal with another team to get feedback. Use the feedback your team received to make any edits you feel are appropriate.
5. Have the spokesperson from your group take your final proposal to meet with the other spokespersons from the other teams and they will put them together in one folder to present.
6. If your team completes this task before any other teams, you could help for future School Spirit Messages by trying to predict what would be the most number of letters you would be able to 'write' out with students in the school yard and explain how you came to that figure. This could also be included in your proposal.

END OF LESSON ON DAY TWO

Before packing up – please take five minutes to write in your Activity Reflection Journals. Include what you think and feel about what we did for this lesson so far.

TELL US ALL ABOUT IT – REFLECTION NARRATIVE

Using your Activity Reflection Journals from yesterday and today, and the Journal Starter graphic organizer, each of you will have three days to independently write and submit a journal narrative reflecting on this task. In it, you should describe the whole process including any difficulties you encountered and how you resolved them. For instance, you should try to include such ideas as:

- How did your team share the responsibilities?
 - What mathematical processes did you need to use to get your totals?
 - How did your team check your computations and point-plotting for accuracy?
- Don't forget to use the graphic organizers to gather your thoughts before writing the narrative.

Student Check List

Be sure to show all of your work. Mark (x) off each one as you complete it.

Student teams need to turn in:

Proposal to the principal

- Is the layout and organization of the proposal creative and appealing?
- Does the message your team chose to be spelled out by the students reflect community school spirit?
- Was the message successfully plotted on the graph?
- Is there a list of coordinates/ordered pairs that accurately reflect the drawing of the message?
- Is the exact number of students that will be needed to spell out the message clearly stated?
- Is the estimated cost of twine listed; including the mathematical process used to determine the amount needed?

EACH individual Student needs to turn in:

Reflective Narrative

- Does the reflective narrative include details of your team's actions and processes? Does it discuss some of the difficulties you encountered and how they were resolved? (use your Personal Reflection Grid organizer to gather your thoughts)
- Have you checked your narrative for grammar and spelling errors?
- Did you check it for readability and organization?

Plotting Points - Important concept:

Before you begin plotting points, take a few minutes and discuss as a team the following questions:

- Why is it important to properly show the ordered pairs in the conventional form of (x,y) ?
- What can happen if the two coordinates in the ordered pair (x and y) are mixed up?
- What are some ways I can check if my coordinates are correct based on the quadrant they are in?

Use the spaces below to keep track of your ordered pairs:

1					
2					
3					
4					
5					
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9					
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11					
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19					
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21					
22					
23					
24					
25					
TOTAL POINTS TO PLOT:			TOTAL NUMBER OF STUDENTS NEEDED:		

More spaces for Ordered Pairs on back if needed

26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
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48					
49					
50					
TOTAL POINTS TO PLOT:				TOTAL NUMBER OF STUDENTS NEEDED:	

When it is time to actually have the students stand on their 'point' in the school yard, we will need to mark the yard with a grid. Part of your proposal is to say approximately how much money it will cost to make this grid. Use the worksheet below to figure out how much money will be needed to buy the twine.

NOTE: the graph lines are three feet apart on the graph.



Twine Needed

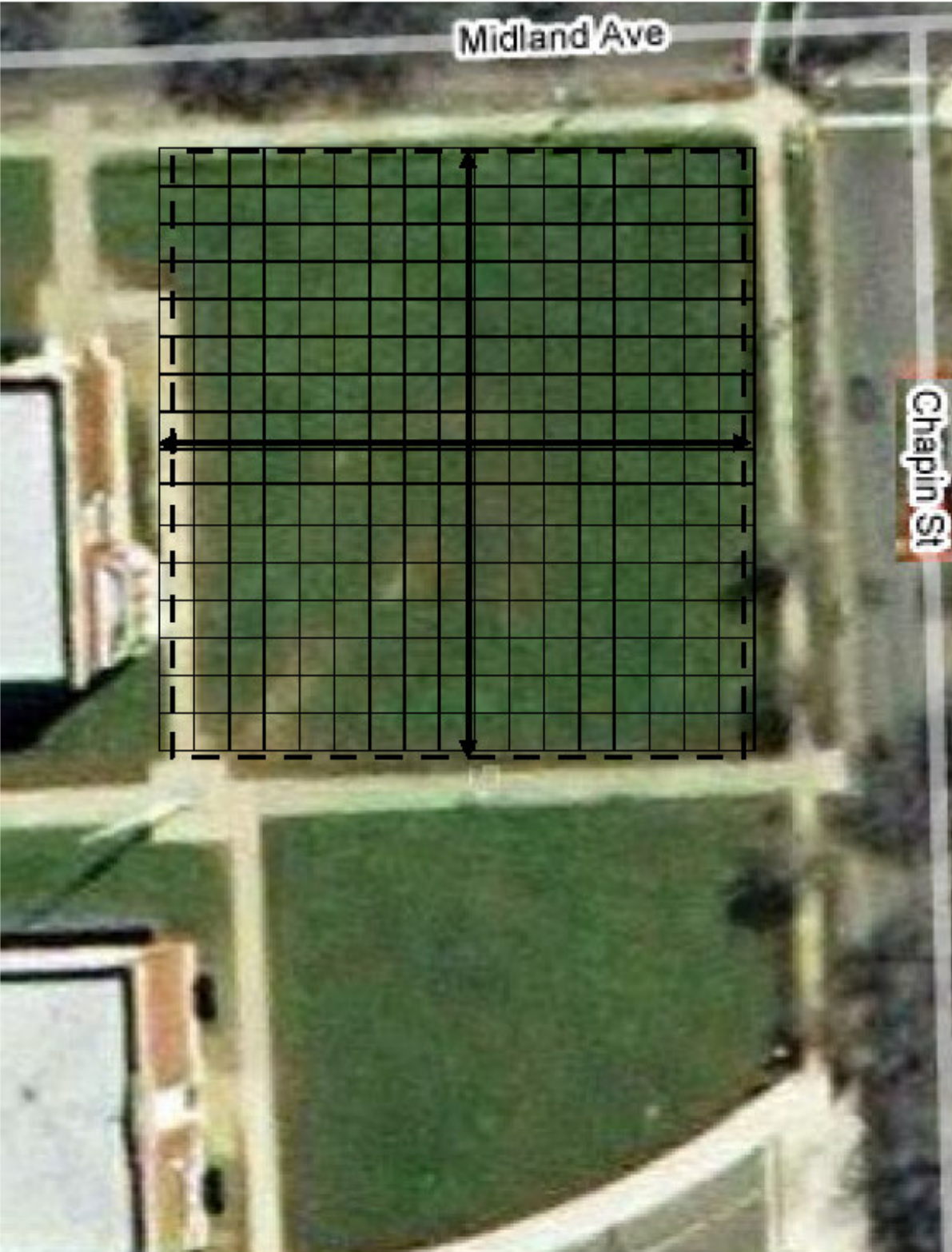
How many feet of twine are needed?	
At 2,250 feet per spool, how many spools are needed?	
At \$12.97 for each spool, plus 8% sales tax, how much money will be needed?	

Be sure to note the quantities with the proper terms/notations. i.e. 25', 25ft. 25 feet, or \$200.00.

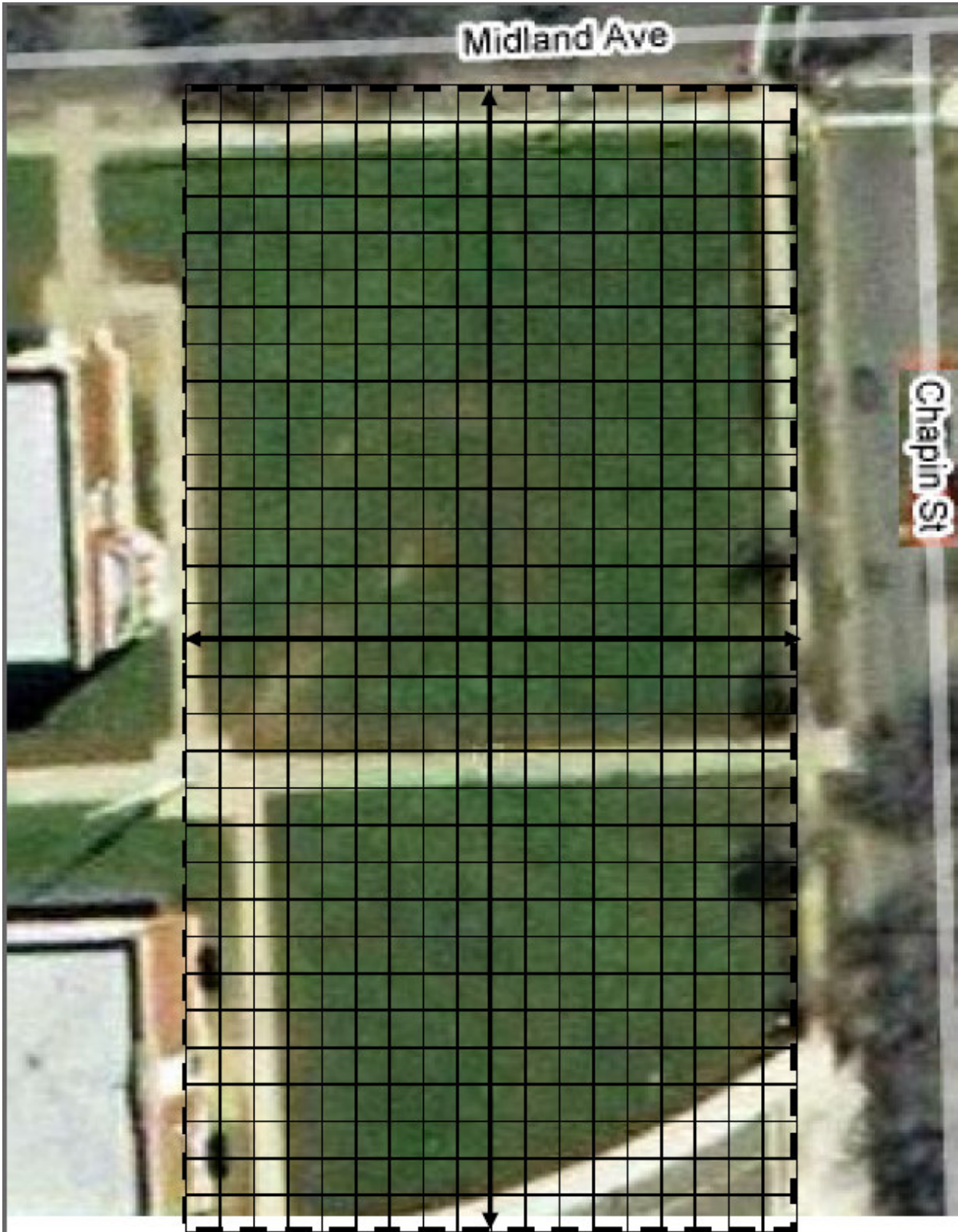
You can use the back of this sheet to do your arithmetic.

Explain how your team figured out how much money it will cost:

Differentiated Level A



Differentiated Level B



Journal 'Starter' Questions: Use these to get your thoughts together to complete your narrative journal. It should be written in standard essay form, checking for grammar, spelling and organization. This reflection essay will be due _____.

My Frame of Mind as I approached this project	
What were my past experiences that related to the project?	
What are my interests that relate to the project?	
What other related knowledge did I bring to the project?	
What I did and How I did it	
What do I think was the most important part of this task?	
How did I go about completing that task?	
What strategies did I use to find solutions to problems?	

What I learned and Skills I used

What did I learn or discover?

Why did I learn it?

What could this help me do?

How could these skills help me do a job I'd like to do in the future?

Self Evaluation

What did I do well?

What was easy for me?

What was hard for me?

What can I still improve on?

What do I want to know more about?