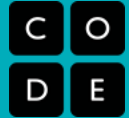


Name(s) _____ Period _____ Date _____

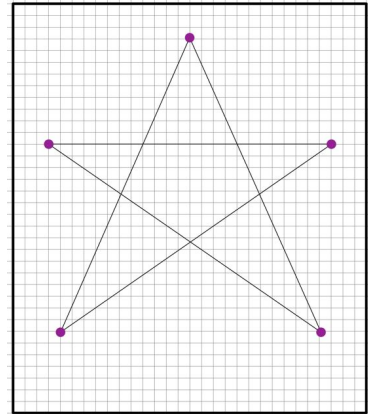
Activity Guide - Sending Numbers



Challenge: Develop a protocol or set of rules for communicating a drawing to your partners using only numbers

Challenge Rules:

- The image will be a line drawing created by connecting points on a grid, like the one seen here.
- You can discuss and agree on a protocol ahead of time, but the image exchange must happen without communication between the two parties other than through using the Internet Simulator.
- You can only send **a single message - a single list of numbers** - through the Internet Simulator to describe the whole image.



Things to Consider:

- How will your points be formatted?
- How does the recipient know when one number ends and the next begins?

Your Protocol: Write the steps of your protocol below.

Self-assess with the *Number-Sending Protocol* rubric on the next page.

Rubric - Sending Numbers



Protocol Rubric

Use the following criteria to evaluate your success in creating a protocol for sending the coordinates to draw an image described in the Sending Numbers activity. Justify your score for each rating.

Criteria	Yes	No	Comments
The team successfully collaborated to create a workable protocol for sending numbers.			
<ul style="list-style-type: none">The order of values is defined.			
<ul style="list-style-type: none">The recipient can distinguish when one number ends and another starts.			
The numbers were successfully translated, sent, and received.			
The receiving team member was able to translate the numbers and re-create the drawing on the other end.			

Reflection:

Note: These questions also appear in Code Studio and can be answered there.

1. What problems arose in your efforts to create a working protocol? How did you think about the problems in order to solve them?
2. How did collaboration play a role in the creation of your protocol?
3. You have a coordinate grid that is 96 x 96. What is the minimum number of bits that you will need to encode a coordinate in that space?
 - a. 16
 - b. 14
 - c. 13
 - d. 10