

Imagine the Possibilities

Name: Answer Guide

Date: _____

Vocabulary

Compass - a tool used to show the current directions based on Earth's magnetic field

Distance - the amount of space between two points

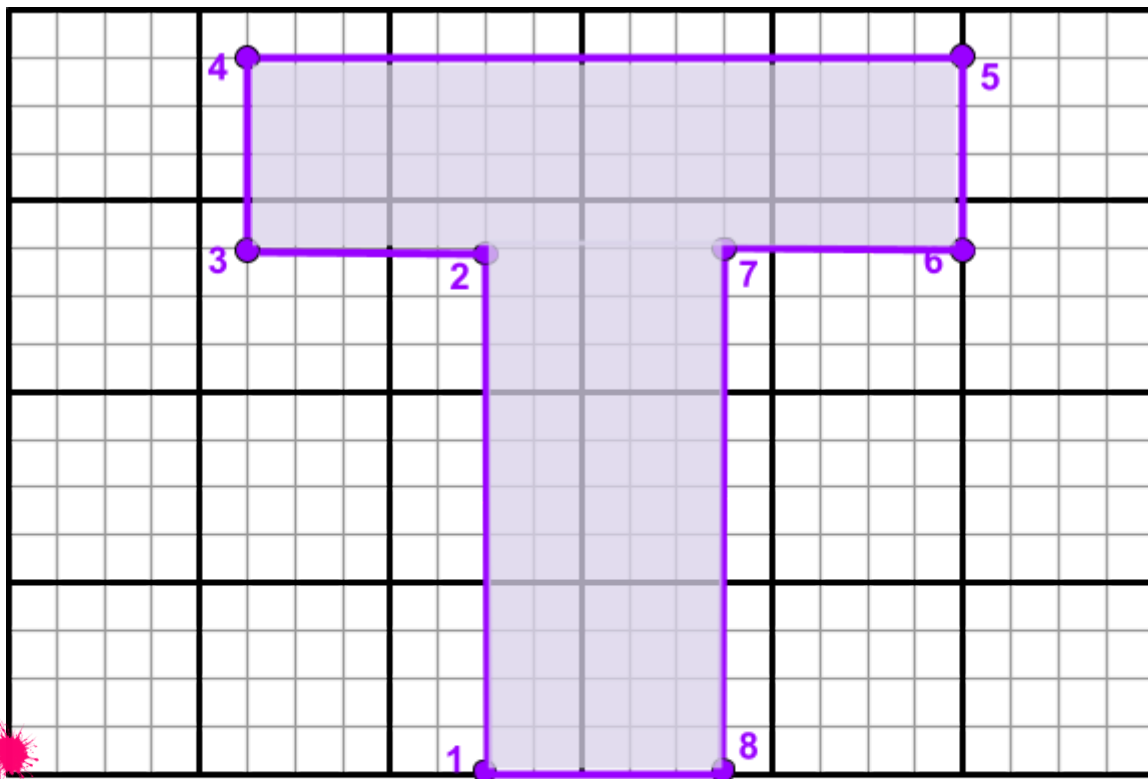
Cardinal Directions - the four main compass directions: North, South, East, and West

Introduction

Measuring on a Grid

Each square in the grid below is $\frac{1}{4}$ inch on each side. Use the squares on the grid to outline the first letter of your first name. Make sure it is at least 2 inches tall.

Letters will vary. Example below.



What is the width of the widest part of your letter? 3 $\frac{3}{4}$ inches

What is the height of the tallest part of your letter? 3 $\frac{3}{4}$ inches

Color your letter your favorite color.



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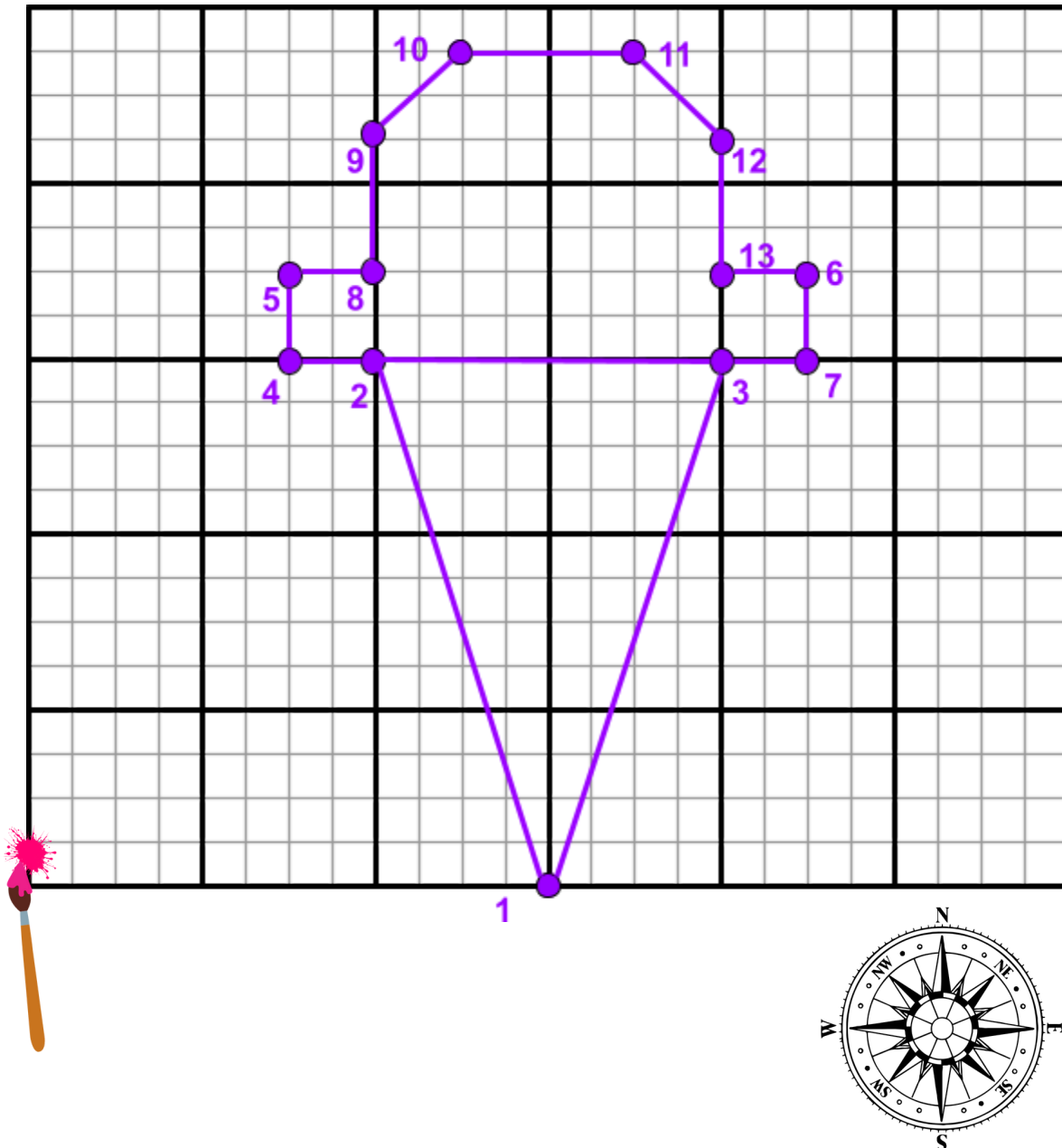
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Activity 1

Ari's Masterpiece

- 1 Ari has created a masterpiece of abstract art. They want to share their design with the world, but they have no way to create it themselves, so they have left directions to follow using their compass and a ruler.



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Directions to Ari's Masterpiece:

Part 1 - Measuring Inches

1. Place Ari at their starting point so that the front of Ari is pointed to the pink painted spot. Set Ari's compass to north using the compass on the page.
2.  #1 - Move Ari 3 inches to the east and draw Dot #1 in front of Ari.
3.  #2 - Move Ari 3 inches north, and 1 inch west. Draw Dot #2 in front of Ari.
4.  #3 - Move Ari 2 inches east and draw Dot #3 in front of Ari.
5. Place Ari back on their image and connect dots 1, 2, and 3 to form a triangle.
6. Use your ruler to measure the three distance below:
 - o Distance between Dots 1 and 2 3 ¼ inches
 - o Distance between Dots 2 and 3 2 inches
 - o Distance between Dots 1 and 3 3 ¼ inches



Part 2 - Measuring ½ inches

1.  #4 - Place Ari so that Dot #2 is directly in front of them. Move Ari ½ inch to the west. Draw Dot #4 in front of Ari.
2.  #5 - Move Ari ½ inch North and draw Dot #5.
3.  #6 - Move Ari 3 inches to the east and draw Dot #6.
4.  #7 - Move Ari ½ inch South and draw Dot #7.
5. Place Ari back on their image and connect dots 2, 4, 5, and 6, 7, 3.
6. Use your ruler and Ari's Compass to measure the distance below:
 - o Distance between Dots 4 and 7 3 inches
 - o Distance between Dots 2 and 7 2 ½ inches
 - o What direction is Dot 6 from Ari's position? northeast
 - o What direction is Dot 5 from Ari's position? north



Part 3 - Measuring ¼ inches

1.  #8 and 9 - Place Ari so that Dot #2 is directly in front of them. Move Ari North ½ inch and draw Dot #8. Continue Ari North another ¾ inch and draw Dot #9.
2.  #10 - Move Ari North ½ inch and East ½ inch and draw Dot #10.
3.  #11 - Move Ari East 1 inch and draw Dot #11.
4.  #12 - Move Ari East ½ inch and South ½ inch and draw Dot #12.
5.  #13 - Move Ari South ¾ inch and mark Dot #13.
6. Place Ari back on their image and connect dots 8, 9, 10, 11, 12, and 13.
7. Color the rest of your image.
8. What is Ari's masterpiece? ice cream cone

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Activity 2

Give Directions Like Ari

- 1 First, label the dots in the image from your introduction.
- 2 Next, decide on the orientation of your compass. Draw your compass on the bottom of the page so you can set Ari's North.

- 3 Write a set of directions to help Ari create your masterpiece.
Answers will vary based on the initial image. Example below.

1.  #1 - Set Ari's compass to north using the compass on the grid. Start Ari at the pink dot and move them 2 1/2 inch east and mark dot #1.

2.  #2 - Move Ari 2 3/4 inches north and mark dot # 2. _____
3.  #3 - Move Ari 1 1/4 inches west and mark dot # 3.

4.  #4 - Move Ari 1 inches north and mark dot #4. _____
5.  #5 - Move Ari 3 3/4 inches east and mark dot #5.

6.  #6 - Move Ari 1 inch south and mark dot #6. _____
7.  #7 - Move Ari 1 1/4 inch west and mark dot #7. Connect dots 1 through 7 and then back to dot #1. _____
8.  #8 -

9.  #9 -

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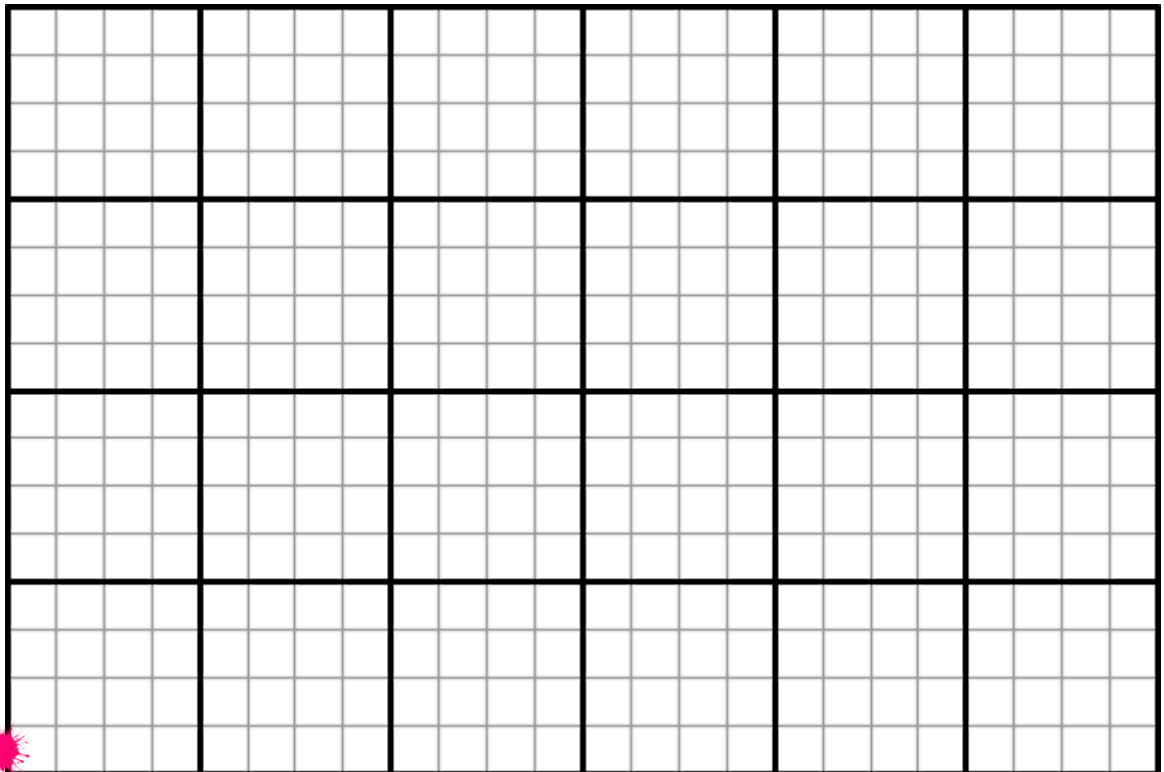
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10.  #10 -

- 4 Try it out! Trade directions with another group and see if they can reproduce your image using your directions. How did they do?

Students should reflect on how accurate the group was in following the directions.

This grid will be used for students to follow each other's directions using Ari.



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Exit Ticket

1. What is the distance from the southern tip of the moon to the southeast point of the lightning bolt? about 2 ¼ inches
2. If Ari is located on the moon, what direction is the orange heart? South
3. What is the distance from the southern point of the orange heart to the northern point of the blue star? about 1 ¾ inches
4. If Ari is located on the orange heart, what direction is the smiley face? northeast
5. What is the distance between the northern tips of the two stars? 2 inches
6. How could Ari get from the orange heart to the purple heart without touching any other icon? One possible answer: Begin at the southern tip of the orange heart, move 4 inches east and 2 inches north.

