

Unit 1: Rational Numbers 6th Grade

Task 1: You will play a game called *Match Mine* four times (twice each person). As you and your partner work together, develop strategies for precisely communicating with each other. Precision in communicating is an important Math Practice Standard that you will be working on all year.

The game goes like this...partners on opposite sides of a barrier communicate with precision, attempting to match the other's arrangement of game pieces on a game board.

Setup: Partners sit on opposite sides of a barrier with identical game boards. One partner is the designated Sender and the other is the designated Receiver.

Step 1: Sender arranges game pieces on game board while Receiver waits quietly.

Step 2: Sender gives the Receiver directions to match the Sender's arrangement of game pieces on the game board.

Step 3: When finished, partners stand up, set the game boards side by side to check for accuracy.

Step 4: Receiver praises Sender, and they develop improvement strategies for the next time they play.

Step 5: Roles are switched, and the game is played again.

The game board can be a blank piece of paper or notebook paper, and the game pieces used to create the design can be pattern blocks, colored tiles or other easily acquired classroom items of your choice that can form a design that can be easily replicated. The purpose of this task is to practice the procedure that you will do in Task 5 for a grade.

Task 2: Plot two points in each of the four quadrants. Label all eight points accurately with the appropriate coordinate notation. Now using at least these 8 points, create a Minecraft/connect the dots type design. (no rounded edges)

Task 3: You will need to write out the precise directions so that your partner or anyone else can accurately imitate your design from Task 2. In your directions, you may not give the coordinates of any point. Although you may not use coordinates to identify a point in your directions, you may use the term "origin" appropriately in order to precisely convey your directions. In your directions, you need to use descriptors in relation to the X-axis and Y-axis as well as descriptors of distance from various points in order for your partner to replicate your design. Ultimately, your partner be able to recreate your design and label the same points that you have on your paper.

It is important to remember, that when giving directions for placement of points, use language that accurately tells the distance between points. (e.g. Place a point at one unit to the positive direction on the X-axis and five units in the positive direction on the Y-axis. From that point, place another point 8 units in the negative direction on the X-axis and label that point.) Continue with all the directions needed to recreate your design.

Task 4: Like the original **Match Mind** game, using your directions from Task 3, have your partner replicate your design. Do the designs match? Discuss ways to improve either the directions or the implementation of the directions. Continue to practice replicating others designs as needed to improve either direction delivering or direction implementing or both.

Task 5: The teacher will give directions for a particular design. All students will independently follow directions and recreate the design to the best of their ability.

Unit 1: Rational Numbers 6th Grade (Teacher instructions)

Task 1: Students will play a game called *Match Mine* four times (twice each person). As they work together, they should develop strategies for precisely communicating with each other. Precision in communicating is an important Math Practice Standard that you will be working on all year.

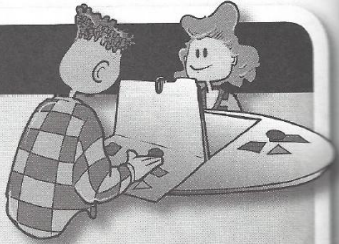
Match Mine

Partners on opposite sides of a barrier communicate with precision, attempting to match the other's arrangement of game pieces on a game board.

Setup: Partners sit on opposite sides of a barrier with identical game boards and game pieces. One is designated to be the Sender, the other the Receiver.

- Sender arranges game pieces on game board while Receiver waits quietly.
- Sender gives the Receiver directions to match the Sender's arrangement of game pieces on the game board.
- When finished, partners set game boards side by side to check for accuracy.
- Receiver praises Sender, and they develop improvement strategies.
- Roles are switched, and the game is played again.

Hints: Teacher instructs students in communication skills: asking for clarification, checking for understanding, giving unambiguous directions.



check for accuracy

The game board can be a blank piece of paper or notebook paper, and the game pieces used to create the design can be pattern blocks, colored tiles or other easily acquired classroom items of your choice that can form a design that can be easily replicated. The purpose of this task is to practice the procedure that you will do in Task 5 for a grade. Optional shapes for game pieces are attached along with an additional idea page from Kagan training for tips on implementation. This task can be repeated numerous times with various partners so that they learn to communicate clearly and accurately with many others.

Task 2: Students create a design on a four quadrant coordinate plane that has at least four points of the design accurately labeled in each of the four quadrants. Circulate and provide actionable feedback or collect papers and provide actionable feedback to students for improvement. Conduct a group debriefing as to how to communicate with peers as well as the importance of using precise mathematical language. Use this task formatively to guide instruction through the unit.

Task 3: Students write out the directions to imitate their design from Task 2. They must have their partner use correct coordinate labels without actually giving them the coordinates. When giving directions for placement of points, use language that accurately tells the distance between points. (e.g. Place a point at one unit to the positive direction on the X-axis and five units in the positive direction on the Y-axis. From that point, place another point 8 units in the negative direction on the X-axis and label that point.) Continue with all the directions needed to recreate your design. Collect the directions and the original picture. Check the precision of the directions with the design. Provide actionable feedback to students for improvement. Use this task formatively to guide instruction through the unit.

Task 4: Like the original **Match Mind** game, using the directions from Task 3, have partners replicate designs. Do the designs match? Discuss ways to improve either the directions or the implementation of the directions. Continue to practice replicating others designs as needed to improve either direction delivering or direction implementing or both. Circulate and provide feedback to student pairs while they are completing the task. Use this task formatively to determine if the students are ready for the assessed task 5.

Task 5: Give each student a coordinate grid and the student copy of design directions. All students will independently follow directions and recreate the design to the best of their ability. Collect and assess using the attached scoring guide. **IMPORTANT TEACHER NOTE:** For students to demonstrate an EXTENDING level of performance, have them, “*Write equations using integers to describe the distance between points H&I, A&B, G&C, Q&A, Y&I.*”

Unit 1: Rational Numbers Real World Experience

Show what you know! Complete all the steps to show your understanding of the coordinate plane and integers.

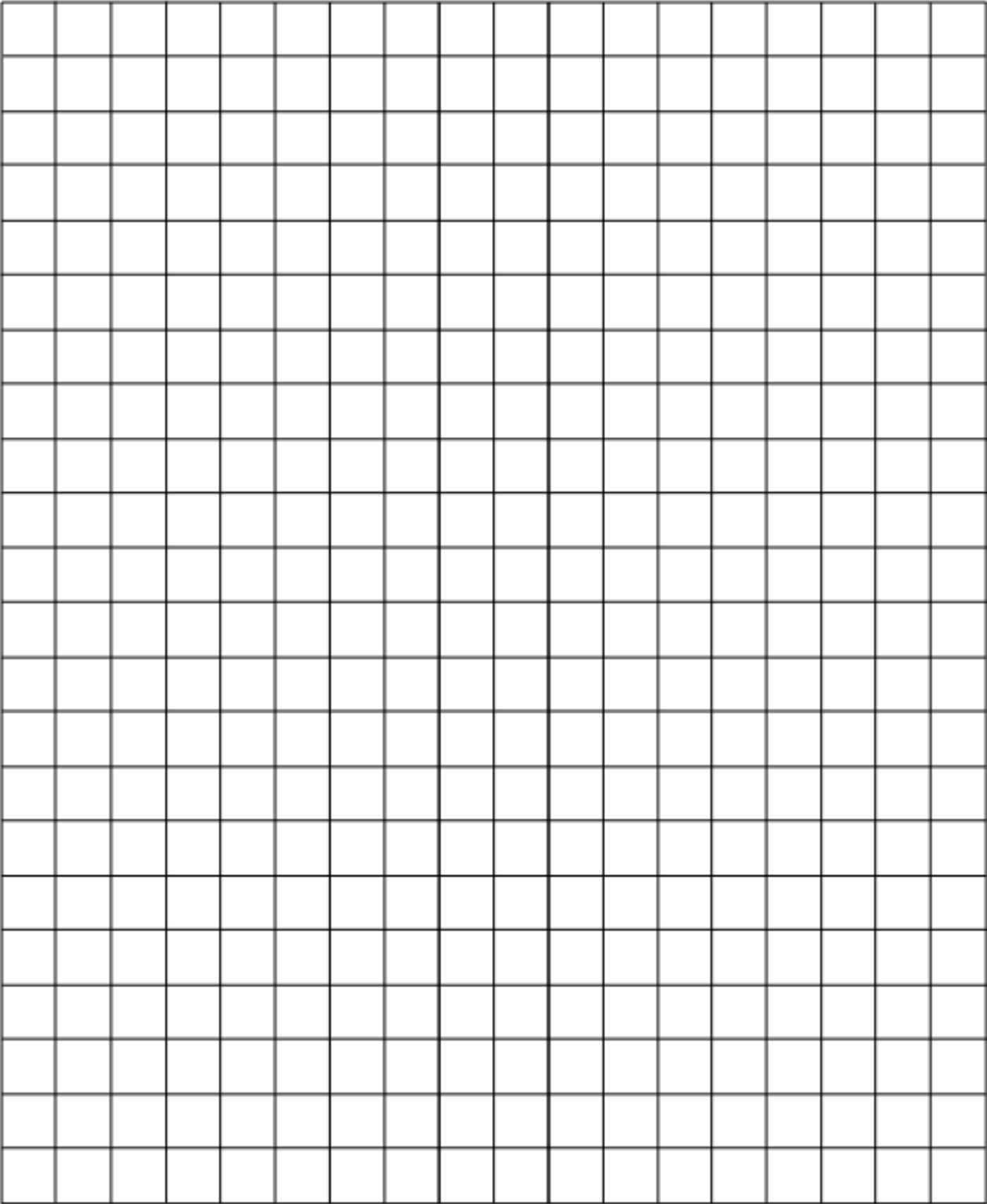
1. Label the X and Y axis.
2. Place point A; at (1, -3); label with coordinates
3. Place point C positive 8 units along the X-axis and positive 5 units along the Y-axis; label with coordinates
4. Place point E positive 10 units along the Y-axis from the origin; label with coordinates
5. Place point B in the IV quadrant 3 units away from each axis; label with coordinates
6. Place point G at (-8, 5); label with coordinates
7. Place point I at negative 3 units below the origin; label with coordinates
8. Place point K one unit in the positive direction along both axis from point (2, -7); label with coordinates
9. Place point D positive 3 units along the X-axis and positive 4 units along the Y-axis; label with coordinates
10. Place point F 3 units away from the X-axis and Y-axis in the II quadrant; label with coordinates
11. Place point H at (-4, -3); label with coordinates
12. Place point J positive 2 units and negative 7 units; label with coordinates
13. With a straight edge, connect the points A through K in alphabetical order and back to A

Name _____

Unit 1: Rational Numbers Real World Experience

Show what you know! Complete all the steps to show your understanding of the coordinate plane and integers.

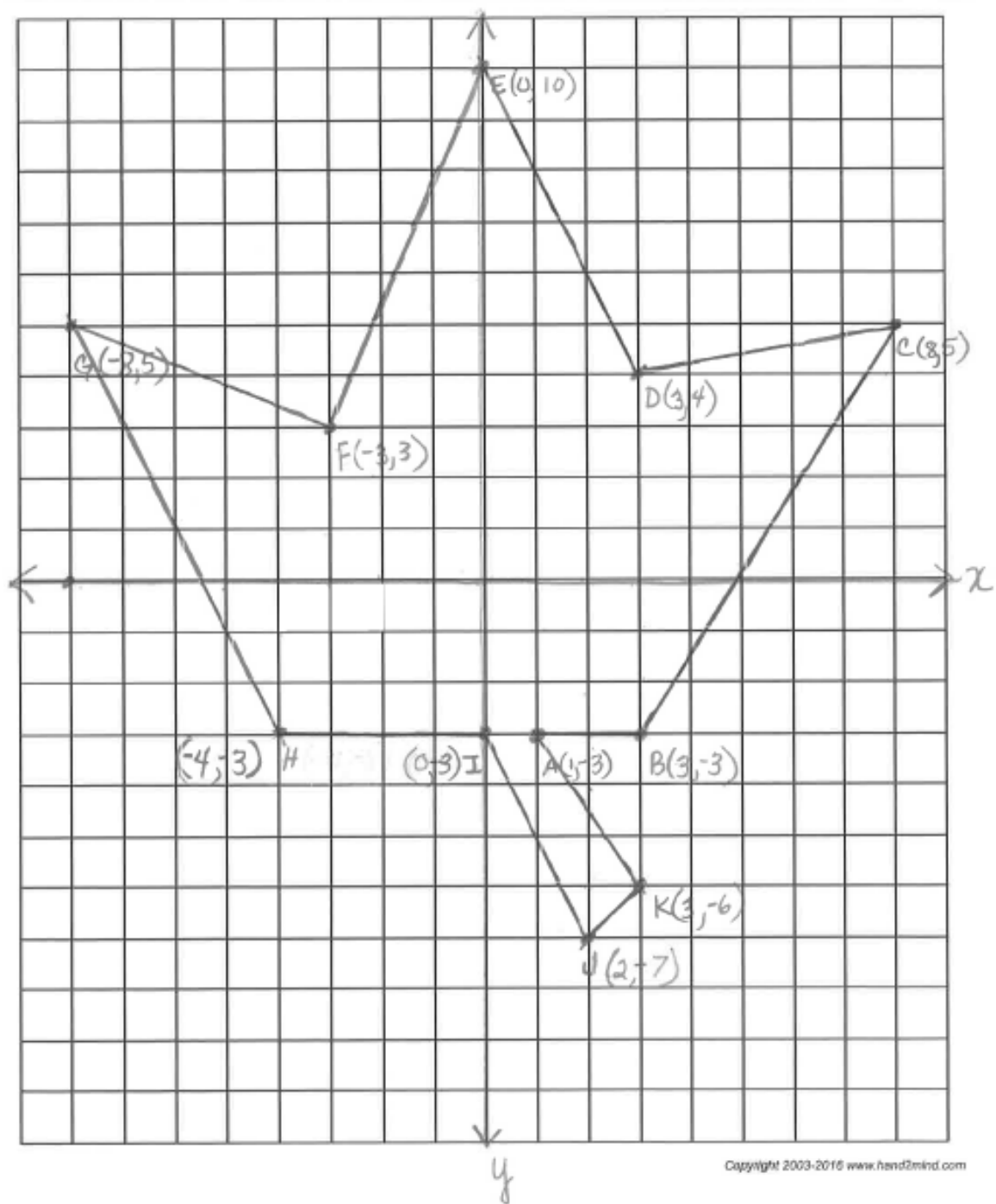
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Name _____

6th Grade Unit 1: Rational Numbers
Real World Experience

MEETING	<ul style="list-style-type: none">• Follows directions correctly• Replicates the original design• Labels points correctly with 9 to 11 points correctly• Labels X-axis correctly• Labels Y-axis correctly
DEVELOPING	<ul style="list-style-type: none">• Closely replicates the original design• Labels 7 or 8 points correctly• Labels X-axis correctly• Labels Y-axis correctly
BEGINNING	<ul style="list-style-type: none">• Design does not closely resemble the original design• Labels less than 7 points correctly• Mislabels X &/or Y-axis incorrectly <p><i>Task to be repeated after re-teaching</i></p>
Comments	



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Extending: Write equations using integers to describe the distance between points H&I, A&B, G&C, K&A, E&I

Distance between points H & I is $-4 - 0 = |-4| = 4$

Distance between points A & B is $1 - 3 = |-2| = 2$

Distance between points G & C is $-8 - 8 = |-16| = 16$

Distance between points K & D is $4 - (-6) = 10$

Distance between points E & I is $10 - (-3) = 13$