Relation Reading Instructions

1. Copy and distribute the passage to each student (or pair of students).
2. Allow the students time to read the passage.
3. When they have finished reading the passage, have the students write a relation.
4. Pair students up and have the students share their relation with the class.
A "relation" is just a relationship between sets of information. Think of all the people in one of your classes, and think of their heights. The pairing of names and heights is a relation. In relations and functions, the pairs of names and heights are "ordered", which means one comes first and the other comes second. To put it another way, we could set up this pairing so that either you give me a name, and then I give you that person's height, or else you give me a height, and I give you the names of all the people who are that tall. The set of all the starting points is called "the domain" and the set of all the ending points is called "the range." The domain is what you start with; the range is what you end up with. The domain is the x's; the range is the y's.

Let's return to our relation of your classmates and their heights, and let's suppose that the domain is the set of everybody's heights. Let's suppose that there's a pizza-delivery guy waiting in the hallway. And all the delivery guy knows is that the pizza is for the student in your classroom who is five-foot-five. Now let the guy in. Who does he go to? What if nobody is five-foot-five? What if there are six people in the room that are five-five? Do they all have to pay? What if you are five-foot-five? And what if you're out of cash? And allergic to anchovies? Are you still on the hook? Ack! What a mess!

A "relation" is just a relationship between sets of information. Think of all the people in one of your classes, and think of their heights. The pairing of names and heights is a relation. In relations and functions, the pairs of names and heights are "ordered", which means one comes first and the other comes second. To put it another way, we could set up this pairing so that either you give me a name, and then I give you that person's height, or else you give me a height, and I give you the names of all the people who are that tall. The set of all the starting points is called "the domain" and the set of all the ending points is called "the range." The domain is what you start with; the range is what you end up with. The domain is the x's; the range is the y's.

Let's return to our relation of your classmates and their heights, and let's suppose that the domain is the set of everybody's heights. Let's suppose that there's a pizza-delivery guy waiting in the hallway. And all the delivery guy knows is that the pizza is for the student in your classroom who is five-foot-five. Now let the guy in. Who does he go to? What if nobody is five-foot-five? What if there are six people in the room that are five-five? Do they all have to pay? What if you are five-foot-five? And what if you're out of cash? And allergic to anchovies? Are you still on the hook? Ack! What a mess!
Function Reading Instructions
1. Copy and distribute the passage to each student (or pair of students).
2. Allow the students time to read the passage.
3. When they have finished reading the passage, have the students revisit the relation they wrote and decide if it is a function or not.
4. Pair students up and have the students discuss why the relation is a function or not. If it is not a function, have them discuss what would make it a function.
A function is a "well-behaved" relation. Just as with members of your own family, some members of the
family of pairing relationships are better behaved than other. (Warning: This means that, while all functions
are relations, since they pair information, not all relations are functions. Functions are a sub-classification of
relations.) When we say that a function is "a well-behaved relation", we mean that, given a starting point, we
know exactly where to go; given an x, we get only and exactly one y.

The relation that we discussed earlier where "height indicates name" is not well behaved. It is not a function.
For a relation to be a function there must be only and exactly one y that corresponds to a given x. For
example, if the input and output of that relation where switched to "name indicates height" then the relation
would be considered well behaved. Given a person's name we could easily find their height. This would be
easier for the pizza delivery guy to find out who ordered the pizza.
FUNction RUN Game Instructions

Components:
- Game Board
- 3 sets of 12 Question Cards
- 6 Playing Pieces
- Category Die
- Movement Die

Object of the Game
The object is to be the first player who reaches the “finish” of the board.

Set Up
1. There are three categories of question cards: “Function or Relation?” “Domain and Range” and Guess the Parent Function” Stack each set of cards on one side of the board.
2. Each player chooses a playing piece and places it on the start square.

Playing the Game
1. The oldest player is player 1. Player 1 reads and asks the first question. Player 1 rolls the colored category die to determine the category of the first question. (Green is Function or Relation?, Yellow is Domain and Range, and Orange is Guess the Parent Function.)
2. Player 1 selects a question card from the category rolled. Player 1 then lays the card in the center of the game board for the rest of the players to see. Any player can yell out an answer at any time. However, each player gets only one try at answering each card. All players who provide incorrect answers are out of that round and cannot try and answer the question again.
3. Player 1 allows the other players to answer until one of the players (Player 2) answers the question correctly. Player 2 then rolls the numbered movement die and moves his/her playing piece forward the number of spaces rolled.
4. If no player answers the question correctly, Player 1 wins the round, rolls the numbered movement die and moves his/her playing piece forward the number of spaces rolled.
5. Play passes to the left with the player to Player 1’s left becoming the Reader

Winning the Game
The first player to land on the space labeled “Finish” at the end of the path is declared the winner. A correct number roll is not required.
<table>
<thead>
<tr>
<th>Guess the Parent Function?</th>
<th>Guess the Parent Function?</th>
<th>Guess the Parent Function?</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X?</td>
<td>LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X?</td>
<td>LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guess the Parent Function?</td>
<td>Guess the Parent Function?</td>
<td>Guess the Parent Function?</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X?</td>
<td>LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X?</td>
<td>LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X?</td>
</tr>
<tr>
<td>Graph 1</td>
<td>Graph 2</td>
<td>Graph 3</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| **Guess the Parent Function?**
LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X? | **Guess the Parent Function?**
LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X? | **Guess the Parent Function?**
LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X? |
| Graph 4 | Graph 5 | Graph 6 |
| **Guess the Parent Function?**
LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X? | **Guess the Parent Function?**
LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X? | **Guess the Parent Function?**
LINEAR, QUADRATIC, EXPONENTIAL, LOGARITHMIC, ABSOLUTE VALUE, SQUARE ROOT, OR RECIPROCAL OF X? |
What is the DOMAIN of the following?

{(2, 3), (-1, 5), (0, -1), (3, 5), (5, 0)}

What is the RANGE of the following?

What is the DOMAIN of the following?

What is the RANGE of the following?

What is the RANGE of the following?

What is the DOMAIN of the following in interval notation?
What is the RANGE of the following?

What is the DOMAIN of the following?

What is the RANGE of the following?

What is the RANGE of the following in set notation?

What is the RANGE of the following?

What is the RANGE of the following?
<table>
<thead>
<tr>
<th>Which of the following is a function?</th>
<th>Is the following graph a function or a relation?</th>
<th>Is the following graph a function or a relation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>X -3 0 3 8 -10</td>
<td><img src="image1.png" alt="Graph 1" /></td>
<td><img src="image2.png" alt="Graph 2" /></td>
</tr>
<tr>
<td>Y 6 8 20 4 8</td>
<td><img src="image3.png" alt="Graph 3" /></td>
<td><img src="image4.png" alt="Graph 4" /></td>
</tr>
<tr>
<td>Is the following graph a function or a relation?</td>
<td>Which of the following is a relation?</td>
<td>Is the following graph a function or a relation?</td>
</tr>
<tr>
<td><img src="image5.png" alt="Graph 5" /></td>
<td>X -3 0 3 8 -10</td>
<td><img src="image6.png" alt="Graph 6" /></td>
</tr>
<tr>
<td>Y 6 8 20 4 8</td>
<td>Y 6 8 20 4 8</td>
<td><img src="image7.png" alt="Graph 7" /></td>
</tr>
<tr>
<td>Is the following a function or a relation?</td>
<td>Is the following mapping a function or a relation?</td>
<td>Is the following graph a function or a relation?</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>{(-4, 6), (-3, 2), (1, 0), (7, 6), (8, 2)}</td>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
</tr>
<tr>
<td>Is the following mapping a function or a relation?</td>
<td>Is the following a function or a relation?</td>
<td>Is the following mapping a function or a relation?</td>
</tr>
<tr>
<td><img src="image3.png" alt="Diagram" /></td>
<td>{(3, 4), (4, -6), (5, -7), (3, 2), (-2, 5)}</td>
<td><img src="image4.png" alt="Diagram" /></td>
</tr>
<tr>
<td>Cannibal Cat</td>
<td>Adventurer Rat</td>
<td>Secret Agent</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Cannibal Cat</td>
<td>Adventurer Rat</td>
<td>Secret Agent</td>
</tr>
</tbody>
</table>

**Instructions:**

Cut along solid lines.
Fold along dotted lines.
Instructions:
Cut along solid lines.
Fold along dotted lines.
# Game Board Rubric

<table>
<thead>
<tr>
<th>Points Possible:</th>
<th>It stinks up in here!</th>
<th>Ehh... Not Bad...</th>
<th>I love it!</th>
<th>Total Points (x4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board Design, Effort and Creativity</td>
<td>Game lacks creativity; game design does not draw in players. Name of the game is not easy to see or is not written on the board. Not well made. Little to no effort put into creating game board.</td>
<td>Game has some degree of creativity in the design. Board was made with some effort. Name of the game may or may not be clearly displayed. Some parts may be messy, incomplete, or missing.</td>
<td>Game is creatively and thoughtfully designed and name of the game is boldly displayed. The board is exceptionally well made. Obvious effort was put into creating game.</td>
<td></td>
</tr>
<tr>
<td>Set up, Rules, and Directions</td>
<td>Set up is difficult, rules and direction are hard to follow.</td>
<td>Set up is somewhat clear, rules and directions are given but not in great detail.</td>
<td>Set up is easy to understand, rules and directions of the game are explicitly clear.</td>
<td></td>
</tr>
<tr>
<td>Content Accurately Incorporated</td>
<td>Content questions are factually incorrect, addresses irrelevant topics, has missing parts, or hardly used in the game.</td>
<td>Game board does not do a good job presenting content or content is only partially presented. Game could be played without topic, questions are not appropriate for the topics discussed, or questions are not on the right level for high school students.</td>
<td>Game board clearly demonstrates mastery in the following topics: -domain and range -function or relation -different types of functions Game includes topics in a fun and interesting way, appropriately, and with no errors.</td>
<td></td>
</tr>
<tr>
<td>Group Collaboration</td>
<td>Team worked well together. Tasks were evenly distributed amongst the group.</td>
<td>Some limited cooperation with team.</td>
<td>Did not work cooperatively with the team.</td>
<td></td>
</tr>
</tbody>
</table>
**Word Dice!**

**Instructions** – Write specific target words in blank dice, or use words intended for a specific goal. Print on card-stock paper, then cut along the outer edges. Finally, fold along the creases first, then lightly place glue on shaded area, then fold and form dice.

**Diagram:**
- Six Sided
- Eight Sided
FUNCTION RUN

START