








Venn Diagram Exploration Questions

This worksheet is intended for use with the lesson [Algorithm Discovery with Venn Diagrams](#). This page should be printed in order to help the students organize their findings during the lesson.

The Shape Sorter Game

The **rules** of the Shape Sorter Game are:

1. Make sure your computer is set to MAKE THE RULE
2. The score card below tells you which version of the game to use in each round of the game. For example, in the first round, you use the one-rule / one-circle version of the game.
3. In Player 1's turn, Player 2 chooses (or makes) the rules for the circle or circles.
4. Player 1 then moves objects into various areas on the Venn diagram. Do not try to move objects into the area outside the circles.
5. Player 2 keeps track of how many right and wrong guesses Player 1 makes.
6. If there are 2 players, then Player 1 sets the rules and keeps score while Player 2 moves objects into the areas of the Venn diagram. If there are 3 players, Player 3 should set the rules and keep score for Player 2.
7. At the end of the game, a player's score is the total number of right answers minus the number of wrong answers. The player with the highest score wins.

Player Name							
		Right	Wrong	Right	Wrong	Right	Wrong
1.							
2.							
3.							
4.							
5.							
6.							
7.							
Totals							
Right - Wrong							

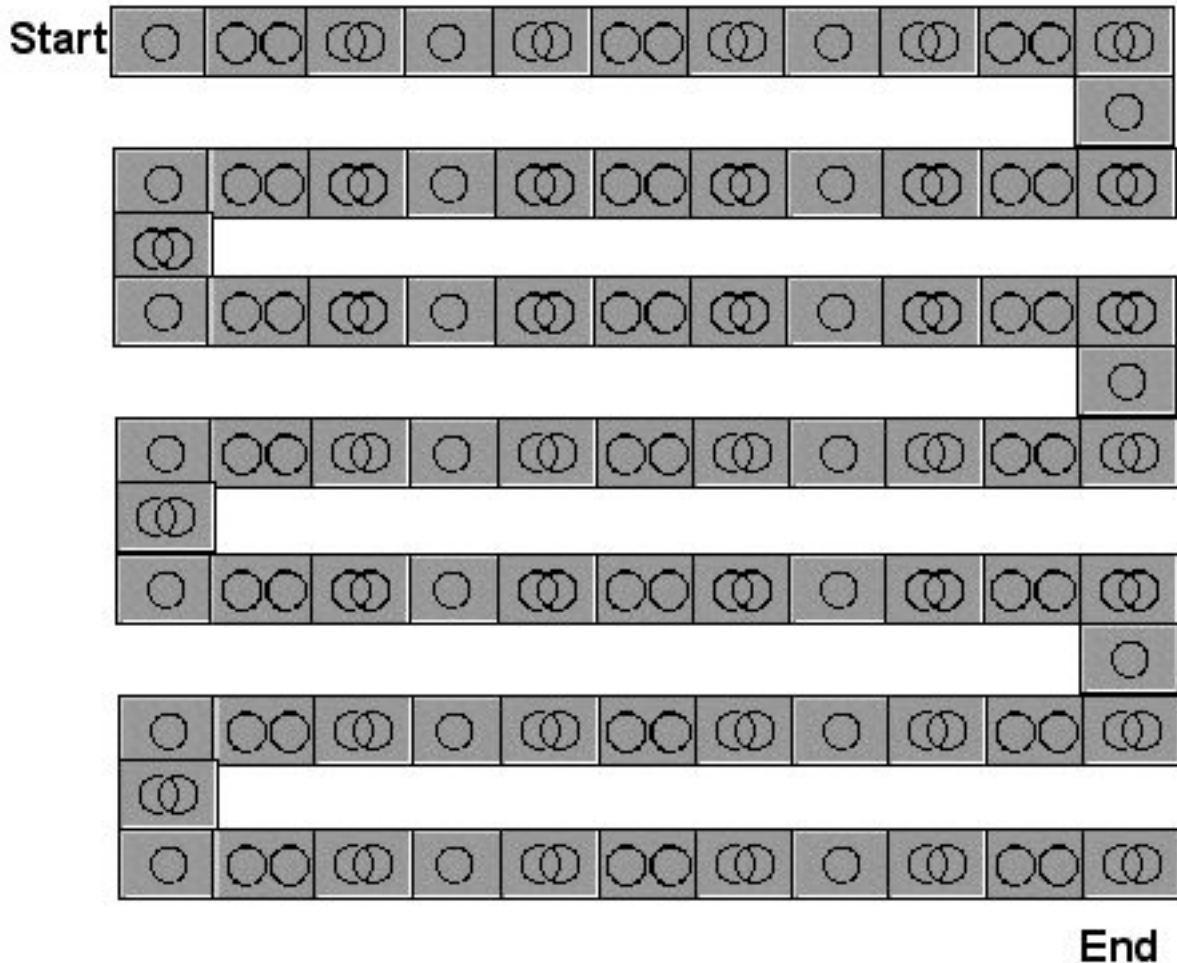
The Shape Sorter Race

The **rules** of the Shape Sorter Race are:

1. Put your markers at the beginning of the racetrack below.
2. In each turn, play the version of the game (one circle, intersecting circles, etc.) that shown on the square containing your marker. For example, the first square has one circle, so all players start out playing that version.
3. In Player 1's turn, Player 2 chooses (or makes) the rules for the circle or circles.
4. Player 1 then moves objects into various areas on the Venn diagram.
Player 1's marker moves one spot forward for each right answer and one

square back for each wrong answer. Do not try to move objects into the area outside the circles.

5. If there are 2 players, then Player 1 sets the rules for Player 2's turn. If there are 3 players, Player 3 should set the rules for Player 2.
6. Continue to take turns.
7. The player who gets to the end of the racetrack first wins.



Shape Sorter Game Exploration Questions

When you have finished playing the game, answer the following questions:

1. How many objects satisfy the rule BIG? How many satisfy the rule RED? How many satisfy the rule TRIANGLE?
2. If you do not think the other player will make any mistakes and if you want to keep the other player's score small, should you set the rule to RED or BIG?
3. How many objects are in the intersection of BLUE and TRIANGLE? What are they?
4. What is the intersection of BLUE and RED?
5. How could you get the biggest intersection?
6. If the version of the game is the one with two separate circles and the first rule is RED, can the rule for the second circle be BIG? Check your answer by setting the first rule to RED and seeing what choices the computer allows for the second rule.
7. If you are playing the version of the game with two intersecting circles and the rule for the first circle is BIG, will the computer allow you to use SMALL as the rule for the second circle? Again, check your answer using the computer. What choices does the computer let you use? Why?
8. Suppose we want to change the game and add a column containing GREEN objects. How many correct answers would there be in the new game when the rule is BIG?
9. Draw all the objects in a new game with 2 colors, 2 sizes, and 3 shapes. You can choose the shapes. How many objects are there?
10. Now suppose the game has 4 colors, 3 sizes and 6 shapes. How many objects are there?