

# Carmen & Ernie's **ARROYO RACE**

## OBJECT OF THE GAME:

To see which object, a large, medium or small size has the greatest chance of traveling through the arroyo and ending up in the river.

## MATERIALS:

- Arroyo Race Board
- Pair of Dice
- 3 objects representing large, medium and small objects
- Data Table



## ARROYO GAME RULES:

- All 3 objects start at the Arroyo at the top of the board.
- Role the die.
- Move the objects 1 space in the arroyo based on the following:
  - Role of 2-5 : Move the MEDIUM Object 1 space
  - Role of 6-9: Move the SMALL Object 1 space
  - Role of 10-12: Move the LARGE object 1 space
- Begin at the top of the arroyo and move the objects based on the role of the die.
- If the object lands on a square that already has an object, the arroyo changes course and you can skip to the next square of the same color.
- The game ends when one of the objects makes it to the river.

After each game, record the number of spaces each object moved. For instance if the large object only moved 5 spaces, then the first result would be 5 in the large column. If the medium object moved 16 spaces it would be recorded as 16 and so on.

The game must be played at least TEN TIMES so that you can collect enough data from the results. You may combine your results with the results of other members or groups.

Using the results from the data, answer the questions on the next page. Based on your game results, put the list of arroyo pollution in order from “Most likely to make it to the River” to “Least likely to make it to the river”



## ARROYO RACE DATA TABLE



GAME	LARGE OBJECT SPACES MOVED	MEDIUM OBJECT SPACE MOVED	SMALL OBJECT SPACES MOVED
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Average spaces per game			

Based on your results, what type of object (small, medium or large) is most likely to end up in a river or other water supply? Use your data to justify your answer

What type of foreign object may be most likely to lodge in an arroyo, drain, or waterway, blocking flow and potentially causing flooding in other areas? How does mass affect the travel of these objects?

What type of pollution would be most likely to affect the quality of water in the river? Justify your answer.

Based on your results, put the following in order from MOST LIKELY to LEAST LIKELY  
To end up in a river from an arroyo:

- Car Tire
- 2000 LB Concrete block
- Paper cup
- Aluminum Can
- Motor Oil that has been absorbed in the sand
- Large Cardboard Box
- 50 pound rock
- A Dried up Christmas Tree
- A molecule of fertilizer
- A plastic bead

LEAST LIKELY

A vertical stack of 10 horizontal bars with rounded ends, used for ranking items. The bars transition in color from dark teal at the top to light cyan at the bottom.

MOST LIKELY

# ARROYO RACE

Race from the arroyo to the river



1.5 million tons of tire particles end up in the US environment every year

## ARROYO



Motor oil does not dissolve in water and can be toxic to people, wildlife and plants



The US throws away 18.2 million mattresses per year with only 56 recycling centers for the entire country!

Fertilizer run-off can cause aquatic dead zones in coastal areas



Every day 8 million pieces of plastic pollution finds its way into our oceans

Antifreeze is highly toxic and can pollute water supplies if dumped, spilled or leaked.



Americans throw away 1 million tons of aluminum trash per year, enough to build a fleet of airplanes

## RIVER

