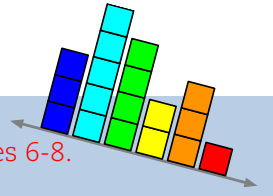


# The Marvelous Mean



## Strands:

Number & Quantity	
Algebra	
Functions	
Geometry	
Statistics & Probability	X

## Materials Needed:

- The Marvelous Mean Scenario cards
- Standard deck of playing cards
- Whiteboard or page protectors
- Dry erase markers
- Scrap paper

## Where:

Outside	
Inside	X
On-line	
On-site	



Work in teams to create visual representations that have a given mean and a given number of data points. For Grades 6-8.

**Object of the Game:** Use line plots or other visual statistical representations to represent a set of data that has a given mean and number of data points.

**Pre-Game:** Suppose there are 7 houses on a street and the average number of outside doors on the houses is 3. What are some statistical ways to represent this scenario? Are there any other ways you can do it?

## Set-Up:

- Form teams with 2 players in each.
- Separate a deck of cards into two stacks: black and red. Remove cards from each stack so that each new stack satisfies the following guidelines:

Card Color	Cards in Stack	Cards Represent
Red	5 through 10, Face Cards	Number of Data Points
Black	3 through 10	Mean of Data Set

- Values of cards: Jack = 11, Queen = 12, and King = 13. All other cards represent the number on the card.
- The player with the longest hair is the first leader.

## Playing the Game:

- The leader begins the round by doing the following:
  - Draw a **red** card. This is the **number of data points** for this round.
  - Draw a **black** card. This is the **mean** for this round.
  - Draw a *Marvelous Mean Scenario* card. Read it aloud. Fill in the blanks for the **mean** and **number of data points** as previously drawn.
- Each team has 8 minutes to create several unique representations for which the **mean**, **number of data points**, and information given on the scenario game card is correct.
- At the end of 8 minutes, teams compare their representations. For representations that are correct for the context and numbers of the round:
  - Cross out any representations that two or more teams have in common. To be considered the same, representations must represent the same data in the same way.
  - Earn 1 point for each of your team's unique representations.
- Change the leader. Repeat steps 1 through 3 for a total of 4 rounds.

**To Win:** After 4 rounds, the team with the most points wins.

## Think About It:

- What did you think about when you were making each representation?
- How did you know you were reaching the target mean?

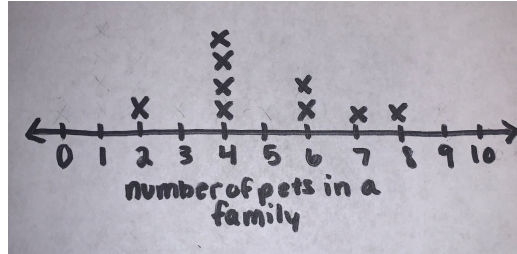
## Variations:

**Gather Data:** Choose one of the scenario cards. Gather data from your friends about the scenario. Find the mean from the data.

**Make Your Own Scenario:** Write a scenario card that is meaningful to you and your friends. Add it to the scenario card deck.

**Helpful Hints:**

- Think about what distribution of data points will “balance” around the target mean.
- Suppose there are \_\_\_ families and the average number of pets in a family is \_\_\_. Here are some possible ways to represent this scenario:
  - The number line shows the number of pets in a family. Each X in the figure represents a family with that many pets. For example, each X over the 4 represents a family that has 4 pets.



- Each X represents a pet in families A, B, C, and so on. For example, each X over the letter C represents one of the pets owned by family C.

	X					X		X
	X		X			X		X
	X	X	X			X		X
	X	X	X	X		X	X	X
	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
A	B	C	D	E	F	G	H	I

- For each of the examples above, find the number of pets each family must have in order for all families to have the same number of pets. Share your thinking.