

Space Surveys and Falling Stars

Target Standard Data Analysis and Probability

- Pose questions and gather data about themselves and their surroundings
- Sort and classify objects according to their attributes and organize data about the objects
- Represent data using concrete objects, pictures, and graphs
- Describe parts of the data and the set of data as a whole to determine what the data show
- Discuss events related to students' experiences as likely or unlikely

Prior Knowledge

- Kindergarten and 1st grade: counting, using tally marks for surveys
- 2nd grade: data collection, sorting, grouping comparison

Teaching Plan

Materials

Space Surveys activity sheets
Dice activity sheet
Scissors
Crayons/markers
Tape
Skittles® candy (one to two bags per class)

Implementation

Kindergarten and 1st grade

Tell the students that they will be conducting **Space Surveys**. They are to ask one (and only one) question to each person in their group. The possible questions are:

1. Who is your favorite space alien?
2. Which spaceship do you like best?
3. What is your favorite space pet?
4. What planet would you like to visit?
5. Which is your favorite star?
6. Who is your favorite NASA Astronaut?

Arrange the students into groups of six. Give each student one of the enclosed **Space Survey** activity sheets and a clipboard for the sheet. Have them ask their question to each member of their group. Have them represent the data with tally marks, children's names, etc. You may want to discuss with them before they begin how they should make sure they survey everyone in their group **only once**.

Teacher Questions:

1. How many people did you survey?
2. How did you decide (or how should you have decided) to survey everyone exactly once?
3. What were your results for (choose survey question 1-6, go from group to group).
4. Do you think you would get the same results if you surveyed a) your group again? b) another group? c) another class? b) your family?

As a possible extension, a bar graph could be created representing student answers to the questions.

2nd Grade: Falling Stars

The materials needed for this activity are scissors, tape, color crayons or markers, and one or two large bags of Skittles® candy per class. (Each group of 4 will need approximately 50 Skittles.)

1. Place the students into groups of roughly 4 students each. Pass out the dice sheets (one per student), and have them color, cut out, and create the dice cubes.
2. Give each group roughly 50-60 Skittles®. Each group should receive exactly the same number of each color of Skittles®, so roughly 10-12 of each color for each group.
3. Explain to the students that the Skittles® represent falling stars (that's what the "S" stands for)...and they will be able to EAT their candy falling stars! But, they must use their dice to decide which Skittles they will eat first.

Before they can start, have them sort stars into the separate colors and ask the following:

Teacher Questions:

1. How many of each color do you have?
2. Which color of star will disappear (be entirely eaten) first? Which color will disappear second, third, etc.? Why do you believe this?

Pass out the **Dice** activity sheet to each group and remind the students they must record which color star disappears first, second, third, fourth, and fifth.

The rules of the game are as follows: (you should model this first)

1. Determine which student should go first in each group. That student will roll his/her dice. The colors that appear face up on the dice represent the colors of the two stars they get to eat. The student removes these two color stars, and the next student (to the right) will roll his/her dice, and continue the game.
2. Once a color completely disappears, the student that ate the last star of that color can write the name of that color on the activity sheet in the correct blank. For the rest of the game, if a student rolls that color (or any other color that has disappeared) they don't eat a star (or stars)!
3. Continue until all stars have disappeared.

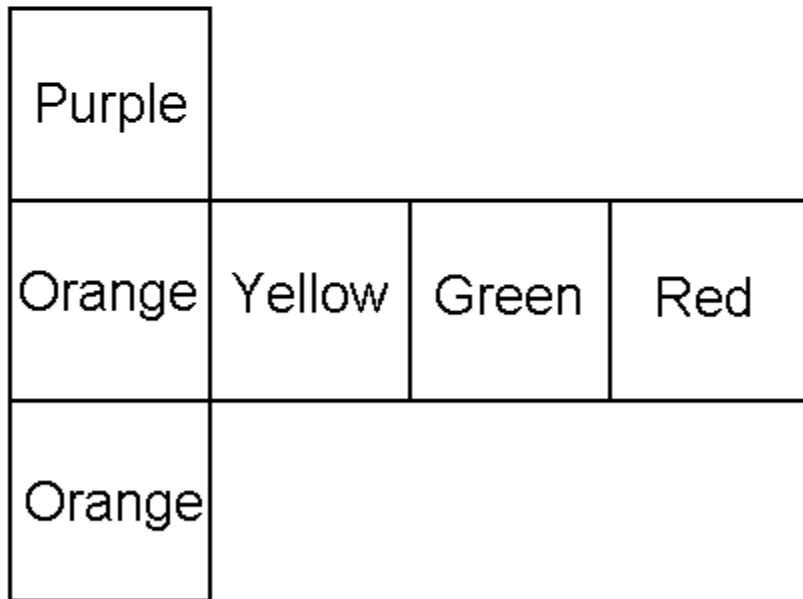
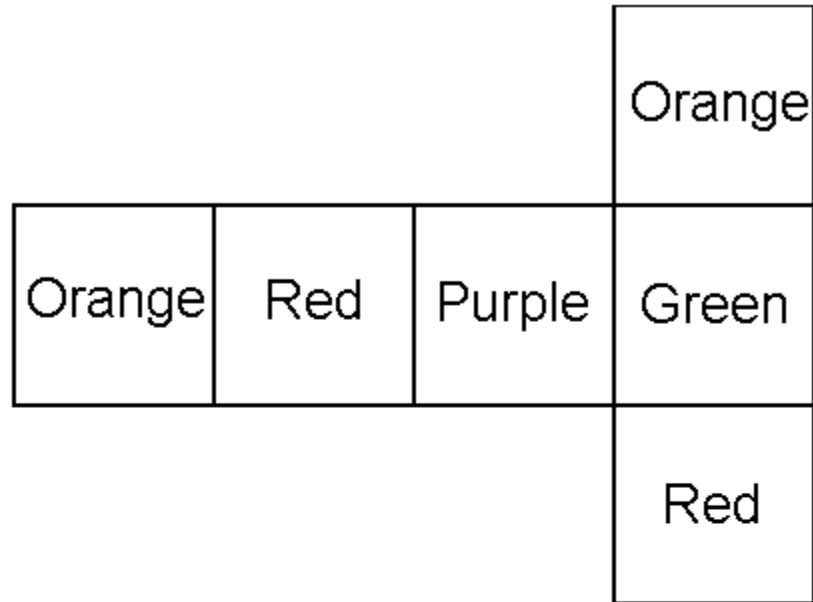
Ask each group the order of the colors of the disappearing stars. Record this information on the board so all students can see it.

Teacher Questions:

1. Did every group have the same results? Why do you think this happened?
2. Which color of star disappeared first most often? Why do you think that happened?
3. Which color of star disappeared last most often? Why do you think that happened?
4. How likely is it that purple will be eaten first if you did it again?
5. If you were a star, what color would you want to be? Why?
6. If you were a star, what color would you **NOT** want to be? Why?
7. How did your experiment compare with your guess?
8. If we did this activity again, would the results be exactly the same, almost the same, or completely different? Why do you think this?

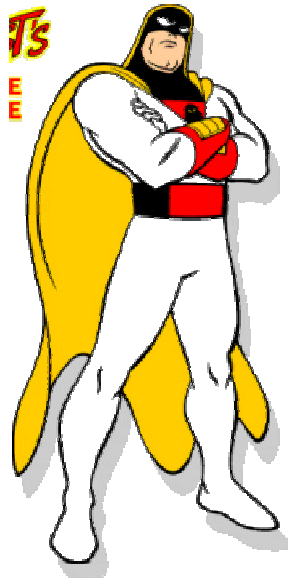


Teacher Note: Falling stars, or meteors in reality are not stars at all. Rather, they are small pieces of rock that collide with Earth and burn up due to friction while descending through the atmosphere.

Dice



Name:

Who is your favorite space alien?

 <p>1. Space Ghost</p>	 <p>2. Marvin</p>	 <p>3. Wicket</p>

Name:

What space ship do you like best?



1. Viking



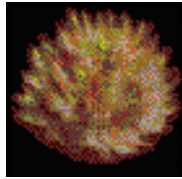
2. Apollo



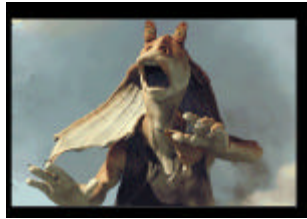
3. Space Shuttle

Name:

Who is your favorite space pet?



1. Tribble



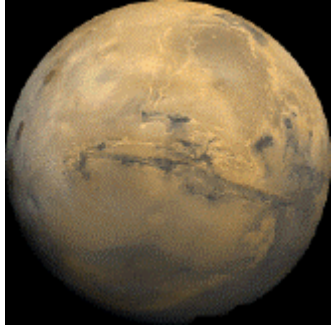
2. Jar Jar Binks



3. Astro

Name:

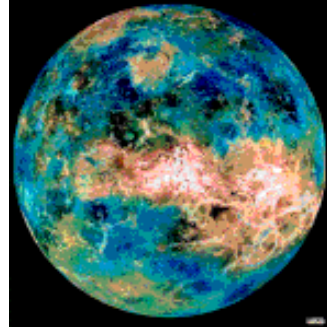
What planet would you like to visit most?



1. Mars



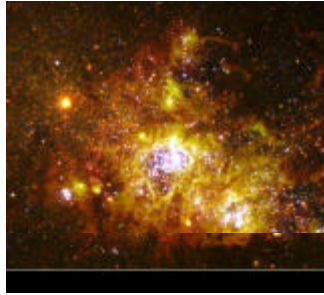
2. Jupiter



3. Venus

Name:

What is your favorite star?



1. Baby Stars



2. The Sun



3. Old Stars

Name:

Who is your favorite NASA Astronaut?



1. Neil Armstrong



2. Sally Ride



3. John Glenn