

Designing, Conducting, and Interpreting a Survey using Venn Diagrams

Introductory InspireData Lesson(s) for Third Graders

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1. Begin by asking students to guess the number of students in the class that have brown hair and have at least two siblings. Let the students know that they will begin exploring a piece of software that will help them to find the exact answer to that question and many, many others.
2. Let the students know that they will be designing, conducting, and then interpreting a survey using InspireData.
3. From the **Starter** screen, open a **New** database and create some fields such as the following: Name, Gender, Age, Hair Color, Number of Siblings, and Likes to Read. Define each field as a **Text**, **Number**, or **True/False** field as appropriate. Set limits on entries by validating the fields Gender and Hair Color. For Gender use the gender predefined validation list to constrain choices to male and female. Decide (with input from the class) the choices that will be offered for Hair Color and validate a custom list.
4. Using student input, create additional fields. (Suggestions for additional fields include the following: Number of Pets, Favorite Month, Favorite Day of the Week, Favorite Month of the Year, Favorite Season, Favorite Continent, Favorite Country other than the US, Likes to Swim, Likes Broccoli, Went on an Airplane this Summer, etc.)
5. Select **Edit Survey** from the **Table** menu and set up the survey so that the student respondents will see a question or prompt. Enter a title and invitation text. To publish **e-Survey** select **Publish e-Survey** from the **Table** menu. (Be sure to record the Survey ID.)
6. Have each student respond to the **e-Survey**.
7. Open the database containing the compiled survey data, select the **Switch to Plot View** icon in the upper left-hand corner of the screen, and lead a whole-class demonstration in creating and interpreting first single- and then multiple-loop Venn diagrams. The demonstration should include the following: changing the field, operator, and value of a constraint; using the notes area; and capturing a slide. Be sure to model how conclusions can be drawn based on the different data.
8. Have the students work independently or in pairs to create different 2-loop and 3-loop Venn diagrams. Have the students use the **Notes Area** to record a description of each of the sections on the diagram and then **Capture** the slide.
9. Discuss how many probability questions can be answered using Venn diagrams. Demonstrate questions such as, "If all student names were put into a bucket and one was pulled at random, what is the probability that the student:
 - a. has two siblings?
 - b. is female and has red hair?
 - c. does not like the continent of Australia best?
 - d. has more than 3 siblings and likes to swim?
 - e. has fewer than 2 pets, no siblings, and likes summer best?"

10. Provide additional questions similar to those above for the students to respond to individually or in pairs. Have students record a complete sentence in the **Notes Area** that will answer the probability question and then **Capture** the slide.
11. Have students generate a couple of their own probability questions: at least one answered with a 1-loop Venn diagram, at least one answered with a 2-loop Venn diagram, and at least one answered with a 3-loop Venn diagram. Have students create Venn diagrams to answer their peers' questions, use the **Notes Area** to record the probability, and then **Capture** the slide.
12. As a class create a Venn diagram that will answer the initial question posed to the students in Step 1. Find the probability of having brown hair and at least two siblings. Compare the original estimates to the actual results.