

Venn Diagrams

Lesson Plan

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Goal: To learn how to create Venn diagrams and use them in problem solving.

Grade and Course: 8th grade

KY Standards: MA 08-4.1.1, MA 08-4.1.4

Objectives:

1. Students will be able to collect data and display it in a Venn diagram.
2. Students will be able to make inferences and conclusions from the data in a Venn diagram.
3. Students will be able to locate the correct region on a Venn diagram representing a specific piece of data.

Resources/materials needed: worksheets

Description of Plan: First, go through the lecture notes defining the basic terms associated with Venn diagrams. I also had the students classify themselves on a diagram on the board using hair and eye color. Then, work through the worksheet with the classroom, allowing for discussion and engaging as many students as possible.

Lesson Source: original

Instructional Mode: Interactive lecture and worksheet

Date Given: September 23, 2008 **Estimated Time:** Two 45 minute class periods

Date Submitted to Algebra3: February 25, 2009

Name _____

Date _____

VENN DIAGRAMS

Use a Venn diagram for each problem to answer the question. Draw the diagrams on your own paper and staple to this to turn in.

1. In a class of 50 students, 18 take Chorus, 26 take Band, and 2 take both Chorus and Band. Draw a Venn diagram and show how many students in the class are not enrolled in either Chorus or Band?

2. In a school of 320 students, 85 students are in the band, 200 students are on sports teams, and 60 students participate in both activities. How many students are involved in either band or sports? How many students **are not** involved in either sports or band?

3. A veterinarian surveys 26 of his patrons. He discovers that 14 have dogs, 10 have cats, and 5 have fish. Four have dogs and cats, 3 have dogs and fish, and one has a cat and fish. If no one has all three kinds of pets, how many patrons have none of these pets?

4. A guidance counselor is planning schedules for 30 students. Sixteen students say they want to take French, 16 want to take Spanish, and 11 want to take Latin. Five say they want to take both French and Latin, and of these, 3 wanted to take Spanish as well. Five want only Latin, and 8 want only Spanish. How many students want Spanish and Latin? How many students want French and Spanish? How many students want French only? Of the students who are taking French, how many also want Spanish?

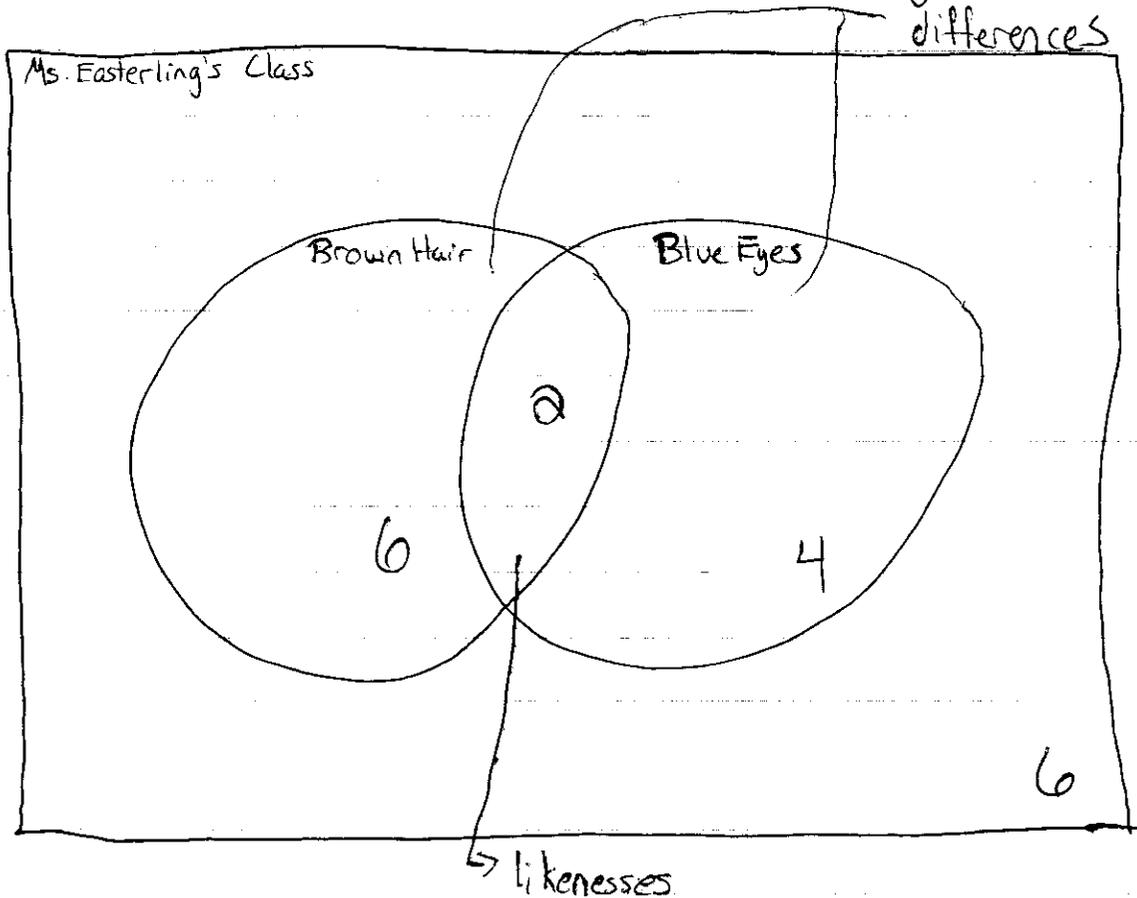
5. Twenty-four dogs are in a kennel. Twelve of the dogs are black, six of the dogs have short tails, and fifteen of the dogs have long hair. There is only one dog that is black with a short tail and long hair. Two of the dogs are black with short tails and do not have long hair. Two of the dogs have short tails and long hair but are not black. All of the dogs in the kennel have at least one of the mentioned characteristics. Draw a Venn diagram and show how many dogs are black with long hair but do not have short tails.

Venn Diagrams

Venn diagram - a graph made of two or more circles contained in a universe that is used to show the relationships between sets

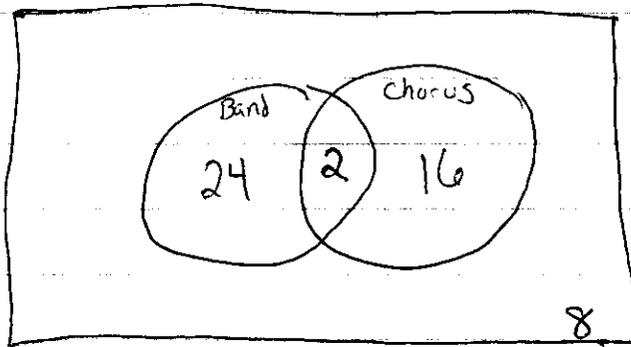
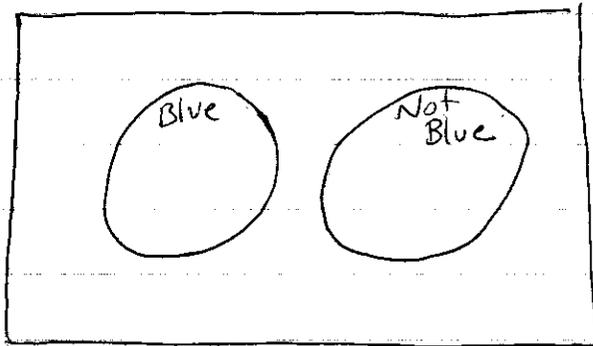
set - a collection of things or objects

universe - the collection of all the things that can be members of the sets in a Venn diagram



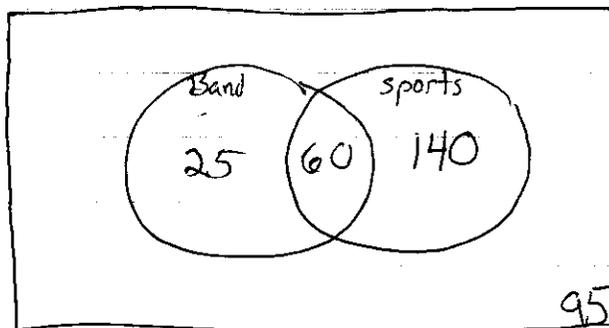
intersection - what the sets have in common

disjoint sets - sets that have nothing in common



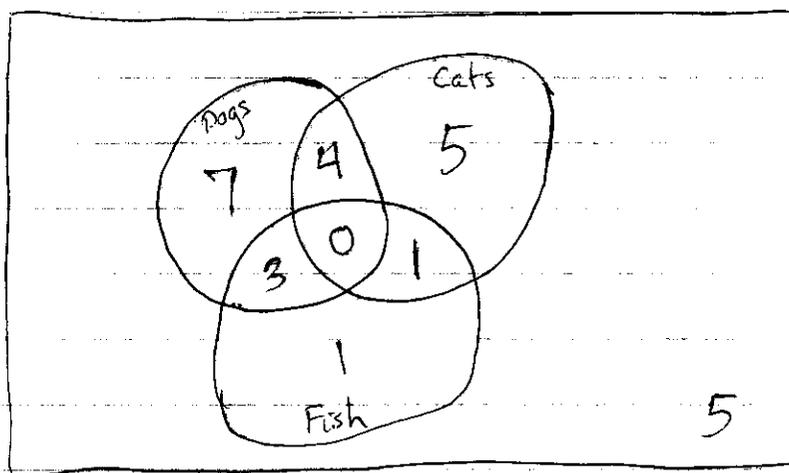
$$\begin{array}{r} 24 \\ 2 \\ + 16 \\ \hline 42 \end{array} \qquad \begin{array}{r} 50 \\ - 42 \\ \hline 8 \end{array}$$

① 8

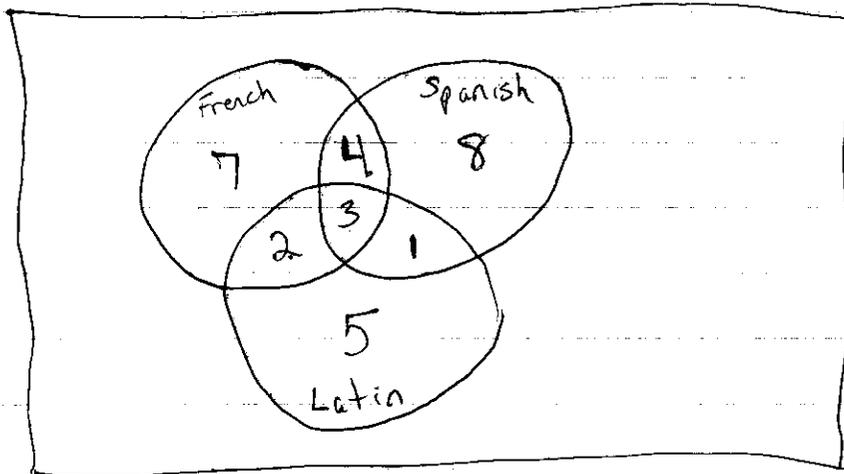


$$\begin{array}{r} 25 \\ 60 \\ + 140 \\ \hline 225 \end{array} \qquad \begin{array}{r} 320 \\ - 225 \\ \hline 95 \end{array}$$

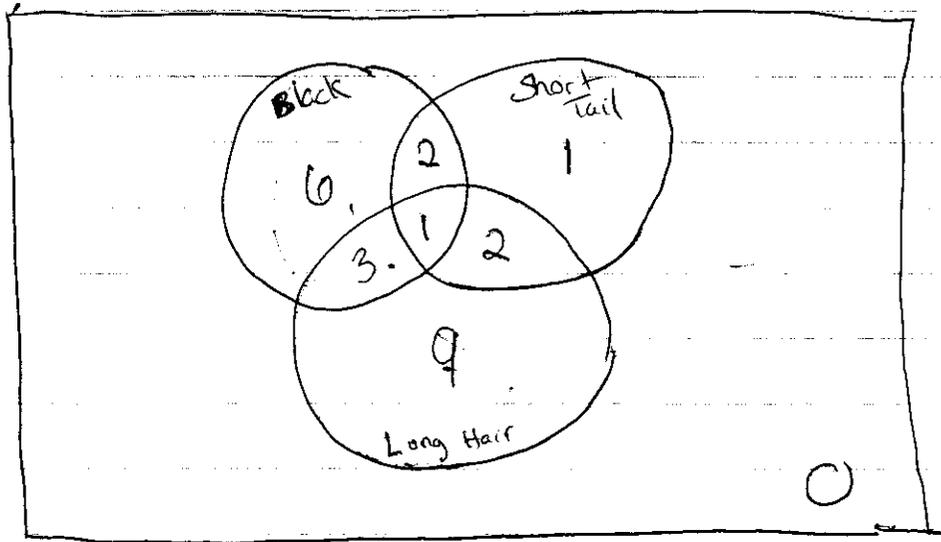
② 225 students are in band or play sports
95 do not do either



③ 5 patrons have none of these pets



- ④ 1 student wants Spanish and Latin
- 4 students want French and Spanish
- 7 students want French only
- 7 French students also want Spanish



⑤ 3 are black with long hair but do not have short tails