

Problem Set Venn Part 2

1. T.E.A.M.

There are 23 students in a math club. Eighteen are taking math and 15 are taking science. Six students are taking math but not science. How many are taking neither subject?

2. SPRING ROSTER

Frank Robinson, former manager of the Texas Rangers baseball team, looked over his roster at the beginning of spring training one season. He noticed the following facts. Every outfielder is a switch-hitter. Half of all infielders are switch-hitters. Half of all switch-hitters are outfielders. There are 14 infielders and 8 outfielders. No infielder is an outfielder. How many switch-hitters are neither outfielders nor infielders?

3. FRESHMAN

Ten students are taking neither band nor Spanish. Five students are taking neither algebra nor Spanish. Seven students are taking neither algebra nor band. All of the students are taking at least one of the three subjects. No student is taking all three subjects. Twenty-one students are not taking band. Seventeen students are taking algebra. Seventeen students are taking Spanish. How many students are taking band?

4. TSU MUSIC DEPARTMENT

The senior class of Tarleton's Music Department has 100 students. You know that 25 are in the chorus, 40 are in the orchestra, and 10 are in both groups. How many students are not members of either group?

5. HAMBURGERS AND HOT DOGS

Of 900 people interviewed, 254 said they liked only hamburgers, 461 said they liked only hot dogs, and 140 people said they liked both hamburgers and hot dogs. How many of the people interviewed didn't like either?

6. TEACHER CANDIDATES

At State U, 43 students are working toward K—8 teaching credentials in the new undergraduate subject-area-emphasis program. Students can choose to emphasize one or two subjects: 18 students are taking the math emphasis courses, 15 are emphasizing science, and 6 are taking the math emphasis but not the science emphasis. How many are emphasizing neither math nor science?

7. THE FIELD TRIPS

The Silversnake class, the Jellyfish class, and the Radical Dog-Star class (kindergartners and first- and second-graders) were talking about their favorite field trips during the school year. One of the teachers, Ms. Burke, turned the discussion into a math lesson, and the students conducted a survey. Each child wrote down on paper which trip was his or her favorite. (Note that many children named more than one field trip as their favorite.) The survey revealed that 52 wrote down the trip to the river, 50 indicated the trip to the police station, and 44 included the trip to the hardware store. The police station and the river were chosen on 19 papers, 32 papers included both the river and the hardware store, and 25 children wrote down the police station and the hardware store on their papers. Ms. Burke counted 17 papers that included all three and one that did not list any of the three trips. How many children were surveyed?

8. NO PETS ALLOWED

The new owner of a student apartment building near campus was considering establishing a No Pets rule. He decided to survey the current residents to see how many owned pets and what kind of pets they owned. The building had 58 units. The previous owner had not allowed cats or dogs or other mammals, but the residents reported a variety of other pets: 30 owned birds; 38 owned fish; and 30 owned frogs, lizards, or snakes. Of those who had fish, 19 also had a frog, lizard, or

snake. The owner found that 18 had both fish and birds and 15 kept a bird and a frog, lizard, or snake. Lastly, he determined that 10 owned fish, a bird, and a frog, lizard, or snake. How many residents could have reported no pets?

9. FLU AND YOU

Influenza is a serious disease causing thousands of deaths each year, mostly among the elderly. Influenza symptoms include fever, cough, sore throat, headache, and muscle aches. The Centers for Disease Control and Prevention (CDC) recommends that people in the following groups receive an annual flu shot:

- Seniors, defined by the CDC as everyone 50 years of age or older
- Anyone with a chronic disease or long-term health problem, for example, asthma, heart disease, kidney disease, or diabetes
- People considered “high risk” because of their professions, such as doctors, health-care workers, students, or teachers

Hospitals and other health agencies sponsor annual flu vaccination clinics. One agency reported the following data for all the people vaccinated during one year:

- 98 people who were vaccinated were seniors.
- 80 people reported a chronic disease or long-term health problem, such as heart or kidney disease.
- 6 of the seniors who reported a chronic disease were still working in their high-risk professions.
- Of those who reported having a chronic disease, 52 were seniors.
- Of the 60 people who worked in high-risk professions, 18 were older than 50.
- 8 of the people vaccinated were younger than 50 and did not work in high-risk professions but reported having a chronic disease.

- a. How many people, total, received flu shots?
- b. How many people in high-risk professions also had a chronic medical condition?
- c. What percentage of seniors did not report a chronic medical condition?