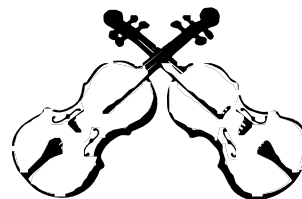


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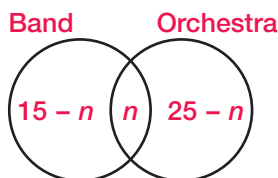
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A Venn diagram is a way to represent relationships among sets of numbers.

There are 32 seventh graders in the orchestra and the band. Of them, 15 are in the band and 25 are in the orchestra. How many students are in both the band and the orchestra?



Let n represent the number of students who are in both groups.



Then write an equation to solve the problem.

$$(15 - n) + n + (25 - n) = 32$$

$$40 - 2n + n = 32$$

$$40 - n = 32$$

$$n = 8$$

There are 8 students who are in both.

Draw a Venn diagram to represent each problem. Then write an equation to solve it.

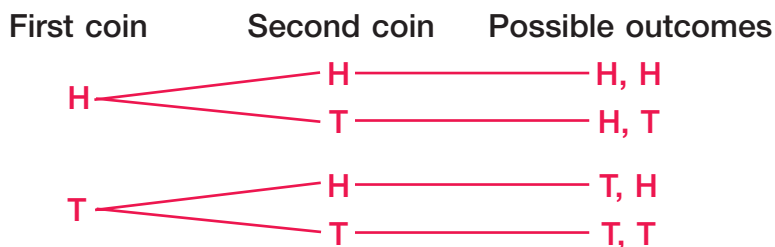
1. There are a total of 11 people in a jazz band and a rock band. The jazz band has 7 musicians. The rock band has 5 musicians. How many people belong to both bands?

2. Mr. Connors gives flute and clarinet lessons. He has 45 students. If 29 students study flute and 30 study clarinet, how many students take lessons in both instruments?

3. Ms. Wagner teaches 50 voice students. All of them either gave a recital or entered a contest. If 36 gave recitals and 18 entered contests, how many did both?

4. The 100 students in a music class had to do a special project. It could be writing a concert report or giving a performance. There were 62 reports and 58 performances. How many students did both?

A tree diagram can show all the possible outcomes in an event. These outcomes are called the sample space.



Make a tree diagram to find the sample space for each event.

1. Joelle has two pairs of shorts, black ones and blue. She has three blouses, white, red, and tan. How many possible outfits can she make?

2. For lunch Greg can have a ham or turkey sandwich, potato salad or chips, and pie or cake. How many different lunches are possible?

3. A souvenir stand stocks T-shirts in small, medium, and large sizes. The T-shirts may be red or green and have black or white printing on them. How many different T-shirts does the souvenir stand have?

4. Tom wants to read until 9 o'clock and then watch a movie. He can read a book, a magazine, or a comic book. The movies on TV at 9 o'clock include a mystery, a thriller, a comedy, and a science fiction film. How many different ways can Tom spend the evening?