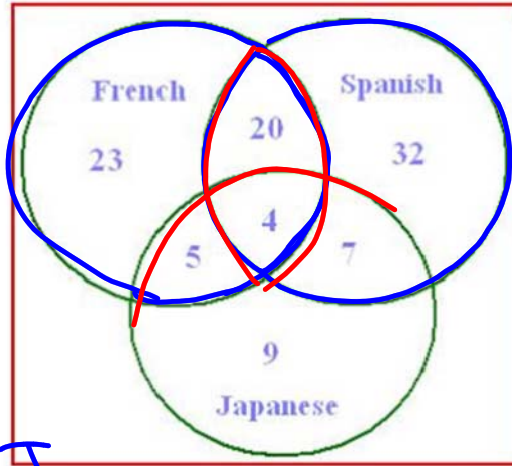


MATH 30 - 2

1.4 APPLICATIONS OF SET THEORY WORKSHEET

1. Kroner asked 100 adults whether they had studied French, Spanish or Japanese in school. According to the Venn diagram, how many had studied

- a. Spanish? **63**
- b. Spanish but not French? **39** *S\F*
- c. Japanese but not French? **16** *J\F*
- d. French and Spanish? **24** *F\N*
- e. French or Spanish? **91** *F\U*
- f. French and Spanish but not Japanese? **20** *(F\N)\J*



2. Sarah conducted a survey of teen gaming preferences. Here are her results:

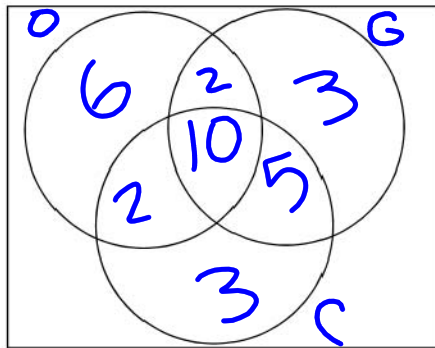
- 20 teens play online games
- 20 play on a game console
- 20 play games on their cellphone.

Sarah surveyed only 31 teens. How can this be?

*there's intersections being counted more than once*

There is not enough information above to have one correct solution. There are many. Complete the below Venn diagram showing one possible solution to Sarah's survey.

$n(U) = 31$



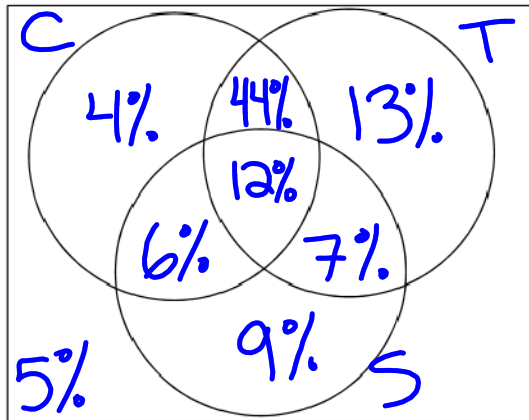
$\emptyset \quad \{ \}$

MATH 30 - 2

INVESTIGATE the Math

Rachel surveyed Grade 12 students about how they communicated with friends over the previous week:

- 66% called on a cellphone
- 76% texted
- 34% used a social networking site
- 56% called and texted
- 18% called and networked
- 19% texted and networked
- 12% did all three



Show this relationship in the Venn diagram.

What percent of students didn't use any form of communication?

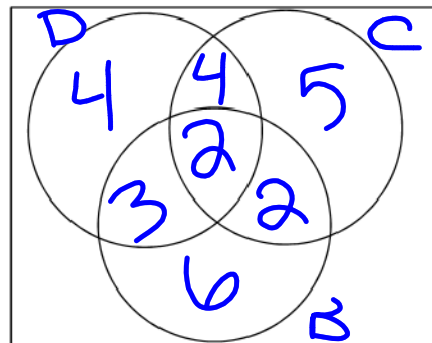
5%

Example 1 (Page 40)

Use the following clues below to determine the missing information. Twenty eight children with pets were asked what kind they have.

- 13 have a dog
- 13 have a cat
- 13 have a bird
- 4 have a dog and a cat
- 3 have a dog and a bird
- 2 have a cat and a bird

and not bird  
and not cat  
and not dog



1. How many children have all THREE: a dog, cat and a bird?

$$39 - x = 28$$

$$x = 11$$

2

2. How many children only have ONE pet?

15

MATH 30 - 2

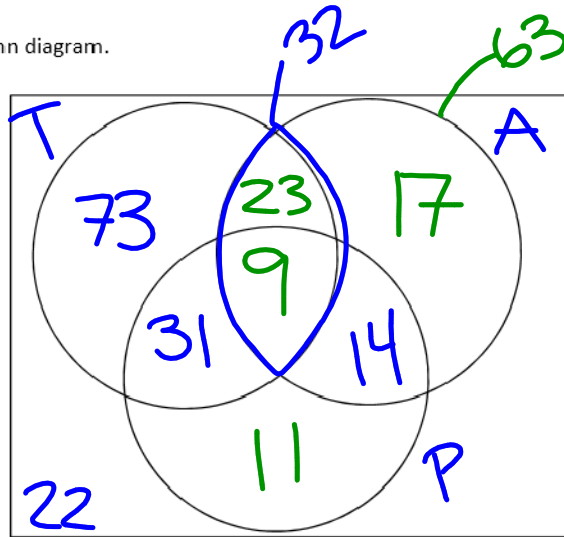
Example 2 (from: <http://www.math.tamu.edu/~kahlig/venn/toons/toons.html>)

A study was made of 200 students to determine what TV shows they watch.

- / 22 students don't watch these cartoons.
- / 73 students watch only Tiny Toons. no intersection
- / 136 students watch Tiny Toons.
- / 14 students watch only Animaniacs and Pinky & the Brain.
- / 31 students watch only Tiny Toons and Pinky & the Brain.
- / 63 students watch Animaniacs.
- / 135 students do not watch Pinky & the Brain (for some completely incomprehensible reason).

Use the above information to complete this Venn diagram.

$n(U) = 200$



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 MATH 30 - 2
 

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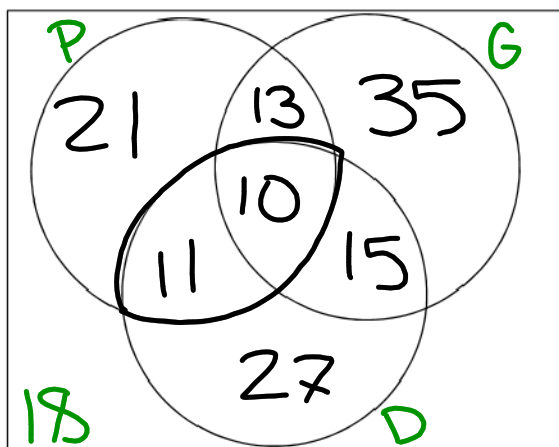
Example 3 (from: <http://www.math.tamu.edu/~kahlig/venn/concert/concert.html>)

Fill in the Venn diagram that would represent this data.

150 people at a Van Halen concert were asked if they knew how to play piano, drums or guitar.

-  18 people could play none of these instruments.
-  10 people could play all three of these instruments.
- 77 people could play drums or guitar but could not play piano.
-  73 people could play guitar.
-  49 people could play at least two of these instruments. 
-  13 people could play piano and guitar but could not play drums.
-  21 people could play piano and drums.

$$n(U) = 150$$



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