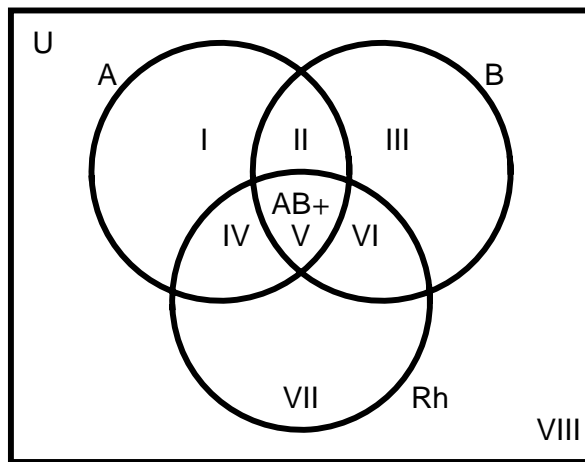


## Worksheet 12.5: Applications of Sets II

Blood Types: Human blood is classified (typed) according to the presence or absence of the specific antigens A, B, and Rh in the red blood cells. Antigens are highly specified proteins and carbohydrates that will trigger the production of antibodies in the blood to fight infection. Blood lacking the Rh antigen is labeled negative and blood lacking both A and B antigens is type O. Sketch a Venn diagram with three sets A, B, and Rh and place each type of blood listed in the proper region. A person has only one type of blood. Region V, the intersection of all three sets, contains blood type AB+ (Do you see why?) Finish the Venn diagram below.



1. Use the Venn diagram above as a guide and draw a new Venn diagram with the information given below to answer the questions.

In a recent blood drive, the following data were recorded

- 243 had the A antigen
- 93 had the B antigen
- 325 had the Rh antigen
- 28 had both the A and B antigens
- 80 had both the B and Rh antigens
- 210 had both the A and Rh antigens
- 25 had all three antigens
- 33 had none of the antigens

How many donors had

- a) A+ blood?
- b) B- blood?
- c) AB+ blood?
- d) How many donors are represented in the blood drive?

2. At a rodeo, 27 contestants entered at least one of the following events: calf roping, steer wrestling, bronco riding. There were 8 who roped cows but did not wrestle steers. There were 11 who wrestled steers but did not rope cows. Of the 11 who entered the bronco riding event, 3 entered only that event. There were 6 who entered only the calf roping event. One contestant entered all three events.

How many contestants entered

- a) only the steer-wrestling event?
- b) only one event?
- c) the steer-wrestling or the calf-roping or the bronco riding events?
- d) the calf-roping and the bronco-riding events, or the steer-wrestling event?

3. A survey of 500 farmers in a midwestern state showed the following.

125 grew only wheat.

110 grew only corn.

90 grew only oats.

200 grew wheat.

60 grew wheat and corn.

50 grew wheat and oats.

180 grew corn.

Find the number who

- a) grew at least one of the three.
- b) grew all three.
- c) did not grow any of the three.
- d) grew exactly two of the three.