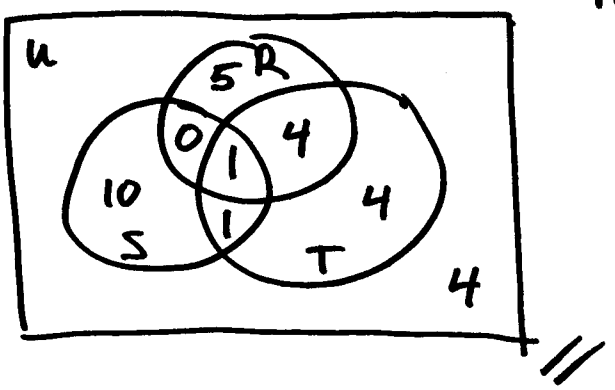
MATH 110 – QUIZ 3 – 14 SEPTEMBER 2006

Answer all of the following questions in the space provided.

1. (4 pts.) Suppose that $n(U) = 29$, $n(R) = 10$, $n(S) = 12$, $n(T) = 10$, $n(S \cup T) = 20$, $n(R \cap T) = 5$, $n(S \cap R) = 1$ and $n(S \cap R \cap T) = 1$. Draw an appropriate Venn diagram and use the given data to determine the number of elements in each basic region.



$n(S \cup T) = n(S) + n(T) - n(S \cap T)$

$20 = 12 + 10 - n(S \cap T)$

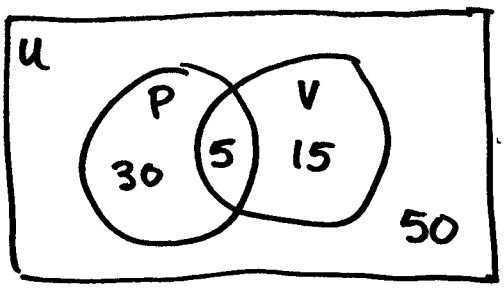
$20 = 22 - n(S \cap T)$

$\therefore n(S \cap T) = 2$ //

2. (3 pts. each) A group of applicants for training in air–traffic control consisted of 35 pilots, 20 veterans, 30 pilots who were not veterans and 50 people who were neither pilots nor veterans.

(a) Use this data to complete a Venn diagram displaying the characteristics of the applicants.

P = {pilots} V = {veterans} U = {all applicants}



(b) How many applicants were there all together?

30 + 5 + 15 + 50 = 100 //