Math 1300 Fall 2013
Quiz 4
Friday October 11 2013
No Work = No Credit

Name: _____ Student Number: _____

Signature: _____

Instructor: _____ Section: _____

Instructions: Answer all questions and show all of your work.

Problem	Points	Student's Score
1	2	
2	2	
3	6	
Total:	10	

...show all work...show all work...show all work...show all work...show all work...show all work...

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1. (2 points) Suppose $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$, $S = \{2, 4, 6, 8\}$ and $T = \{1, 2, 3, 4\}$. Find $S' \cup T'$.

Solution:

$$S' \cup T' = (S \cap T)'$$

$$S \cap T = \{2, 4\}$$

$$S' \cup T' = (S \cap T)' = \boxed{\{1, 3, 5, 6, 7, 8\}}$$

2. (2 points) Suppose S and T are subsets of U with $n(U) = 27$, $n(S \cup T) = 15$, $n(S) = 11$ and $n(T') = 15$. Find $n(S \cap T)$.

Solution:

$$n(T') = 15 \text{ and } n(U) = 27 \longrightarrow n(T) = 12$$

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

$$15 = 11 + 12 - n(S \cap T)$$

$$\boxed{n(S \cap T) = 8}$$

...show all work...show all work...show all work...show all work...show all work...show all work...

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3. A store that sells smart phones did heavy advertising to promote a sale. Store management surveyed 400 incoming customers to determine where they learned about the sale and found the following.

   180 learned about the sale via Internet advertising

   190 learned about the sale via Television advertising

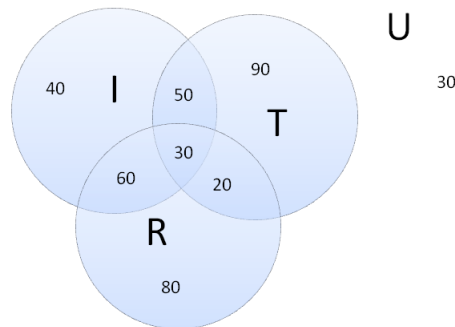   190 learned about the sale via Radio advertising

   80 learned about the sale via Internet and Television advertising

   90 learned about the sale via Internet and Radio advertising

   50 learned about the sale via Television and Radio advertising

   30 learned about the sale via all three forms of advertising

   (a) (2 points) Draw a Venn diagram which represents the data in the problem.

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(b) (1 point) How many people learned about the sale exclusively from Radio?

> **Solution:** $\boxed{80}$

(c) (1 point) How many people learned about the sale from the Internet or Television but not from Radio?

> **Solution:** $\boxed{180}$

(d) (1 point) How many people learned about the sale from at least two of the three media?

> **Solution:** $\boxed{160}$

(e) (1 point) How many people learned about the sale from the Internet or Radio but not both?

> **Solution:** $\boxed{190}$