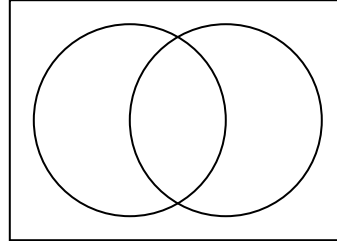


**Review for test 4:**

1. Let E and F be two events of an experiment,  $P(E) = .3$  and  $P(F) = .2$ , and  $P(E \cup F) = .35$ . Find the following probabilities:



a.  $P(E \cap F)$

b.  $P(E^c \cap F)$

c.  $P(E | F)$

d.  $P(F | E^c)$

2. Companies A, B, and C produce 10%, 40% and 50% respectively of the Model II computer. It has been found 1 % from A, 1½ % from B and 2% from C are found to be defective. Find the following probabilities:

- a. Find the probability of a computer being defective.
- b. Find the probability of a computer being defective given it came from company C.
- c. If it is found that a computer is defective, find the probability it came from company A.

3. The odds for rain tomorrow are 2:3. What is the probability of it not raining?

4. The probability of a horse winning is .4. What are the odds of the horse winning?

5. One of 2 bands is chosen at random with equally likely probability then a band member is chosen at random from the chosen band. Band one has 30 boys and 20 girls. Band two has 20 boys and 25 girls. Find the indicated probabilities:

- a. What is the probability that band two was chosen, given a boy was chosen?
- b. What is the probability that a girl was chosen?
- c. What is the probability a boy was chosen given band one was chosen?

6. A 45 point quiz was given to a history class. The scores are listed below with the corresponding probability. Find the average for this class.

X	P(X=x)
30	.15
32	.225
33	.175
37	.3
42	.1

7. Given the following probability distribution with an expected value of 6.7. Find the standard deviation.

X	P(X=x)
3	.4
5	.2
9	.1
12	.3

8. The heights of 4,000 women who participate in a recent survey have a mean of 64.5 inches and a standard deviation of 2.5. Use Chebychev's Inequality to estimate the probability that a woman chosen at random height will be between 60.5 and 68.5.
9. Consider the binomial experiment. The probability that cell phone is defective is .11. If a sample of 6 cell phones is selected at random.
- What is the probability at least two are defective?
  - What is the mean or expected value?
  - What is the Variance and standard deviation?
10. Consider the following binomial experiment. The probability that a person will get a cold this winter is .55. A sample of 10 people were chosen random.
- Find the probability that is at least 2 people will get a cold.
  - Find the probability that is exactly five people will get a cold
11. Let  $Z$  be a standard normal random variable. Find the following probabilities:
- $P(Z < -1.47)$
  - $P(Z > -1.87)$
  - $P(1.1 < Z < 2.13)$
  - $P(Z < z) = .8264$

e.  $P(Z > z) = .8665$

f.  $P(-z < Z < z) = .8690$

12. The heights of award winning tomatoes plants were normally distributive with a mean of 10 inches and a standard deviation of 2 inches. Find the probability that a plant selected at random measures between 8 and 12.
13. The test scores on the last exam for the students in Finite were normally distributive with a mean 72 and a standard deviation of 10. What is the probability that a student scored below a 60?
14. Use the normal distribution to approximate the binomial distribution. A flu vaccine has a probability of 20% of not preventing a person who is inoculated from getting the flu. A county health office inoculated 134 people. Find the probability that fewer than 20 will get the flu.