Name _____ Period _____ Business Statistics FALL MIDTERM PRACTICE

1. Write the multiplication rule on the line below.

a) $P(A \cap B) =$ _____

b) In order to use the multiplication rule, event A and event B must be _____.

2. Write the formula for compound probability.

$P(A \cup B) =$ _____

3. What is the term used to describe all of the outcomes possible? S_____ S_____.

4. The probability of any event can never be more than _____ or less than _____.

5. The sum of the probabilities for all outcomes in a sample set is always _____.

6. TRUE or FALSE: Events are the possible results for any given outcome.

7. What probability symbol can be used in place of the word "and"? _____

8. What probability symbol can be used in place of the word "or"? _____

#9-15. Mega Clocks sells large clocks for industrial use throughout the world. The number of clocks sold in a given day is normally distributed with a mean of 500 and a standard deviation of 25.	3a.
9. Find the probability that the store sells fewer than 477 clocks on any single day?	3b.
10. The sales vice president of Mega Clocks gets a bonus if more than 535 clocks are sold. What is the probability that the store manager will earn the bonus on any single day?	3c.
11. Find the probability Mega Clocks sells an average of 498 or more clocks in a 5-day work week.	3d.
12. Find the proportion of days that Mega Store sells between 480 and 510 clocks on any single day?	3e.
13. The sales manager of Mega Clocks will be fired if mean sales are less than 494 bottles in the next 30-day month. What is the probability that the manager is fired at the end of the next month?	3f.
14. If you randomly select 50 days from Mega Clock's sales reports, what is the probability that the average sales for this period will fall between 499 and 503 bottles?	3g. **DRAW ANSWER ON BACK OF PAGE**
15. Assuming a sample size of 25 days, draw the sampling distribution for Mega Clock's mean sales over that period. Shade the probability: $P(501 < \bar{X} < 505)$	

16. Calculate the expected value of Facebook stock given the following discrete random variables and outcomes.

x **= state of the economy measured in two classes – "recession" or "boom"**
y = another social media site surfaces as competition – "competition" or "no competition" **Both of these variables are independent.**

x	Recession	Boom
$P(x)$	.35	.65

y	Competition	No Competition
$P(y)$	.25	.75

16a. Find $P(Boom \cap Competition) =$ _____

16b. Find $P(Boom \cap No.Competition) =$ _____

16c. Find $P(Recession \cap Competition) =$ _____

16d. Find $P(Recession \cap No.Competition) =$ _____

16e. In calculating Facebook's expected value, consider the following outcomes:

If there is a boom and competition surfaces, Facebook will be worth $30/share.
If there is a boom and no competition surfaces, Facebook will be worth $70/share
If there is a recession and competition surfaces, Facebook will be worth $10/share
If there is a recession and no competition surfaces, Facebook will be worth $40/share

Facebook Expected Value $ _____/share