

Probability/Statistics
Chapter 5 Review A

NAME _____

You may use the attached Binomial Probability Table as needed along with the following formulas:

Mean: $\mu = \sum xP(x)$ Standard Deviation: $\sigma = \sqrt{\sum (x - \mu)^2 p(x)}$

Binomial Probability Distribution: $P(r) = C_{n,r} p^r q^{n-r}$ $\mu = np$ $\sigma = \sqrt{npq}$

Which of the following are continuous variables and which are discrete?

1. Number of golf balls hit into the water on the 7th tee.
2. Time needed to complete tonight's homework.
3. Your weight this morning.

1. _____

2. _____

Laura works as a volunteer at an emergency hot-line. For the last 80 days she recorded the number of calls per evening. In this table, x is the number of calls received and the frequency is the number of evening calls.

3. _____

<i>x</i>	0	1	2	3	4	5	6
frequency	5	10	15	20	30	60	40

5. _____

<i>x</i>	<i>P(x)</i>	<i>xP(x)</i>	<i>x - μ</i>	<i>(x - μ)²</i>	<i>(x - μ)²P(x)</i>
0					
1					
2					
3					
4					
5					
6					

6. _____

7. _____

8. _____

4. Complete the chart.
5. Find the expected number of calls (μ).
6. Find the standard deviation (σ).

9. _____

10. _____

In Summit County 65% of the voter population are Republicans. We want to know what the probability that a random sample 6 out of 10 Summit County voters will contain Republicans.

11. _____

7. What is the value of n?
8. What is the value of p?

12. _____

9. What is the value of q?
10. What is the value of r?

11. What is the probability that exactly 8 are republicans?

12. What is the probability that less than 4 are republicans?

A TV sports commentator claims that 45% of all football injuries are knee related. Assuming that the claim is true, what is the probability that in a game with five reported injuries:

13. all are knee injuries

14. none are knee injuries

15. at least 3 are knee injuries

16. no more than 2 are knee injuries

13. _____

14. _____

15. _____

16. _____

17.

The probability of an adverse reaction to a flue shot is 0.10. Flu shots are given to a group of 6 people. Let r be the number of people who suffer an adverse reaction to the flu shot. $P(r) = C_{n,r} p^r q^{(n-r)}$

r	P(r)
0	
1	
2	
3	
4	
5	
6	

17. List the probability distribution P(r) for r = 0, 1, 2, 3, 4, 5, 6 in a table.

18.

18. Graph this probability distribution using a histogram.

19. Is this graph symmetric or skewed? Explain.

A biologist has found that 40% of all brown bears are infected with trichinosis.

19. _____

20. What is the expected number of infected brown bears in a random sample of 27?

21. If the biologist studied 12 brown bears, what is the standard deviation?

20. _____

21. _____