

1.(1 pt) If x is a binomial random variable, compute $p(x)$ for each of the following cases:

(a) $n = 5, x = 0, p = 0.3$

$p(x) =$ _____

(b) $n = 5, x = 2, p = 0.4$

$p(x) =$ _____

(c) $n = 6, x = 0, p = 0.1$

$p(x) =$ _____

(d) $n = 4, x = 2, p = 0.1$

$p(x) =$ _____

2.(1 pt) The rates of on-time flights for commercial jets are continuously tracked by the U.S. Department of Transportation. Recently, Southwest Air had the best reate with 80 % of its flights arriving on time. A test is conducted by randomly selecting 10 Southwest flights and observing whether they arrive on time.

(a) Find the probability that at least 6 flights arrive late.

(b) Would it be unusual for Southwest to have 5 flights arrive late?

(Enter YES or NO) _____

3.(1 pt) If x is a binomial random variable, compute the mean, the standard deviation, and the variance for each of the following cases:

(a) $n = 5, p = 0.6$

$\mu =$ _____

$\sigma^2 =$ _____

$\sigma =$ _____

(b) $n = 6, p = 0.6$

$\mu =$ _____

$\sigma^2 =$ _____

$\sigma =$ _____

(c) $n = 4, p = 0.8$

$\mu =$ _____

$\sigma^2 =$ _____

$\sigma =$ _____

(d) $n = 5, p = 0.8$

$\mu =$ _____

$\sigma^2 =$ _____

$\sigma =$ _____

4.(1 pt) A quiz consists of 20 multiple-choice questions, each with 4 possible answers. For someone who makes random guesses for all of the answers, find the probability of passing if the minimum passing grade is 60 %.

5.(1 pt) If x is a binomial random variable, compute $P(x)$ for each of the following cases:

(a) $P(x \leq 2), n = 4, p = 0.6$

$P(x) =$ _____

(b) $P(x > 3), n = 6, p = 0.1$

$P(x) =$ _____

(c) $P(x < 2), n = 5, p = 0.8$

$P(x) =$ _____

(d) $P(x \geq 4), n = 6, p = 0.6$

$P(x) =$ _____

6.(1 pt)

The Census Bureau reports that 82% of Americans over the age of 25 are high school graduates. A survey of randomly selected residents of certain county included 1170 who were over the age of 25, and 1010 of them were high school graduates.

(a) Find the mean and standard deviation for the number of high school graduates in groups of 1170 Americans over the age of 25.

Mean = _____

Standard deviation = _____

(b) Is that county result of 1010 unusually high, or low, or neither?

(Enter HIGH or LOW or NEITHER) _____

7.(1 pt) To determine whether or not they have a certain disease, 140 people are to have their blood tested. However, rather than testing each individual separately, it has been decided first to group the people in groups of 10. The blood samples of the 10 people in each group will be pooled and analyzed together. If the test is negative, one test will suffice for the 10 people (we are assuming that the pooled test will be positive if and only if at least one person in the pool has the disease); whereas, if the test is positive each of the 10 people will also be individually tested and, in all, 11 tests will be made on this group. Assume the probability that a person has the disease is 0.04 for all people, independently of each other, and compute the expected number of tests necessary for each group.

answer: _____

8.(1 pt) A man claims to have extrasensory perception. As a test, a fair coin is flipped 26 times, and the man is asked to predict the outcome in advance. He gets 18 out of 26 correct. What is the probability that he would have done at least this well if he had no ESP?
