

**Instructions:** Answer all questions, upload it on Canvas together with lecture notes [Feb 12 to Feb 16 class] by Feb 19th class time!

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

- 1) The random variable  $x$  represents the number of tests that a patient entering a hospital will have along with the corresponding probabilities. Find the mean and standard deviation.

1) A

$x$	0	1	2	3	4
$P(x)$	$\frac{3}{17}$	$\frac{5}{17}$	$\frac{6}{17}$	$\frac{2}{17}$	$\frac{1}{17}$

- ☒ A) mean: 1.59; standard deviation: 1.09  
☐ C) mean: 1.59; standard deviation: 3.71

- ☐ B) mean: 2.52; standard deviation: 1.93  
☐ D) mean: 3.72; standard deviation: 2.52

- 2) In a recent survey, 80% of the community favored building a police substation in their neighborhood. If 15 citizens are chosen, what is the mean number favoring the substation?

2) D

- ☐ A) 15 ☐ B) 8 ☐ C) 10 ☒ D) 12

**SHORT ANSWER.** Write the word or phrase that best completes each statement or answers the question.

- 3) In a recent survey, 69% of the community favored building a police substation in their neighborhood. If 14 citizens are chosen,

3) \_\_\_\_\_

- (a) Find the probability that exactly 9 of them favor the building of the police substation.

$$P(X=9) = \text{binompdf}(14, 0.69, 9) = 0.2032$$

- (b) Find the probability that at least 9 of them favor the building of the police substation.

$$P(X \geq 9) = 1 - P(X \leq 8) = 1 - \text{binomcdf}(14, 0.69, 8) = 0.7546$$

- (c) Find the probability that more than 9 of them favor the building of the police substation

$$P(X > 9) = 1 - P(X \leq 9) = 1 - \text{binomcdf}(14, 0.69, 9) = 0.5514$$

- (d) Find the probability that at most 9 of them favor the building of the police substation

$$P(X \leq 9) = \text{binomcdf}(14, 0.69, 9) = 0.4486$$

- (e) Find the probability that less than 9 of them favor the building of the police substation

$$P(X < 9) = P(X \leq 8) = \text{binomcdf}(14, 0.69, 8) = 0.2454$$

- 4) According to government data, the probability that a woman between the ages of 25 and 29 was never married is 40%. In a random survey of 10 women in this age group.

4) \_\_\_\_\_

- (a) what is the probability that at least eight were married?

$$P(X \geq 8) = 1 - P(X \leq 7) = 1 - \text{binomcdf}(10, 0.40, 7) = 0.0123$$

- (b) what is the probability that at most eight were married?

$$P(X \leq 8) = \text{binomcdf}(10, 0.40, 8) = 0.9983$$

- (c) what is the probability that more than eight were married?

$$P(X > 8) = 1 - P(X \leq 8) = 1 - \text{binomcdf}(10, 0.40, 8) = 0.0017$$