Stats for Business Practice Quiz 4

DO NOT TURN QUIZ OVER !!
(until asked to do so)

For maximum benefit, observe exam conditions:

- Write answers yourself (No help from classmates)
- Calculators may not be shared.
- Use pencil/pen and calculator only. (No notes/cell phones.)
- You MAY Binomial Table on Notebook p. 4–5
- You have 8 minutes for quiz. (We review afterward)

Potentially Useful Formulas:

$$p(x) = {}_nC_x \cdot p^x \cdot (1-p)^{n-x}$$

$$\mu = n \cdot p$$

$$\sigma^2 = n \cdot p \cdot (1-p)$$

Stat 1030 Macbride Practice **Quiz 4** 15 points You may access Notebook pages 4–5 (table) only.

DIRECTIONS: **(Choose the single best answer.) You have 8 minutes to complete the quiz.**

Suppose that 10% of students at American universities have used *bitcoin*, a digital form of money, to make at least one purchase. If 15 UI students are randomly selected ...

1. What is the probability that 13 of them have not used bitcoin?

   (a) 0.000 (b) 0.267 (c) 0.816 (d) 1.000 (e) None of the answers is correct to the third decimal place

2. What is the probability that between 4 and 8 of them have used bitcoin?

   (a) 0.000 (b) 0.002 (c) 0.987 (d) 0.998 (e) None of the answers is correct to the third decimal place

3. On average, how many out of the 15 students would we expect to not have used bitcoin?

   (a) 0 (b) 1.5 (c) 7.5 (d) 13.5 (e) None of the answers is correct to the first decimal place

Macbride Quiz Announcements

- I post Practice Quiz Solution on the Stats Website after each quiz for easy review. (See Macbride Quiz page.)

- Self-Grading! Now compare your answers to the solution that I show.

Stat 1030 Macbride Practice **Quiz 4** 15 points You may access Notebook pages 4–5 (table) only.

DIRECTIONS: **(Choose the single best answer.) You have 8 minutes to complete the quiz.**

Suppose that 10% of students at American universities have used *bitcoin*, a digital form of money, to make at least one purchase. If 15 UI students are randomly selected ...

1. What is the probability that 13 of them have not used bitcoin?

   (a) 0.000 (b) 0.267 (c) 0.816 (d) 1.000 (e) None of the answers is correct to the third decimal place

2. What is the probability that between 4 and 8 of them have used bitcoin?

   (a) 0.000 (b) 0.002 (c) 0.987 (d) 0.998 (e) None of the answers is correct to the third decimal place

3. On average, how many out of the 15 students would we expect to not have used bitcoin?

   (a) 0 (b) 1.5 (c) 7.5 (d) 13.5 (e) None of the answers is correct to the first decimal place

S O L U T I O N

Here is ONE solution: Use "success" = no bitcoins !

- success = no bitcoins
- $n = 15$ students
- $p = 0.90$
- x = # students who do not use bitcoins

1.

(a) **Use Formula**

$$p(x) = \left[{}_nC_x \right] p^x \ (1-p)^{n-x}$$

$$p(x = 13) = \left[{}_{15}C_{13} \right] (0.90)^{13} \ (0.10)^2 = (105) \ (0.90)^{13} \ (0.10)^2 = \boxed{\mathbf{0.2669}}$$

(b) **Use Table**

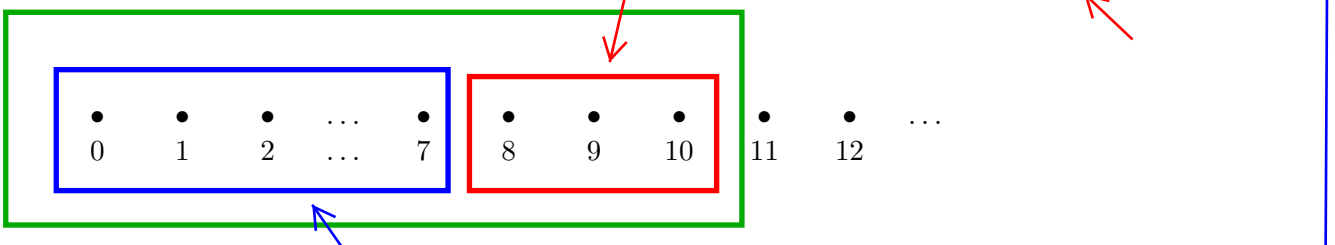
$$P(x = 13) = P(x \leq 13) - P(x \leq 12) = 0.451 - 0.184 = \boxed{\mathbf{0.267}}$$

2.

- 4 students use bitcoin $\implies$ 11 students do NOT
- 8 students use bitcoin $\implies$ 7 students do NOT

$$P(7 < x < 11) = P(8 \leq x \leq 10) = P(x \leq 10) - P(x \leq 7)$$

$$= 0.013 - 0.000 = \boxed{\mathbf{0.013}}$$



3.

$$\mu_x = n \cdot p = (15)(0.90) = \boxed{\mathbf{13.5 \text{ students, on average}}}$$