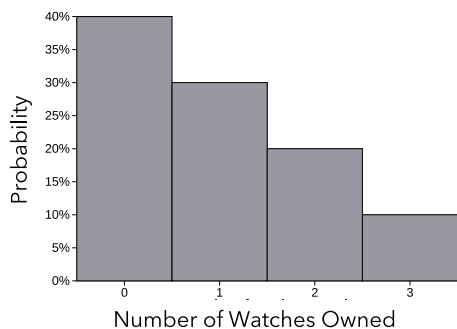


Lesson #24 · Topic 2E · Practice

Name _____

1. Determine if each of the following describes a discrete random variable. Justify your answer.
 - a. The suit of a card randomly selected from a deck of playing cards
 - b. Number of tickets sold for a randomly selected basketball game
 - c. Amount of money won from a lottery ticket
 - d. Whether or not a randomly selected flight is on time

2. Let X = the number of watches owned by a randomly selected high school student. A histogram of the probability distribution of X is shown.



- Describe the shape of the distribution.
- What is the probability that the number of watches owned by a randomly selected student is two or fewer?
- Find and interpret $P(X = 1)$.

3. Let R = the number of times a family dines out for dinner in a randomly selected week. The possible values of R with corresponding probabilities are shown in the table.

R	0	1	2	3	4	5
$P(R)$	0.15	0.20	0.10	0.10	0.15	0.20

Is this a valid probability model? Explain your answer.

4. A local radio station claims they have limited commercial breaks. Let C = the number of commercials played during a randomly selected hour on this radio station. The probability distribution of C is shown in the table.

C	0	1	2	3	4	5
$P(C)$	0.05	0.15	0.20	0.25	0.25	???

- Find $P(C = 5)$.
- Find and interpret the mean of C .
- Find and interpret the standard deviation of C .

5. The school dance team has created a fundraising game that parents can play at an event. The team puts 100 slips of paper into a bag, with \$50 written on one slip, \$30 written on one slip, and \$20 written on one slip. All the remaining slips of paper have \$0 written on them. Suppose a parent is to randomly select a slip of paper.

- Create a probability distribution for the scenario by completing the table.

Money won	\$50	\$30	\$20	\$0
Probability				

- Juno, a sixth grader who has just learned about averages, says people can expect to win \$25 because the average amount won is $\frac{50 + 30 + 20 + 0}{4}$ or \$25. Explain to Juno why this is not the case.
- What is the expected amount won?

6. Coach Bobbitt has a large jar of marbles that he uses to determine the number of laps the students run. Each marble has a number from one to five. He randomly chooses a student to blindly pull out a marble, report the number, and replace the marble back in the jar. Let M = the number on the marble. The probability distribution of M is shown in the table.

M	1	2	3	4	5
$P(M)$	0.20	0.20	0.20	0.20	0.20

The mean of 1, 2, 3, 4, and 5 (the possible values of M) is 3 and the expected value of the random variable M is also 3. Why this is the case?

7. At a local community college, students are required to take two introductory English courses, English 101 and English 102. English 101 must be completed first. Out of the students in English 101, 40% earn an A. Of the students who earn an A in English 101, 30% go on to earn an A in English 102. Of the students who do not earn an A in English 101, 10% earn an A in English 102. Let X = the number of A's earned by a randomly selected student in the introductory English courses. Which of the following tables shows the probability distribution of X ?

A)

X	0	1	2
$P(X)$	0.20	0.10	0.70

B)

X	0	1	2
$P(X)$	0.42	0.08	0.50

C)

X	0	1	2
$P(X)$	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{2}{5}$

D)

X	0	1	2
$P(X)$	0.54	0.34	0.12

8. For the 40 patients seen each day by a doctor's office, the table shows the distribution of time, in minutes, that it takes to complete the checkout process.

Checkout time (minutes)	1	3	5	10
Number of patients	12	15	10	3

After the checkout desk is moved during construction, the checkout process increases by 2 minutes due to the additional walk from the exam room to the checkout desk. Let W = the time, in minutes, that it takes a randomly selected patient to complete the checkout process during construction. What is the expected value of W ?

- A) 1.425 minutes
- B) 3 minutes
- C) 3.425 minutes
- D) 5.425 minutes