Time Frame: 50 minutes

Subject Matter: Discrete Probability Distribution TELL ME

Objective: TSWBAT (a) Compare and contrast discrete and continuous variables, determine whether a distribution represents a probability distribution or not, and construct a probability distribution data.

Standards: DA – 5.11

 Materials: Transparencies and Worksheets

SHOW ME

Presentation of Information:

The teacher will let the students read the following below. Then fill the bubble map below comparing discrete random variable and continuous random variable.

Guide questions in filling the bubble map.

1. Define random variable.
2. Explain the difference between a discrete and a continuous random variable.
3. Give three examples of a discrete random variable.
4. Give three examples of a continuous random variable.

Random Variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



Classify whether the variable is discrete or continuous.

|  |  |  |
| --- | --- | --- |
| Variable | Discrete | Continuous |
| 1. The speed of a race car.
 |  |  |
| 1. The number of cups of coffee that a fast-food restaurant serves each day.
 |  |  |
| 1. The number of people who play the state lottery each day.
 |  |  |
| 1. The weight of a rhinoceros.
 |  |  |
| 1. The time it takes to complete an exercise session.
 |  |  |
| 1. The number of mathematics major in your school.
 |  |  |
| 1. The blood pressure of all patients admitted to a hospital on a specific day.
 |  |  |

|  |
| --- |
| Two Requirements for a Probability Distribution |
| 1. The sum of the probabilities of all events in the sample space must be equal to 1.
2. The probability of each event in the sample space must be between or equal to 0 and 1.
 |

Example

Determine whether each distribution is a probability distribution or not.

|  |  |  |  |
| --- | --- | --- | --- |
| Distribution | Requirement # 1 | Requirement # 2 | Yes or no |
| 1. X 0 5 10 15 20

 P(X) $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ | passed | passed | yes |
| 1. X 0 2 4 6\_

 P(X) -1.0 1.5 0.3 0.2 | passed | failed | No |
| 1. X 1 2 3 4\_\_\_

 P(X) $\frac{1}{4}$ $\frac{1}{8}$ $\frac{1}{16}$ $\frac{9}{16}$  | Passed | Passed | Yes |
| 1. X 2 3 7\_\_\_

P(X) 0.5 0.3 0.4 | Failed | Passed | No |

Exercises

Determine whether each distribution is a probability distribution or not.

|  |  |  |  |
| --- | --- | --- | --- |
| Distribution | Requirement # 1 | Requirement # 2 | Yes or no |
| 1. X 1 3 5 7 9 11\_\_

 P(X) $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ |  |  |  |
| 1. X 3 6 9 12 15\_

 P(X) $\frac{4}{9}$ $\frac{2}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ |  |  |  |
| 1. X 1 2 3 4\_\_ 5\_

 P(X) $\frac{3}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{2}{10}$ $\frac{3}{10}$ |  |  |  |
| 1. X 3 6 8\_\_\_

P(X) - 0.3 0.6 0.7 |  |  |  |
| 1. X 20 30 40 50\_

 P(X) 1.1 0.2 0.9 0.3 |  |  |  |
| 1. X 5 10 15 \_

 P(X) 1.2 0.3 0.5  |  |  |  |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: Dec. 7, 2010

Exercises

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|  |  |  |  |
| --- | --- | --- | --- |
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| 1. X 3 6 9 12 15\_

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 P(X) $\frac{4}{9}$ $\frac{2}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ |  |  |  |
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 P(X) $\frac{3}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{2}{10}$ $\frac{3}{10}$ |  |  |  |
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| 1. X 5 10 15 \_

 P(X) 1.2 0.3 0.5  |  |  |  |