

Year 1 and AS Mathematics

Statistics - Discrete Distributions

Teachers Notes:

This is a card sorting activity for the students work through in groups.

There are three sets of cards:

1. Describe the discrete distribution
2. Probability Distribution
3. Cumulative Distribution

The students need to match up initially Card Sets 1 and 2, then add Card Set 3 to their solutions ...

This activity reinforcing the understanding of the work covered on discrete distributions.

There are blank cards at the end of each set so the students could devise their own distributions, which when mixed with those of other students create further practice.

Solution
A - L - R
B - J - M
C - H - S
D - I - N
E - G - P
F - K - Q

Set 1

A. Draw the probability distribution for X, where X is the score on a fair tetrahedral dice.

B. A random variable X has a probability distribution given by the probability function:

$$P(X = x) = kx, \text{ for } x = 1, 2, 3, 4$$

C. The discrete random variable X has the probability distribution:

$$P(X = x) = \frac{k}{x}, \text{ for } x = 1, 2, 3, 4$$

D. The probability distribution of the random variable X is given by:

$$P(X = x) = k(x + 1), \text{ for } x = 1, 2, 3, 4$$

E. The discrete random variable X has the probability distribution:

$$P(X = x) = \frac{1^x}{2}, \text{ for } x = 1, 2, 3$$

$$P(X = x) = \frac{1}{8}, \text{ for } x = 4$$

F. The probability distribution of the random variable X is given by:

$$P(X = x) = kx, \text{ for } x = 1, 2$$

$$P(X = x) = k(x + 1), \text{ for } x = 3, 4$$

Set 2 - probability distribution

G				
X	1	2	3	4
P(X=x)	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$

J				
X	1	2	3	4
P(X=x)	$\frac{1}{10}$	$\frac{1}{5}$	$\frac{3}{10}$	$\frac{2}{5}$

H				
X	1	2	3	4
P(X=x)	$\frac{12}{25}$	$\frac{6}{25}$	$\frac{4}{25}$	$\frac{3}{25}$

K				
X	1	2	3	4
P(X=x)	$\frac{1}{12}$	$\frac{1}{6}$	$\frac{1}{3}$	$\frac{5}{12}$

I				
X	1	2	3	4
P(X=x)	$\frac{1}{7}$	$\frac{3}{14}$	$\frac{2}{7}$	$\frac{5}{14}$

L				
X	1	2	3	4
P(X=x)	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

X	1	2	3	4
P(X=x)				

X	1	2	3	4
P(X=x)				

Set 3 - cumulative distribution

M				
X	1	2	3	4
F(X)	$\frac{1}{10}$	$\frac{3}{10}$	$\frac{6}{10}$	1

Q				
X	1	2	3	4
F(X)	$\frac{1}{12}$	$\frac{1}{4}$	$\frac{7}{12}$	1

N				
X	1	2	3	4
F(X)	$\frac{1}{7}$	$\frac{5}{14}$	$\frac{9}{14}$	1

R				
X	1	2	3	4
F(X)	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1

P				
X	1	2	3	4
F(X)	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	1

S				
X	1	2	3	4
F(X)	$\frac{12}{25}$	$\frac{18}{25}$	$\frac{22}{25}$	1

X	1	2	3	4
F(X)				

X	1	2	3	4
F(X)				