03/20/2019

A random variable has to be numeric.

1. a. Discrete
   b. continuous
   c. Discrete
   d. continuous
   e. continuous
   f. continuous

2. Random variable = # of tails.

# of tails	sample space	Probability
2	{TT}	1/4 P(2 tails)
1	{TH, HT}	1/2 P(1 tail)
0	{HH}	1/4 P(0 tails)

3.

# of free cards	Probability
0	$\frac{40}{52} \cdot \frac{40}{52}$
1	$\frac{12}{52} \cdot \frac{40}{52} + \frac{40}{52} \cdot \frac{12}{52}$
2	$\frac{12}{52} \cdot \frac{12}{52}$

(4) $\sum x_i P(x_i)$

x	0	1	2
$P(x)$	$\left(\frac{40}{52}\right)^2$ ✓	$\frac{2\times12\times40}{52^2}$ ✓	$\left(\frac{12}{52}\right)^2$ ✓

$$E(x) = 0\times\left(\frac{40}{52}\right)^2 + 1\times\frac{2\times12\times40}{52^2} + 2\left(\frac{12}{52}\right)^2 .$$

(5)

~~$\sum x_i P(x_i)$~~

$\sum x_i P(x_i)$

x	0	1	2
$P(x)$	$1/4$	$1/2$	$1/4$

$$E(H) = 0\times 1/4 + 1\times 1/2 + 2\times 1/4$$

$$= 0 + 1/2 + 1/2 = 1 .$$