

Lesson #12 week #6 topics 4,5,6
 Test #2 based on weeks # 4,5,6 on Thursday November 8
 Quiz #5 due tomorrow at 11:45pm.

Do Now: Determine whether this table represents a probability distribution

X	P(X)
0	0.15
1	0.25
2	0.3
3	0.3
$\Sigma = 1$	

two conditions
 ① $0 \leq P(X) \leq 1$
 ② $\sum P(X) = 1$
yes

Oct 30-1:54 PM

I - Mean of a discrete probability Distribution

1) $X =$ number of workouts in a week

Note: X is a Discrete random variable

X	P(X)
0	0.1
1	0.15
2	0.4
3	0.25
4	0.1
$\Sigma = 1$	

a) Check if it is a prob. Distr. ✓
 b) Mean = Expected Value = $\mu_x = E(X)$

$0(0.1) = 0$
 $1(0.15) = 0.15$
 $2(0.4) = 0.8$
 $3(0.25) = 0.75$
 $4(0.1) = 0.4$
 $E(X) = \Sigma 2.1$

$\sigma_x = 1.09$
 $\sigma_x^2 = (1.09)^2 = 1.19$

Meaning of 2.1 \rightarrow Mean \rightarrow Expected number of workouts per week based on our table.

μ_x mean

2.1	2.1	2.1	2.1	2.1
-2.09	-1.09	1.09	1.09	2.09
	1.01		3.19	

Oct 30-2:12 PM

II - VARIANCE (σ^2) and STANDARD Deviation (σ) of a Discrete Random Variable Distribution

STANDARD Deviation = 1.09

X	P(X)
0	0.1
1	0.15
2	0.4
3	0.25
4	0.1

① mean = 2.1

X	$(X - \text{mean})^2$	$(X - \text{mean})^2 \cdot P(X)$
0	$(0 - 2.1)^2$	$(-2.1)^2 \cdot (0.1) = .441$
1	$(1 - 2.1)^2$	$(-1.1)^2 \cdot (0.15) = .1815$
2	$(2 - 2.1)^2$	$(0.1)^2 \cdot (0.4) = 0.004$
3	$(3 - 2.1)^2$	$(0.9)^2 \cdot (0.25) = .2025$
4	$(4 - 2.1)^2$	$(1.9)^2 \cdot (0.1) = .361$
		$\Sigma = 1.19$

② Variance 1.19
 ③ Std. Dev. $\sqrt{1.19} = 1.09$

Oct 30-2:42 PM