

key

First Name: _____ Last Name: _____ SID: _____ Class Time: M Tu W Th math10 - HW4

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Continuous random variables are obtained from data that can be measured rather than counted. 1) B
A) False B) True

2) Discrete variables have values that can be measured. 2) A
 A) False B) True

3) The sum of the probabilities of all the events in the sample space of a probability distribution must equal 1. 3) A
 A) True B) False

4) Determine whether the random variable described is discrete or continuous. 4) A
The number of 3-point shots made in a basketball game
 A) discrete B) continuous

5) Determine whether the table represents a discrete probability distribution. 5) B

x	$P(x)$
-3	0.05
-2	0.15
-1	0.35
0	0.45

check 2 conditions.

A) No B) Yes

6) Determine whether the table represents a discrete probability distribution. 6) A

x	$P(x)$
1	0.45
2	0.2
3	0.4
4	<input checked="" type="radio"/> 0.05

can't be negative!

A) No B) Yes

key

7) Determine whether the table represents a discrete probability distribution.

7) B

x	$P(x)$
1	0.45
2	0.1
3	0.35
4	0.35

Sum: > 1

A) Yes

B) No

8) The following distribution is not a probability distribution because

8) D

X	-2	-1	0	1	2
$P(X)$	0.16	0.15	0.42	0.13	0.31

$\Rightarrow \text{sum} \neq 1$

A) the probability values are not discrete.

B) the probability values are not increasing.

C) the values of the variable are negative.

D) the probability values do not add to 1.

9) Fill in the missing value so that the following table represents a probability distribution.

9) B

x	-4	-3	-2	-1
$P(x)$	0.42	0.08	?	0.05

$$0.42 + 0.08 + ? + 0.05 = 1$$

$$\Rightarrow ? = 0.45$$

A) 0.33

B) 0.45

C) 0.25

D) 0.26

10) The following table presents the probability distribution of the number of vacations X taken last year for a randomly chosen family. Find the probability that a family took at least 3 vacations last year. $= p(3) + p(4) = 0.07 + 0.02 = 0.09$

10) C

x	0	1	2	3	4
$P(x)$	0.05	0.69	0.17	0.07	0.02

A) 0.91

B) 0.07

C) 0.09

D) 0.26

key

11) A survey asked 851 people how many times per week they dine out at a restaurant. The results are presented in the following table.

11) D

Number of Times	Frequency
0	104
1	244
2	242
3	142
4	62
5	22
6	27
7	8
Total	851

Consider the 851 people to be a population. Let X be the number of times per week a person dines out for a person sampled at random from this population. Find the probability that a person does not dine out at all. $p(0) = \frac{104}{851}$

- A) 0.409 B) 0.287 C) 0 D) 0.122

12) A survey asked 857 people how many times per week they dine out at a restaurant. The results are presented in the following table.

12) C

Number of Times	Frequency
0	136
1	254
2	233
3	104
4	74
5	21
6	28
7	7
Total	857

$$p(x) = \frac{\text{Frequency}}{857}$$

$$\sigma^2 = \sum x^2 p(x) - \mu^2$$

$$= \left(0^2 \cdot \frac{136}{857} + 1^2 \cdot \frac{254}{857} + 2^2 \cdot \frac{233}{857} + \dots \right) - \mu^2$$

Consider the 857 people to be a population. Let X be the number of times per week a person dines out for a person sampled at random from this population. Compute the standard deviation.

- A) 1.9 B) 2.1 C) 1.5 D) 2.3

key

- 13) The following table presents the probability distribution of the number of vacations X taken last year for a randomly chosen family. Find $P(1 \text{ or more})$. $= 1 - P(0)$

13) A

x	0	1	2	3	4
$P(x)$	0.05	0.69	0.16	0.08	0.02

$$= 1 - 0.05$$
$$= 0.95$$

- (A) 0.95 B) 0.69 C) 0.26 D) 0.74

- 14) Find the mean of the distribution shown below.

14) C

X	2	3	4
$P(X)$	0.36	0.32	0.32

$$\mu = \sum x p(x)$$

- A) 2.56 B) 2.92 (C) 2.96 D) 1.60

- 15) Give the variance of the following distribution?

15) A

X	0	1	2	3	4
$P(X)$	0.20	0.35	0.10	0.25	0.10

$$\sigma^2 = \sum x^2 p(x) - \mu^2$$

- (A) 1.71 B) 1.31 C) 1.83 D) 1.25

- 16) The following table presents the probability distribution of the number of vacations X taken last year for a randomly chosen family. Compute the mean μ .

16) C

x	0	1	2	3	4
$P(x)$	0.12	0.59	0.16	0.1	0.03

$$\mu = \sum x p(x)$$

- A) 1.45 B) 0.84 (C) 1.33 D) 0.92

- 17) What is the standard deviation of the following probability distribution?

17) C

X	0	2	4	6	8
$P(X)$	0.20	0.05	0.35	0.25	0.15

$$\sigma^2$$

- A) 4.7 B) 3.9 (C) 2.6 D) 5.4

- 18) The following table presents the probability distribution of the number of vacations X taken last year for a randomly chosen family. Compute the standard deviation σ .

18) D

x	0	1	2	3	4
$P(x)$	0.06	0.67	0.18	0.07	0.02

$$\sigma^2 = \sum x^2 p(x) - \mu^2$$

- A) 1.38 B) 0.60 C) 1.32 (D) 0.77

key

- 19) Compute the standard deviation of the random variable with the given discrete probability distribution. 19) C

x	$P(x)$
0	0.2
5	0.45
15	0.05
25	0.3

$$\sigma^2 = \sum x^2 p(x) - \mu^2$$

$$\Rightarrow \sigma = ?$$

- A) 99.8 B) 11.25 C) 10.0 D) 10.5

- 20) The number of cartoons watched on Saturday mornings by students in Mrs. Kelly's first grade class is shown below. 20) C

Number of cartoons watched X	0	1	2	3	4	5
Probability $P(X)$	0.15	0.20	0.30	0.10	0.20	0.05

What is the mean of the data?

- A) 1.89 B) 1.18 C) 2.15 D) 1.37

- 21) The number of cartoons watched on Saturday mornings by students in Mrs. Kelly's first grade class is shown below. 21) C

Number of cartoons watched X	0	1	2	3	4	5
Probability $P(X)$	0.15	0.20	0.30	0.10	0.20	0.05

Give the standard deviation for the probability distribution.

- A) 2.25 B) 1.89 C) 1.46 D) 1.18

- * 22) If a gambler rolls two dice and gets a sum of 10, he wins \$10, and if he gets a sum of three, he wins \$20. The cost to play the game is \$5. What is the expectation of this game? 22) A

- A) -\$3.06 B) \$2.78 C) \$3.06 D) -\$2.78

- 23) An investor is considering a \$25,000 investment in a start-up company. She estimates that she has probability 0.05 of a \$20,000 loss, probability 0.2 of a \$20,000 profit, probability 0.15 of a \$35,000 profit, and probability 0.6 of breaking even (a profit of \$0). What is the expected value of the profit? 23) D

- A) \$10,250 B) \$11,667 C) \$23,250 D) \$8250

#22:

Win \$10:	$\frac{4}{5} + \frac{6}{3} = 10$	$\frac{p(x)}{6 \times 6}$	Return
Win \$20:	$\frac{1}{2} + \frac{2}{1} = 3$	$\frac{2}{6 \times 6}$	20
Loss:	all others	$1 - \frac{3}{36} - \frac{2}{36} = \frac{5}{36}$	-5

#23:

x	$p(x)$
-20000	0.05
20000	0.2
35000	0.15
0	0.6

$\Rightarrow \mu = \sum xp(x)$

Answer Key

Testname: HW4

- 1) B
- 2) A
- 3) A
- 4) A
- 5) B
- 6) A
- 7) B
- 8) D
- 9) B
- 10) C
- 11) D
- 12) C
- 13) A
- 14) C
- 15) A
- 16) C
- 17) C
- 18) D
- 19) C
- 20) C
- 21) C
- 22) A
- 23) D