

Name \_\_\_\_\_

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

List the outcomes comprising the specified event.

- 1) When a quarter is tossed four times, 16 outcomes are possible.

1) \_\_\_\_\_

HHHH	HHHT	HHTH	HHTT
HTHH	HTHT	HTTH	HTTT
THHH	THHT	THTH	THTT
TTHH	TTHT	TTTH	TTTT

Here, for example, HTTH represents the outcome that the first toss is heads, the next two tosses are tails, and the fourth toss is heads. List the outcomes that comprise the following event.

A = event exactly three tails are tossed

A) TTTT

B) HTTT, THTT, TTTH

C) HTTT, THTT, TTHT, TTTH

D) HTTT, THTT, TTHT, TTTH, TTTT

- 2) In a competition, two people will be selected from four finalists to receive the first and second prizes. The prize winners will be selected by drawing names from a hat. The names of the four finalists are Jim, George, Helen, and Maggie. The possible outcomes can be represented as follows.

2) \_\_\_\_\_

JG	JH	JM	GJ	GH	GM
HJ	HG	HM	MJ	MG	MH

Here, for example, JG represents the outcome that Jim receives the first prize and George receives the second prize. List the outcomes that comprise the following event.

A = event that Helen gets a prize

A) JH, GH, HJ, HG, HM

B) JH, GH, HJ, JG, HG, HM, MH

C) HJ, HG, HM

D) JH, GH, HJ, HG, HM, MH

Determine the number of outcomes that comprise the specified event.

- 3) The age distribution of students at a community college is given below.

3) \_\_\_\_\_

<u>Age (years)</u>	<u>Number of students (f)</u>
Under 21	2189
21-25	2031
26-30	1073
31-35	853
Over 35	221

A student from the community college is selected at random. The event A is defined as follows.

A = event the student is between 26 and 35 inclusive.

Determine the number of outcomes that comprise the event (not A).

- A) 4441                      B) 5294                      C) 4220                      D) 1926

- 4) The age distribution of students at a community college is given below.

4) \_\_\_\_\_

<u>Age (years)</u>	<u>Number of students (f)</u>
Under 21	2146
21-25	2077
26-30	1191
31-35	891
Over 35	234

A student from the community college is selected at random. The events A and B are defined as follows.

A = event the student is between 21 and 35 inclusive

B = event the student is 26 or over

Determine the number of outcomes that comprise the event (A or B).

- A) 2082                      B) 6475                      C) 2316                      D) 4393

Find the indicated probability.

- 5) A 8-sided die is rolled. What is the probability of rolling a number less than 7?

5) \_\_\_\_\_

- A)  $\frac{3}{4}$                       B) 6                      C)  $\frac{1}{8}$                       D)  $\frac{7}{8}$

- 6) A survey resulted in the sample data in the given table. If one of the survey respondents is randomly selected, find the probability of getting someone who lives in a flat. 6) \_\_\_\_\_

Type of accommodation	Number
House	414
Flat	424
Apartment	242
Other	556

- A) 424                      B) 0.002                      C) 0.393                      D) 0.259

Determine the possible values of the random variable.

- 7) Suppose a coin is tossed four times. Let  $X$  denote the total number of tails obtained in the four tosses. What are the possible values of the random variable  $X$ ? 7) \_\_\_\_\_
- A) 1, 2, 3  
 B) 0, 1, 2, 3, 4  
 C) HHHH, HHHT, HHTH, HHTT, HTHH, HTHT, HTTH, HTTT, THHH, THHT, THTH, THTT, TTHH, TTHT, TTTH, TTTT  
 D) 1, 2, 3, 4

- 8) The following frequency distribution analyzes the scores on a math test. For a randomly selected score between 40 and 99, let  $Y$  denote the number of students with that score on the test. What are the possible values of the random variable  $Y$ ? 8) \_\_\_\_\_

Scores	Number of students
40-59	2
60-75	4
76-82	6
83-94	15
95-99	5

- A) 2, 4, 6, 5                      B) 2, 4, 6, 15                      C) 32                      D) 2, 4, 6, 15, 5

Use random-variable notation to represent the event.

- 9) Suppose that two balanced dice are rolled. Let  $Y$  denote the product of the two numbers. Use random-variable notation to represent the event that the product of the two numbers is greater than 4. 9) \_\_\_\_\_
- A)  $\{5, 6\}$                       B)  $\{XY > 4\}$                       C)  $\{Y > 4\}$                       D)  $P\{Y > 4\}$
- 10) For a randomly selected student in a particular high school, let  $Y$  denote the number of living grandparents of the student. Use random-variable notation to represent the event that the student obtained has exactly three living grandparents. 10) \_\_\_\_\_
- A)  $\{Y \geq 3\}$                       B)  $P\{Y = 3\}$                       C)  $\{Y < 3\}$                       D)  $\{Y = 3\}$

Obtain the probability distribution of the random variable.

- 11) When a coin is tossed four times, sixteen equally likely outcomes are possible as shown below: 11) \_\_\_\_\_

HHHH HHHT HHTH HHTT  
HTHH HTHT HTTH HTTT  
THHH THHT THTH THTT  
TTHH TTHT TTTH TTTT

Let  $X$  denote the total number of tails obtained in the four tosses. Find the probability distribution of the random variable  $X$ . Leave your probabilities in fraction form.

A)

$x$	$P(X = x)$
1	$1/4$
2	$7/16$
3	$1/4$
4	$1/16$

B)

$x$	$P(X = x)$
0	$1/16$
1	$3/16$
2	$1/2$
3	$3/16$
4	$1/16$

C)

$x$	$P(X = x)$
0	$1/16$
1	$1/4$
2	$3/8$
3	$1/4$
4	$1/16$

D)

$x$	$P(X = x)$
0	$1/16$
1	$1/8$
2	$3/8$
3	$1/8$
4	$1/16$

- 12) When two balanced dice are rolled, 36 equally likely outcomes are possible as shown below. 12) \_\_\_\_\_

(1, 1) (1, 2) (1, 3) (1, 4) (1, 5) (1, 6)  
(2, 1) (2, 2) (2, 3) (2, 4) (2, 5) (2, 6)  
(3, 1) (3, 2) (3, 3) (3, 4) (3, 5) (3, 6)  
(4, 1) (4, 2) (4, 3) (4, 4) (4, 5) (4, 6)  
(5, 1) (5, 2) (5, 3) (5, 4) (5, 5) (5, 6)  
(6, 1) (6, 2) (6, 3) (6, 4) (6, 5) (6, 6)

Let  $X$  denote the smaller of the two numbers. If both dice come up the same number, then  $X$  equals that common value. Find the probability distribution of  $X$ . Leave your probabilities in fraction form.

A)

$x$	$P(X = x)$
1	$5/18$
2	$1/4$
3	$7/36$
4	$5/36$
5	$1/9$
6	$1/36$

B)

$x$	$P(X = x)$
1	$11/36$
2	$1/4$
3	$7/36$
4	$5/36$
5	$1/12$
6	$1/36$

C)

$x$	$P(X = x)$
1	$5/18$
2	$2/9$
3	$1/6$
4	$1/9$
5	$1/18$
6	0

D)

$x$	$P(X = x)$
1	$1/6$
2	$1/6$
3	$1/6$
4	$1/6$
5	$1/6$
6	$1/6$

Find the specified probability.

- 13) A statistics professor has office hours from 9:00 am to 10:00 am each day. The number of students waiting to see the professor is a random variable,  $X$ , with the distribution shown in the table. 13) \_\_\_\_\_

$x$	0	1	2	3	4	5
$P(X = x)$	0.05	0.10	0.40	0.25	0.15	0.05

The professor gives each student 10 minutes. Determine the probability that a student arriving just after 9:00 am will have to wait no longer than 30 minutes to see the professor.

A) 0.95

B) 0.25

C) 0.40

D) 0.80

## Answer Key

Testname: UNTITLED5

- 1) C
- 2) D
- 3) A
- 4) D
- 5) A
- 6) D
- 7) B
- 8) D
- 9) C
- 10) D
- 11) C
- 12) B
- 13) D