

Name _____

Insert " \subseteq " or " $\not\subseteq$ " in the blank to make the statement true.

1) $\{16, 29, 34\}$ ___ $\{11, 29, 34, 44\}$

A) \subseteq

B) $\not\subseteq$

2) $\{7, 9, 11\}$ ___ $\{x \mid x \text{ is an odd counting number}\}$

A) \subseteq

B) $\not\subseteq$

Find the number of subsets of the set.

3) $\{\text{mom, dad, son, daughter}\}$

A) 12

B) 8

C) 16

D) 14

Let $U = \{q, r, s, t, u, v, w, x, y, z\}$; $A = \{q, s, u, w, y\}$; $B = \{q, s, y, z\}$; and $C = \{v, w, x, y, z\}$. List the members of the indicated set, using set braces.

4) $(A \cap B)'$

A) $\{t, v, x\}$

B) $\{s, u, w\}$

C) $\{r, t, u, v, w, x, z\}$

D) $\{q, s, t, u, v, w, x, y\}$

Use the union rule to answer the question.

5) If $n(B) = 36$, $n(A \cap B) = 7$, and $n(A \cup B) = 63$; what is $n(A)$?

A) 32

B) 34

C) 36

D) 27

Use a Venn diagram to answer the question.

6) A survey of a group of 115 tourists was taken in St. Louis. The survey showed the following:

63 of the tourists plan to visit Gateway Arch;

49 plan to visit the zoo;

10 plan to visit the Art Museum and the zoo, but not the Gateway Arch;

14 plan to visit the Art Museum and the Gateway Arch, but not the zoo;

19 plan to visit the Gateway Arch and the zoo, but not the Art Museum;

7 plan to visit the Art Museum, the zoo, and the Gateway Arch;

15 plan to visit none of the three places.

How many plan to visit the Art Museum only?

A) 100

B) 59

C) 14

D) 36

Write the sample space for the given experiment.

7) A group of 12 people are assigned numbers 1 through 12. A person assigned a number of 5 or less is chosen.

A) $\{1\}$

B) $\{1, 2, 3, 4\}$

C) $\{1, 2, 3, 4, 5\}$

D) $\{12\}$

For the experiment described, write the indicated event in set notation.

8) A die is tossed twice with the tosses recorded as an ordered pair. Represent the following event as a subset of the sample space: The sum of the tosses is either three or four.

A) $\{(1, 2), (2, 2)\}$

B) $\{(2, 1), (3, 1), (2, 2)\}$

C) $\{(1, 2), (2, 1), (1, 3), (3, 1), (2, 2)\}$

D) $\{(1, 2), (1, 3), (2, 2)\}$

Find the probability of the given event.

9) A card drawn from a well-shuffled deck of 52 cards is a face card or a 4.

A) 16

B) $\frac{2}{13}$

C) $\frac{4}{13}$

D) $\frac{12}{13}$

10) A bag contains 19 balls numbered 1 through 19. A randomly chosen ball has an even number.

A) $\frac{9}{19}$

B) 9

C) $\frac{19}{9}$

D) $\frac{2}{19}$

Solve the problem.

11) A single die is rolled one time. Find the probability of rolling a number greater than 2 or less than 5.

A) $\frac{1}{3}$

B) $\frac{1}{6}$

C) 1

D) $\frac{1}{4}$

Find the odds in favor of the indicated event.

12) Rolling an odd number with a fair die.

A) 1 to 2

B) 2 to 1

C) 3 to 2

D) 1 to 1

Solve the problem.

13) A survey of senior citizens at a doctor's office shows that 50% take blood pressure-lowering medication, 48% take cholesterol-lowering medication, and 2% take both medications. What is the probability that a senior citizen takes either blood pressure-lowering or cholesterol-lowering medication? Express the answer as a percentage

A) 96%

B) 4%

C) 100%

D) 0%

14) If a single fair die is rolled, find the probability of a 4 given that the number rolled is odd.

A) $\frac{1}{2}$

B) $\frac{1}{6}$

C) 1

D) 0

Assume that two marbles are drawn without replacement from a box with 1 blue, 3 white, 2 green, and 2 red marbles.

Find the probability of the indicated result.

15) The second marble is blue, given that the first marble is white.

A) $\frac{1}{8}$

B) $\frac{3}{8}$

C) $\frac{1}{7}$

D) $\frac{3}{7}$

Solve the problem.

16) If two fair dice are rolled, find the probability of a sum of 6 given that the roll is a double.

A) $\frac{1}{6}$

B) $\frac{1}{5}$

C) $\frac{1}{3}$

D) $\frac{1}{4}$

Find the probability.

17) A calculator requires a keystroke assembly and a logic circuit. Assume that 77% of the keystroke assemblies and 88% of the logic circuits are satisfactory. Find the probability that a finished calculator will be satisfactory.

A) .5929

B) .7744

C) .8300

D) .6776

Use the given table to find the indicated probability.

18) People were given three choices of soft drinks and asked to choose one favorite. The following table shows the results.

	cola	root beer	lemon-lime
under 21 years of age	40	25	20
between 21 and 40	35	20	30
over 40 years of age	20	30	35

P(person drinks root beer | person is over 40)?

A) $\frac{2}{17}$

B) $\frac{6}{17}$

C) $\frac{2}{5}$

D) None of the above

Use Bayes' rule to find the indicated probability.

19) Two stores sell a certain product. Store A has 38% of the sales, 5% of which are of defective items, and store B has 62% of the sales, 3% of which are of defective items. The difference in defective rates is due to different levels of pre-sale checking of the product. A person receives a defective item of this product as a gift. What is the probability it came from store B?

A) 0.475

B) 0.465

C) 0.5

D) 0.4895

Prepare a probability distribution for the experiment. Let x represent the random variable, and let P represent the probability.

20) A field goal kicker has a kicking average of .75 and he tries 3 field goals in a game. The number of field goals is counted.

A)

x	P
0	.016
1	.140
2	.522
3	.322

B)

x	P
0	.522
1	.141
2	.322
3	.016

C)

x	P
0	.422
1	.141
2	.016
3	.422

D)

x	P
0	.016
1	.141
2	.422
3	.422

Find the expected value for the random variable.

- 21) A business bureau gets complaints as shown in the following table. Find the expected number of complaints per day.

Complaints per Day	0	1	2	3	4	5
Probability	.04	.11	.26	.33	.19	.12

- A) 2.98 B) 2.85 C) 2.73 D) 3.01

Solve the problem.

- 22) Suppose a charitable organization decides to raise money by raffling a trip worth \$500. If 3000 tickets are sold at \$1.00 each, find the expected value of winning for a person who buys 1 ticket.

- A) -\$.81 B) -\$.85 C) -\$1.00 D) -\$.83

- 23) Find the expected number of girls in a family of 3 children.

- A) 2.25 B) 1.5 C) 2 D) 2.5

Evaluate the expression.

- 24) $4!$

- A) 6 B) 24 C) 20 D) 28

- 25) $10P_4$

- A) 6 B) 210 C) 5040 D) 34

- 26) $17C_5$

- A) 6213 B) 6203 C) 6188 D) 6160

Solve the problem.

- 27) How many different 7-digit phone numbers are possible if the first digit cannot be a 0?

- A) 1,000,000 B) 10,000,000 C) 900,000 D) 9,000,000

Solve the problem.

- 28) A classical music concert is to consist of 2 cello pieces, 4 choral works, and 4 pieces for piano. In how many ways can the program be arranged if a piano piece must come first?

- A) 362,880 B) 1,451,520 C) 3,628,800 D) 2880

- 29) Three student representatives are to be chosen from a group of five students: Andrew, Brenda, Chad, Dorothy, and Eric. In how many different ways can the representatives be chosen if two must be male and one female?

- A) 4 B) 12 C) 2 D) 6

Answer Key

Testname: M1324 REVIEW 3

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