

Name _____

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

Let $U = \{q, r, s, t, u, v, w, x, y, z\}$, $A = \{q, s, u, w, y\}$, $B = \{q, s, y, z\}$, and $C = \{v, w, x, y, z\}$. Find the elements in the set

- 1) $(A \cup B)'$ 1) _____
 A) $\{t, v, x\}$ B) $\{s, u, w\}$
 C) $\{r, s, t, u, v, w, x, z\}$ D) $\{r, t, v, x\}$

Answer: D

- 2) $A \cap B'$ 2) _____
 A) $\{t, v, x\}$ B) $\{r, s, t, u, v, w, x, z\}$
 C) $\{u, w\}$ D) $\{q, s, t, u, v, w, x, y\}$

Answer: C

- 3) $A' \cup B$ 3) _____
 A) $\{s, u, w\}$ B) $\{r, s, t, u, v, w, x, z\}$
 C) $\{q, r, s, t, v, x, y, z\}$ D) $\{q, s, t, u, v, w, x, y\}$

Answer: C

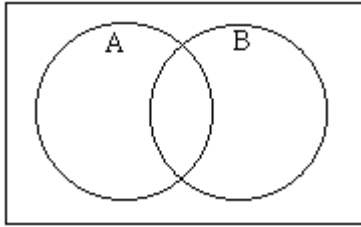
- 4) $B \cap (A \cup C)$ 4) _____
 A) $\{q, s, y, z\}$ B) $\{q, s, u, w, y, z\}$ C) $\{q, r, w, y, z\}$ D) $\{q, w, y\}$

Answer: A

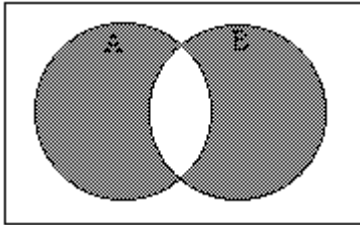
Shade the Venn diagram to represent the set.

5) $A' \cap B'$

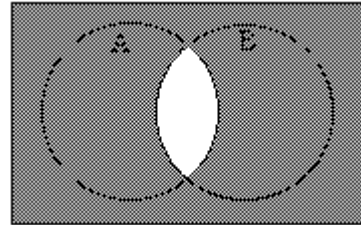
5) _____



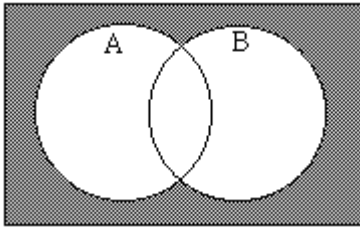
A)



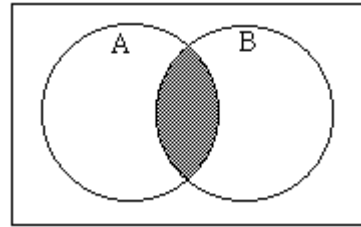
B)



C)



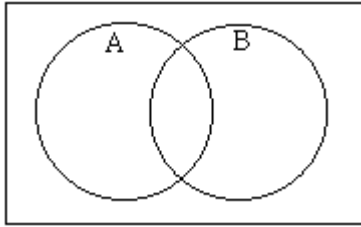
D)



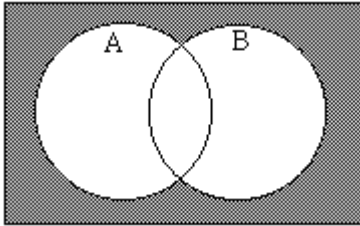
Answer: C

6) $A' \cup B'$

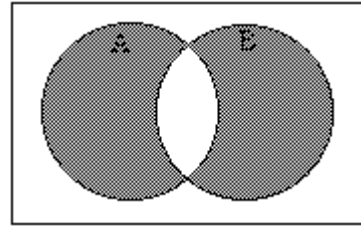
6) _____



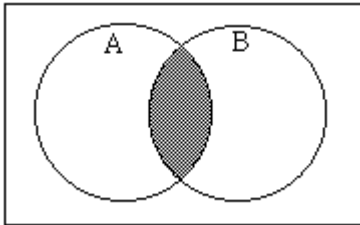
A)



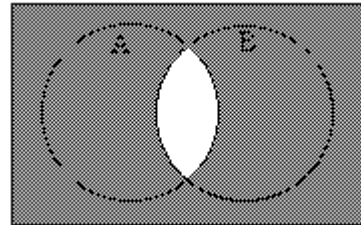
B)



C)



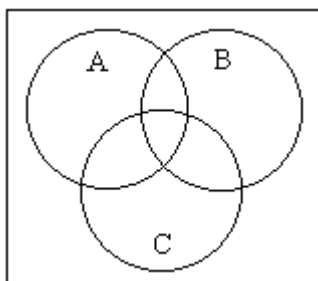
D)



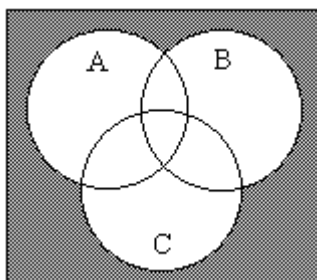
Answer: D

7) $(A \cup B)' - C$

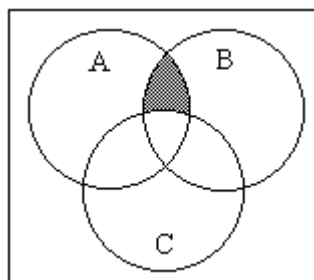
7) _____



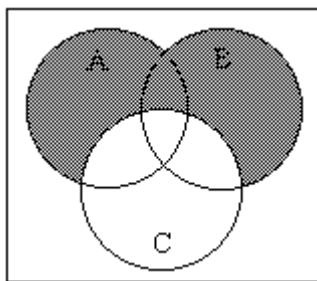
A)



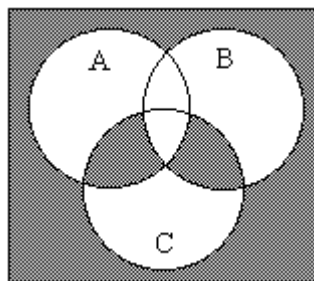
B)



C)



D)



Answer: A

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

Determine whether the statement is true or false.

8) $A \cap A' = \emptyset$.

8) _____

Answer: TRUE

9) $A' \cap \emptyset = A'$.

9) _____

Answer: FALSE

10) $A \cup B$ is never a subset of $A \cap B$.

10) _____

Answer: FALSE

11) If B is a subset of A, then $A \cap B = B$.

11) _____

Answer: TRUE

12) $(A \cap B)' = A' \cup B'$.

12) _____

Answer: TRUE

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

Let $U = \{\text{all soda pops}\}$, $A = \{\text{all diet soda pops}\}$, $B = \{\text{all cola soda pops}\}$, $C = \{\text{all soda pops in cans}\}$, and $D = \{\text{all caffeine-free soda pops}\}$. Describe the set in words.

- 13) $A' \cap C$ 13) _____
- A) All diet soda pops and all soda pops in cans
 - B) All non-diet soda pops in cans
 - C) All non-diet soda pops and all soda pops in cans
 - D) All diet soda pops in cans

Answer: B

- 14) $(B \cup C)'$ 14) _____
- A) All soda pops that are non-colas and are not in cans.
 - B) All non-canned soda pops.
 - C) All soda pops that are in cans or are not colas.
 - D) All soda pops that are non-colas or are not in cans.

Answer: A

Answer the question.

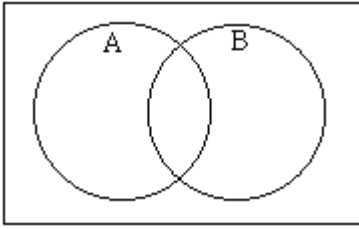
- 15) Let the universal set U be the set of all students at Oklahoma State University. Let C be the set of students who own at least one cat and let D be the set of students who own at least one dog. Write a set expression for the students who have no dogs. 15) _____
- A) $A - (A \cap D)$ B) $U - A$ C) $A - D$ D) D'

Answer: D

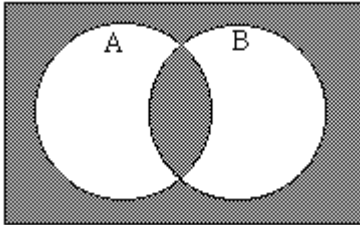
Shade the Venn diagram to represent the set.

16) $A' \cup B'$

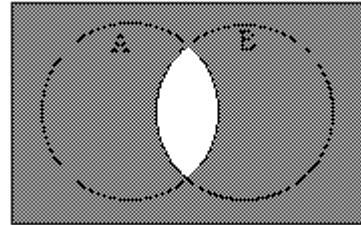
16) _____



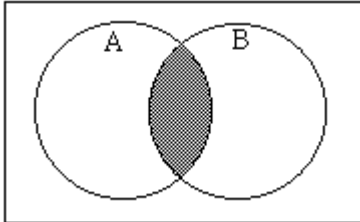
A)



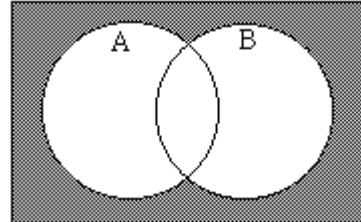
B)



C)



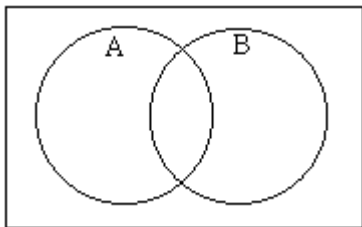
D)



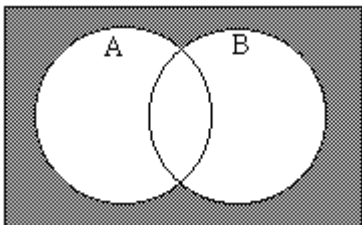
Answer: B

17) $A' \cap B'$

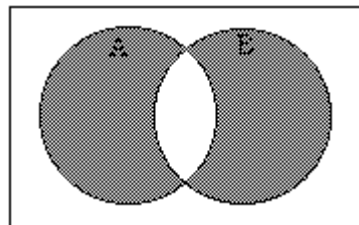
17) _____



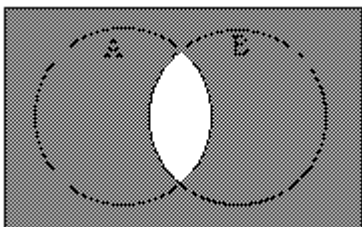
A)



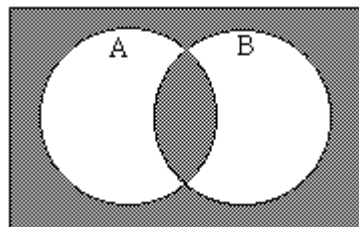
B)



C)



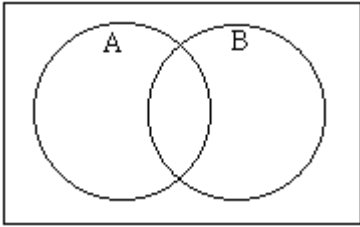
D)



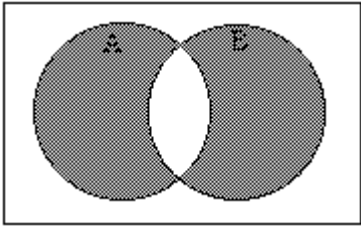
Answer: A

18) $(A \cap B) \cup (A \cup B)'$

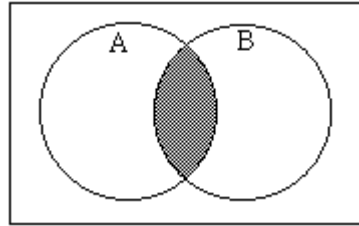
18) _____



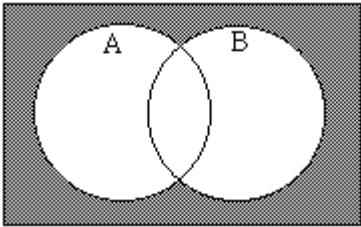
A)



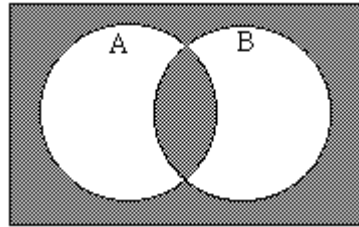
B)



C)



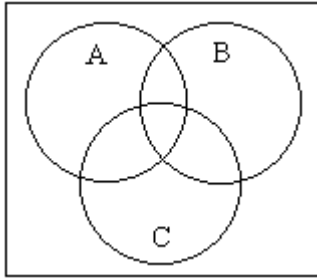
D)



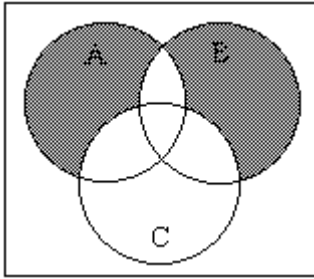
Answer: D

19) $(A \cup B \cup C)'$

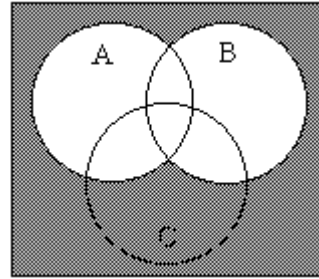
19) _____



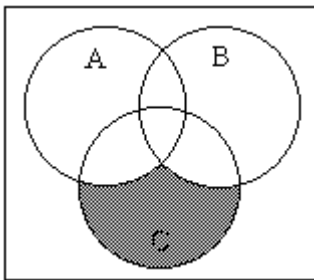
A)



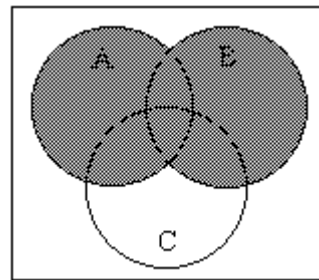
B)



C)



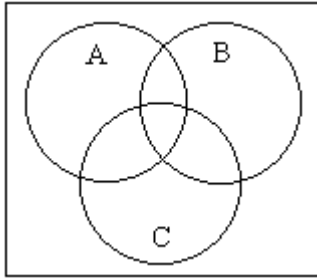
D)



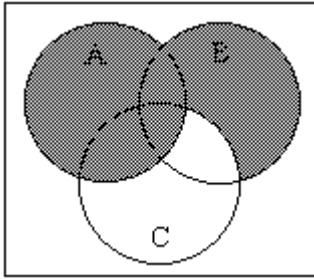
Answer: C

20) $(A' \cup B) \cap C$

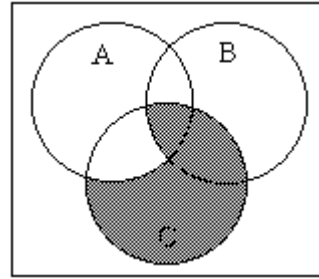
20) _____



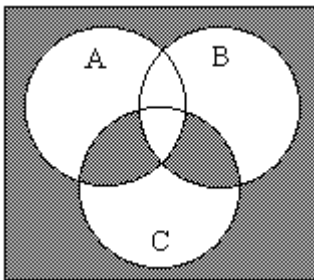
A)



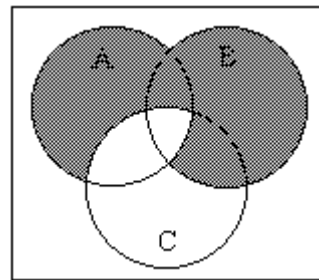
B)



C)



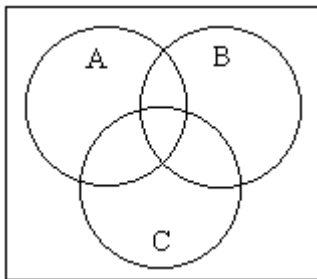
D)



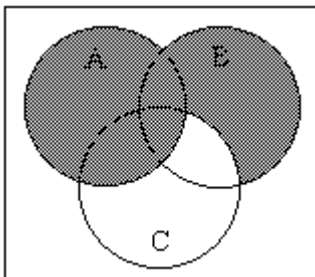
Answer: B

21) $B \cup (A \cap C)$

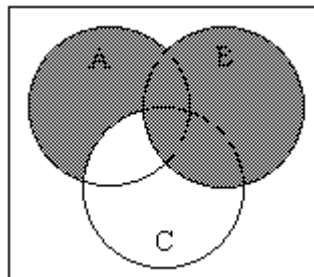
21) _____



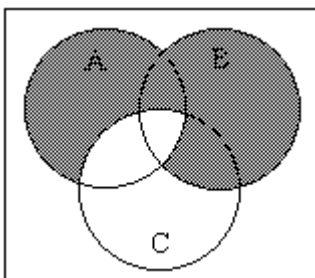
A)



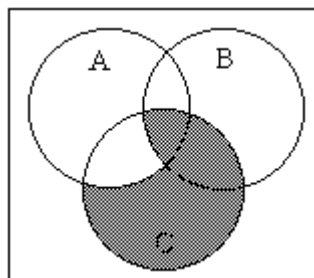
B)



C)



D)



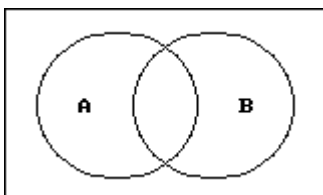
Answer: B

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

Use a Venn diagram to decide if the statement is true or false.

22) $(A' \cup B)' = A' \cap B$

22) _____



Answer: FALSE

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

Use the counting formula to solve the problem.

23) If $n(A) = 4$, $n(B) = 9$ and $n(A \cap B) = 2$, what is $n(A \cup B)$?

23) _____

A) 13

B) 11

C) 12

D) 10

Answer: B

- 24) If $n(A) = 32$, $n(B) = 93$ and $n(A \cup B) = 109$, what is $n(A \cap B)$? 24) _____
A) 18 B) 8 C) 48 D) 16

Answer: D

- 25) If $n(B) = 12$, $n(A \cap B) = 3$, and $n(A \cup B) = 21$, find $n(A)$. 25) _____
A) 14 B) 9 C) 10 D) 12

Answer: D

- 26) If $n(A) = 10$, $n(A \cup B) = 28$, and $n(A \cap B) = 6$, find $n(B)$. 26) _____
A) 23 B) 18 C) 24 D) 25

Answer: C

Solve the problem.

- 27) At East Zone University (EZU) there are 897 students taking College Algebra or Calculus. 520 are taking College Algebra, 450 are taking Calculus, and 73 are taking both College Algebra and Calculus. How many are taking Algebra but not Calculus? 27) _____
A) 374 B) 824 C) 447 D) 377

Answer: C

- 28) A survey of 300 families showed that 28) _____
115 had a dog;
88 had a cat;
40 had a dog and a cat;
112 had neither a cat nor a dog nor a parakeet;
10 had a cat and dog and a parakeet.

How many had a parakeet only?

- A) 25 B) 35 C) 30 D) 40

Answer: A

- 29) A survey of a group of 115 tourists was taken in St. Louis. The survey showed the following: 29) _____
64 of the tourists plan to visit Gateway Arch;
48 plan to visit the zoo;
11 plan to visit the Art Museum and the zoo, but not the Gateway Arch;
13 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;
16 plan to visit none of the three places.

How many plan to visit the Art Museum only?

- A) 37 B) 13 C) 62 D) 99

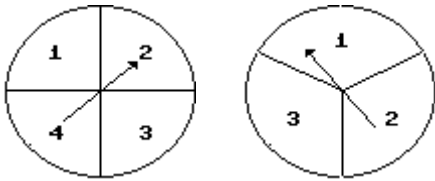
Answer: B

- 30) Give the number of possible outcomes for tossing 10 coins. 30) _____
A) 2048 B) 1024 C) 20 D) 512

Answer: B

31)

31) _____



Give the number of possible outcomes for spinning the first spinner 3 times and the second spinner 6 times.

- A) 793 B) 216 C) 30 D) 46,656

Answer: D

List the outcomes.

- 32) A 6-sided die is rolled. The sides contain the numbers 1, 2, 3, 4, 5, 6. List the sample space of rolling one die. 32) _____
 A) {1, 2, 3, 4, 5, 6} B) {6} C) {1, 6} D) {36}

Answer: A

- 33) An 8-sided die is rolled. The sides contain the numbers 1, 2, 3, 4, 5, 6, 7, 8. List the sample space of rolling one die. 33) _____
 A) {8} B) {1, 8}
 C) {1, 2, 3, 4, 5, 6, 7, 8} D) {64}

Answer: C

- 34) A box contains 13 white cards numbered 1 through 13. List the outcomes of sample space of the event choosing one card with a number greater than 6. 34) _____
 A) {7, 8, 9, 10, 11, 12, 13} B) {11}
 C) {1, 2, 3, ... 13} D) {6, 7, 8, 9, 10, 11, 12, 13}

Answer: A

- 35) A box contains 2 blue cards numbered 1 through 2, and 3 green cards numbered 1 through 3. List the outcomes of sample space of picking a blue card followed by a green card. 35) _____
 A) {(1, 1), (1, 2), (1, 3), (2, 1), (2, 2), (2, 3)} B) {(1, 1), (1, 2), (2, 1), (2, 2), (3, 1), (3, 2)}
 C) {12} D) {7}

Answer: A

- 36) A group of 18 people are assigned numbers 1 through 18. List the outcomes of sample space of the event choosing a person with a number 5 or less. 36) _____
 A) {1} B) {1, 2, 3, 4, 5} C) {18} D) {1, 2, 3, 4}

Answer: B

Find the probability.

- 37) A bag contains 4 red marbles, 3 blue marbles, and 6 green marbles. What is the probability of choosing a blue marble? 37) _____
 A) $\frac{4}{13}$ B) $\frac{3}{13}$ C) $\frac{6}{13}$ D) $\frac{3}{7}$

Answer: B

- 38) A 6-sided die is rolled. What is the probability of rolling a number less than 6? 38) _____
A) $\frac{1}{6}$ B) $\frac{5}{7}$ C) 1 D) $\frac{5}{6}$

Answer: D

- 39) A bag contains 8 red marbles, 2 blue marbles, and 1 green marble. What is the probability of choosing a marble that is not blue? 39) _____
A) $\frac{2}{11}$ B) $\frac{11}{9}$ C) $\frac{9}{11}$ D) 9

Answer: C

- 40) Two 6-sided dice are rolled. What is the probability that the sum of the two numbers on the dice will be greater than 10? 40) _____
A) $\frac{1}{18}$ B) $\frac{5}{18}$ C) 3 D) $\frac{1}{12}$

Answer: D

- 41) A lottery game contains 21 balls numbered 1 through 21. What is the probability of choosing a ball numbered 22? 41) _____
A) $\frac{1}{21}$ B) 0 C) 1 D) 21

Answer: B

Assign a probability to the outcome.

- 42) When a single card is drawn from an ordinary 52-card deck, find the probability of getting a red card. 42) _____
A) 2 B) $\frac{1}{4}$ C) $\frac{1}{52}$ D) $\frac{1}{2}$

Answer: D

- 43) If you are dealt two cards successively (with replacement of the first) from a standard 52-card deck, find the probability of getting a heart on the first card and a diamond on the second. 43) _____
A) $\frac{1}{16}$ B) $\frac{1}{169}$ C) $\frac{13}{204}$ D) $\frac{1}{204}$

Answer: A

- 44) If you are dealt two cards successively (without replacement) from a standard 52-card deck, find the probability of getting a black on the first card and a heart on the second. 44) _____
A) $\frac{7}{51}$ B) $\frac{1}{2,652}$ C) $\frac{13}{51}$ D) $\frac{13}{102}$

Answer: D

- 45) If you are dealt two cards successively (without replacement) from a standard 52-card deck, find the probability of getting two black cards. 45) _____
A) $\frac{13}{51}$ B) $\frac{25}{102}$ C) $\frac{1}{2,652}$ D) $\frac{25}{51}$

Answer: B

Consider the sample space $S = \{a, b, c, d\}$. Use the given information to find the requested probability.

46) $P(a) = \frac{1}{4}$, $P(b) = \frac{1}{8}$, $P(c) = \frac{1}{4}$; find $P(d)$.

46) _____

A) $P(d) = \frac{1}{4}$

B) $P(d) = \frac{3}{8}$

C) $P(d) = \frac{5}{8}$

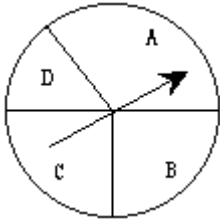
D) $P(d) = 0$

Answer: B

Solve the problem.

47)

47) _____



What is the probability of spinning an A on this spinner?

A) $\frac{5}{8}$

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

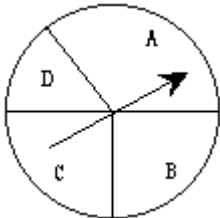
C) $\frac{3}{8}$

D) $\frac{3}{5}$

Answer: C

48)

48) _____



What is the probability of spinning a B on this spinner?

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

B) $\frac{2}{6}$

C) $\frac{2}{3}$

D) $\frac{3}{4}$

Answer: A

Find the probability of the given event.

49) A card drawn from a well-shuffled deck of 52 cards is a red ace.

49) _____

A) $\frac{1}{13}$

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

C) $\frac{1}{52}$

D) $\frac{1}{26}$

Answer: D

50) A card drawn from a well-shuffled deck of 52 cards is an ace or a 9.

50) _____

A) $\frac{5}{13}$

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

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

D) 10

Answer: C

- 51) A bag contains 7 red marbles, 4 blue marbles, and 1 green marble. A randomly drawn marble is not blue. 51) _____
- A) $\frac{3}{2}$ B) 8 C) $\frac{1}{3}$ D) $\frac{2}{3}$

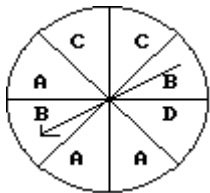
Answer: D

- 52) A bag contains 19 balls numbered 1 through 19. A randomly chosen ball has an even number. 52) _____
- A) $\frac{2}{19}$ B) $\frac{9}{19}$ C) 9 D) $\frac{19}{9}$

Answer: B

Find the odds.

- 53) 53) _____

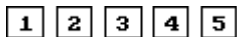


What are the odds of spinning an A on this spinner? Sectors are of equal size.

- A) 3:5 B) 6:2 C) 4:2 D) 2:6

Answer: A

- 54) 54) _____



What are the odds of drawing an even number from these cards?

- A) 3:2 B) 2:5 C) 5:2 D) 2:3

Answer: D

- 55) A number cube labeled with numbers 1, 2, 3, 4, 5, and 6 is tossed. What are the odds for the cube showing a 4? 55) _____

- A) 4:6 B) 1:4 C) 1:5 D) 1:6

Answer: C

Two marbles are drawn without replacement from a box with 3 white, 2 green, 2 red, and 1 blue marble. Find the probability.

- 56) Both marbles are white. 56) _____

- A) $\frac{3}{32}$ B) $\frac{9}{56}$ C) $\frac{3}{28}$ D) $\frac{3}{8}$

Answer: C

- 57) The first marble is red and the second marble is white. 57) _____

- A) $\frac{3}{28}$ B) $\frac{3}{8}$ C) $\frac{3}{56}$ D) $\frac{3}{7}$

Answer: A

- 58) One marble is green and one marble is red. 58) _____
A) $\frac{1}{4}$ B) $\frac{3}{28}$ C) $\frac{1}{7}$ D) $\frac{1}{2}$

Answer: C

Solve the problem. Express the answer as a percentage.

- 59) 70% of the workers at Motor Works are female, while 51% of the workers at City Bank are female. If a worker is selected at random, what is the probability that the worker will be from Motor Works, given that the worker is female? Round your answer to the nearest tenth, if necessary. 59) _____
A) 51% B) 70% C) 57.9% D) 42.1%

Answer: C

- 60) 38% of the workers at Motor Works are female, while 60% of the workers at City Bank are female. If one of these companies is selected at random (assume a 50-50 chance for each), and then a worker is selected at random, what is the probability that the worker will be female? 60) _____
A) 60% B) 22% C) 38% D) 49%

Answer: D

- 61) A coin is biased to show 39% heads and 61% tails. The coin is tossed twice. What is the probability that the coin turns up tails on both tosses? 61) _____
A) 37.21% B) 22% C) 39% D) 61%

Answer: A

Answer Key

Testname: MATH1324TEST3REVIEW

- 1) D
- 2) C
- 3) C
- 4) A
- 5) C
- 6) D
- 7) A
- 8) TRUE
- 9) FALSE
- 10) FALSE
- 11) TRUE
- 12) TRUE
- 13) B
- 14) A
- 15) D
- 16) B
- 17) A
- 18) D
- 19) C
- 20) B
- 21) B
- 22) FALSE
- 23) B
- 24) D
- 25) D
- 26) C
- 27) C
- 28) A
- 29) B
- 30) B
- 31) D
- 32) A
- 33) C
- 34) A
- 35) A
- 36) B
- 37) B
- 38) D
- 39) C
- 40) D
- 41) B
- 42) D
- 43) A
- 44) D
- 45) B
- 46) B
- 47) C
- 48) A
- 49) D
- 50) C

Answer Key

Testname: MATH1324TEST3REVIEW

- 51) D
- 52) B
- 53) A
- 54) D
- 55) C
- 56) C
- 57) A
- 58) C
- 59) C
- 60) D
- 61) A