



Total: ____/34 marks

Multiple Choice (13 marks)*Identify the choice that best completes the statement or answers the question.*

1. The odds in favour of Macy passing her driver's test on the first try are 7 : 4. Determine the probability of Macy **not** passing her driver's test on the first try.

- A. 4 : 7
- B. 4 : 11
- C. 7 : 11
- D. 3 : 11

2. Julie draws a card at random from a standard deck of 52 playing cards. Determine the odds in favour of the card being a heart.

- A. 3 : 1
- B. 1 : 3
- C. 1 : 1
- D. 3 : 13

3. The weather forecaster says that there is an 80% probability of rain tomorrow. Determine the odds against rain.

- A. 4 : 5
- B. 4 : 1
- C. 1 : 5
- D. 1 : 4

4. Nine boys and twelve girls have signed up for a trip. Only six students will be selected to go on the trip. Determine, to the nearest hundredth of a percent, the probability that only boys will be on the trip.

- A. 0.02%
- B. 0.08%
- C. 0.15%
- D. 0.23%

5. Select the events that are mutually exclusive.

- A. Rolling a sum of 9 or rolling a multiple of 3 with a pair of six-sided dice, numbered 1 to 6.
- B. Drawing a Jack or drawing a face card from a standard deck of 52 playing cards.
- C. Walking to school or taking the bus to school.
- D. Drawing a 2 or drawing a spade from a standard deck of 52 playing cards.

6. Lorne rolls two regular six-sided dice. Determine the odds against him rolling an odd sum or a sum of 4.

- A. 7 : 11
- B. 1 : 8
- C. 17 : 19
- D. 5 : 7

7. There are 60 males and 90 females in a graduating class. Of these students, 30 males and 50 females plan to attend a certain university next year. Determine the probability that a randomly selected student plans to attend the university.

- A. 0.41
- B. 0.47
- C. 0.53
- D. 0.59

Use this information to answer the next two questions.

A person is shopping for a new snowmobile. The probability that someone buys an Artic Cat is 39%, a Polaris is 27% and a Ski-Doo is 18%.

8. Which of the following is the probability that this person buys either an Arctic Cat or a Ski-Doo?

- A. 66%
- B. 57%
- C. 45%
- D. 21%

9. What is the probability that the person buys a snowmobile that is not Arctic Cat, Polaris or Ski-Doo?

- A. 16%
- B. 61%
- C. 73%
- D. 82%

10. Cai tosses three coins. Determine the probability that they all land as tails.

- A. 0.125
- B. 0.875
- C. 0.0625
- D. 0.375

11. A spinner that has 3 equal parts of different colors is spun, and a regular fair 6-sided die is rolled. Determine the probability of spinning blue and rolling a 4.

- A. 1.24%
- B. 5.56%
- C. 7.17%
- D. 9.82%

12. Select the events that are dependent.

- A. Rolling a 2 and rolling a 5 with a pair of six-sided dice, numbered 1 to 6.
- B. Drawing an odd card from a standard deck of 52 playing cards, putting it back, and then drawing another odd card.
- C. Drawing a spade from a standard deck of 52 playing cards and then drawing another spade, without replacing the first card.
- D. Rolling an even number and rolling an odd number with a pair of six-sided dice, numbered 1 to 6.

13. Select the independent events.

- A. $P(A) = 0.22$, $P(B) = 0.39$, and $P(A \cap B) = 0.072$
- B. $P(A) = 0.18$, $P(B) = 0.7$, and $P(A \cap B) = 0.163$
- C. $P(A) = 0.51$, $P(B) = 0.1$, and $P(A \cap B) = 0.069$
- D. $P(A) = 0.9$, $P(B) = 0.23$, and $P(A \cap B) = 0.207$

Numerical Response (4 marks)

1. From a committee of 12 people, 3 of these people are randomly chosen to be president, vice-president, and secretary. Determine, to the nearest hundredth of a percent, the probability that Pavel, Rashida, and Jerry will be chosen.

Record your answer in the numerical response box below.

2. Ashley has letter tiles that spell NAPKIN. She has selected three of these tiles at random to form different letter arrangements. Determine the probability, to the nearest hundredth, that the tiles she selected are two consonants and one vowel.

Record your answer in the numerical response box below.

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3. Meghan needs to create a 4-digit password. The digits cannot repeat in the password and cannot start with the digit 0. What is the probability, to the nearest hundredth of a percent, that the password starts with a 9 and ends with a 6?

Record your answer in the numerical response box below.

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4. Liam has four identical black socks and six identical white socks loose in his drawer. He pulls out one sock at random and then another sock, without replacing the first sock. Determine, to the nearest tenth of a percent, the probability that He pulls out a pair of black socks.

Record your answer in the numerical response box below.

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Written Response (17 marks)

Please show all your work for full marks.

1. Jason and Coulter have invented a game:

- Two people play.
- For each turn, both players roll a die.
- Player 1 scores a point in the product of the two numbers is even.
- Player 2 scores a point in the product of the two numbers is odd.
- A game consists of 10 turns.
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Is their game fair? If it is not fair, which player has the advantage? (2 marks)

2. Brian has been awarded a penalty shot in a hockey game. Colby is the goalie. Brian has scored 4 times in his last 10 penalty shots. His coach says that the odds against him scoring is 4 : 10. Discuss two mistakes that the coach made in his calculations. (2 marks)

3. Two regular 6-sided dice are rolled. Let A represent rolling a sum greater than 10. Let B represent rolling a sum that is a multiple of 2. Sam says events A and B are mutually exclusive.

Is Sam correct? (1 mark)

Justify your answer using a graphic organizer. (1 mark)

What is the probability of rolling $A \cap B$? (1 mark)

4. A particular history class at Arlington High School has the following breakdown of students by grade and by gender:

Grade	Gender
6 Freshmen	3 Girls and 3 Boys
16 Sophomores	10 Girls and 6 Boys
8 Juniors	5 Girls and 3 Boys
30 Total Students	18 Girls and 12 Boys

One student is chosen at random from the 30 total students to give a speech the next day. Find the probability that the student chosen is:

a. A girl (1 mark)

b. A sophomore (1 mark)

c. A girl or a sophomore (1 mark)

d. Why is the probability that you calculated in part (c) not the sum of the probabilities that you found in parts (a) and (b)? (1 mark)

5. Game 1 has odds in favor of winning of 2:3. Game 2 has odds against winning of 5:7.
Which game would you prefer to play? Explain your answer. (1 mark)

6. Laurianne has seven red marbles and five blue marbles in a bag. He draws two marbles, one after the other, without replacing the first marble.

Determine the probability that both marbles are red.

Determine the probability that both marbles are blue.

c. Use your answers for parts a) and b) to determine the probability of drawing one red marble and one blue marble.

7. Brandon walks his dog every day. They walk by the river five days a week, and they walk around the block two days a week. When they walk by the river, they see other dogs 85% of the time. When they walk around the block, they see other dogs 30% of the time.

a. Draw a tree diagram to represent this situation. (1 mark)

b. Determine the probability that Logan and his dog will see another dog. (1 mark)