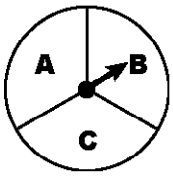
Name: _____ **Class:** _____ **Date:** _____ **ID: A**

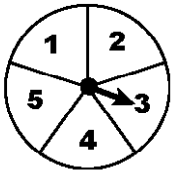
Honors Math II Probability Unit Review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. A bag contains hair ribbons for a spirit rally. The bag contains 5 black ribbons and 7 green ribbons. Lila selects a ribbon at random, then Jessica selects a ribbon at random from the remaining ribbons. Find the probability that both events *A* and *B* occur. Express your answer as a fraction in simplest form.
   Event *A*: Lila selects a black ribbon.
   Event *B*: Jessica selects a green ribbon.
   a. $\frac{7}{33}$
   b. $\frac{35}{144}$
   c. $\frac{35}{132}$
   d. $\frac{5}{22}$
2. A bag contains orange, white, and purple marbles. If you randomly choose a marble from the bag, there is a 17% chance of drawing an orange marble and a 50% chance of drawing a white marble. What is the probability of choosing a purple marble? Express your answer as a percent.
   a. 67%
   b. $33\frac{1}{3}\%$
   c. 33%
   d. 17%
3. A movie company surveyed 1000 people. 229 people said they went to see the new movie on Friday, 256 said they went on Saturday. If 24 people saw the movie both nights, what is the probability that a person chosen at random saw the movie on Friday or Saturday?
   a. 0.413
   b. 0.437
   c. 0.461
   d. 0.485
4. A spinner is divided into three sections: red, blue, and green. The probability that the spinner will land on red is $\frac{2}{5}$. The probability that the spinner will land on blue is $\frac{1}{3}$. What is the probability of the spinner landing on green? Express your answer as a fraction in simplest form.
   a. $\frac{2}{5}$
   b. $\frac{4}{15}$
   c. $\frac{11}{15}$
   d. $\frac{1}{3}$
5. Events *A* and *B* are independent. Find the missing probability.
   $P(A) = _?_$
   $P(B) = 0.3$
   $P(A \text{ and } B) = 0.06$
   a. 0.7
   b. 0.24
   c. 0.2
   d. 0.3

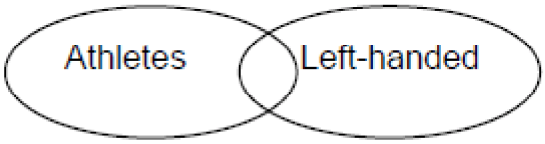
6. Find the probability of getting the results shown on the spinners. Express your answer as a fraction in simplest form.





a. $\frac{1}{5}$
c. $\frac{1}{3}$
b. $\frac{1}{15}$
d. $\frac{1}{8}$

7. Of 50 students going on a class trip, 35 are student athletes and 5 are left-handed. Of the student athletes, 3 are left-handed. Which is the probability that one of the students on the trip is an athlete or is left-handed?



a. 0.2
c. 0.74
b. 0.5
d. 0.8

8. The table shows the distribution of male and female students and left- and right-handed students in the math club. Find the probability that a female student selected at random is left-handed. Express your answer as a fraction in simplest form.

	Left-handed	Right-handed
Male	2	35
Female	6	36

a. $\frac{3}{4}$
c. $\frac{1}{6}$
b. $\frac{1}{7}$
d. $\frac{6}{79}$

9. The sections on a spinner are numbered from 1 through 8. If the probability of landing on a given section is the same for all the sections, what is the probability of spinning a number less than 4 or greater than 7 in a single spin?

a. $\frac{1}{2}$
b. $\frac{1}{8}$
c. $\frac{3}{8}$
d. $\frac{5}{8}$

10. There are 89 students in the freshman class at Northview High. There are 32 students enrolled in Spanish class and 26 enrolled in history. There are 17 students enrolled in both Spanish and history. If a freshman is selected at random to raise the flag at the beginning of the school day, what is the probability that it will be a student enrolled in Spanish or history?

a. $\frac{41}{58}$
c. $\frac{17}{89}$
b. $\frac{41}{89}$
d. $\frac{58}{89}$

11. Caleb and Drew are playing a game with a pair of dice. Caleb needs a sum of 5 or greater to win. What is his probability of winning on his next turn?

    a. $\frac{5}{6}$
    c. $\frac{1}{6}$
    b. $\frac{2}{5}$
    d. $\frac{2}{3}$

12. A spinner is divided into 10 equal parts and numbered from 1 through 10. What is the probability of spinning a number less than 6 or greater than 6 in a single spin?

    a. $\frac{9}{10}$
    b. $\frac{3}{5}$
    c. $\frac{4}{5}$
    d. $\frac{7}{10}$

13. A person is selected at random. What is the probability that the person was not born on a Monday? Express your answer as a percent. If necessary, round your answer to the nearest tenth of a percent.

    a. 80%
    c. 85.7%
    b. 20%
    d. 14.3%

14. What is the probability of rolling a 5 on the first number cube and rolling a 6 on the second number cube? Assume the number cubes are fair and have six sides. Express your answer as a fraction in simplest form.

Cube 1

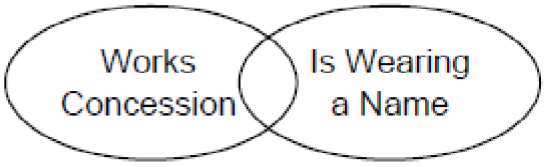
Cube 2

    a. $\frac{1}{30}$
    c. $\frac{1}{36}$
    b. $\frac{1}{12}$
    d. $\frac{1}{6}$

15. At a school carnival one of the booths has 12 plastic ducks floating in a tub of water. Each duck has either a zero, one, or two printed on the bottom, indicating the number of prize tickets you receive if you select that duck. Six of the ducks have a zero on the bottom, three of them have a one printed on the bottom, and three of them have a two printed on the bottom. If you randomly select a duck, and then randomly select another duck without returning the first to the tub, what is the probability that you will receive four prize tickets?

    a. $\frac{1}{16}$
    b. $\frac{1}{22}$
    c. $\frac{1}{6}$
    d. $\frac{1}{44}$

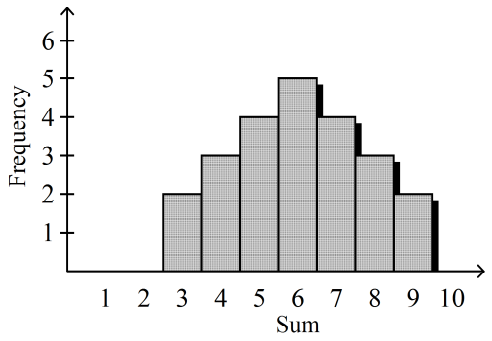
16. Of 100 workers in a stadium, 42 work in the concession stands and 88 are wearing name tags. Of the workers in the concession stand, five-sixths are wearing name tags. Which is the probability that one of the workers is in concessions or is wearing a name tag?



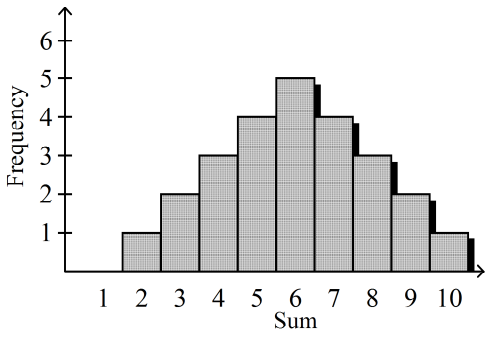
    a. 0.3
    c. 0.95
    b. 0.87
    d. 1

17. Suppose you spin two spinners. Each has 5 equally likely outcomes, the numbers 1 through 5. Which graph shows the probability distribution for the sum of the two spinners?

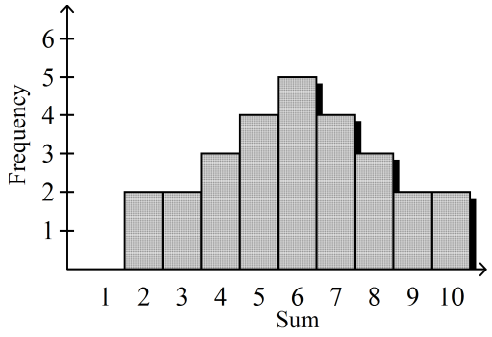
a.



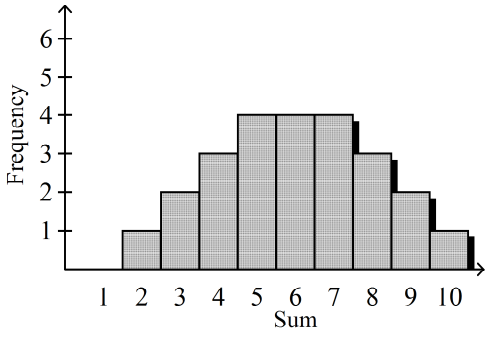
c.



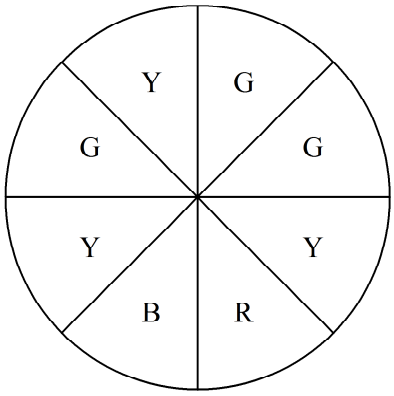
b.



d.



18. The dartboard has 8 sections of equal area. The letters represent the colors red (R), yellow (Y), blue (B), and green (G). Use a table to show the probability distribution for a dart that hits the board at a random location.



a.

Color	R	Y	G	B
Probability	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

c.

Color	R	Y	G	B
Probability	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$

b.

Color	R	Y	G	B
Probability	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{4}$

d.

Color	R	Y	G	B
Probability	$\frac{3}{8}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{8}$

19. The table shows the results of a survey of students in two math classes.
Find *P*(more than 1 hour of TV | 6th period class). Round to the nearest thousandth.

Did You Watch More Than One Hour of TV Last Night?

	Yes	**No**
3rd period class	11	6
6th period class	13	10

a. 0.647 b. 0.565 c. 0.435 d. 0.765

20. The table shows the results of a survey of college students. Find the probability that a student is taking a humanities class, given the student is male. Round to the nearest thousandth.

First Class of the Day for College Students

	Male	**Female**
Humanities	70	80
Science	50	80
Other	60	70

a. 0.171 b. 0.467 c. 0.269 d. 0.389

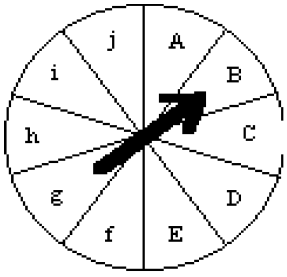
21. The probability that a city bus is ready for service when needed is 84%. The probability that a city bus is ready for service and has a working radio is 67%. Find the probability that a bus chosen at random has a working radio given that it is ready for service. Round to the nearest tenth of a percent.
a. 17.0% b. 79.8% c. 83.8% d. 12.5%

22. A class of 40 students has 11 honor students and 10 athletes. Three of the honor students are also athletes. One student is chosen at random. Find the probability that this student is an athlete if it is known that the student is not an honor student. Round to the nearest thousandth.
a. 0.241 b. 0.345 c. 0.252 d. 0.034

Suppose *Q* and *R* are independent events. Find *P*(*Q* and *R*).

23. $P(Q) = 0.41$, $P(R) = 0.44$
a. 0.03 b. 0.1804 c. 0.85 d. 0.0123

24. If all possible results are equally likely, what is the probability that a spin of the spinner will land on an upper case letter or a consonant?



a. 0.9 b. 0.7 c. 0.5 d. 0.3

Name: _____ **ID: A**

Short Answer

1. A card is randomly selected from a standard deck of 52 cards. What is the probability that it is a diamond or a 10?

2. There are 300 seniors this year in the high school. Of this class, 140 take a math course and 145 take a language course. If the probability of randomly selecting a student from the seniors that takes a math or a language course is 75%, about how many from the seniors take both a math and a language course?

3. Let *n* be a randomly selected integer from 1 to 40. What is the probability that *n* is prime given it is greater than 25?

4. An electronics parts company tests parts daily to see how many parts are faulty.

	Faulty	Not faulty
Day Shift	27	672
Night Shift	13	597

Part A: What is the probability of randomly choosing a part that is faulty, given that it was made on the night shift? Express the probability as a percent rounded to the nearest tenth.

Part B:. If 3% or greater of a shift's parts are faulty, production stops and the machinery is adjusted. Did the night shift or day shift need to stop production to adjust the machines? Explain your answer.

5. Participants in a study of a new medication received either medication *A* or a placebo. Make a tree diagram of the results of the study. Then find *P*(placebo and improvement).

   Of all those who participated in the study, 80% received medication *A*.
   Of those who received medication *A*, 76% reported an improvement.
   Of those who received the placebo, 62% reported no improvement.

Essay

1. A study of traffic patterns in a large city shows that if the weather is rainy, there is a 50% chance of an automobile accident occurring during the morning commute. If the weather is clear, the chance of an accident is reduced to 25%. Suppose the weather forecast for tomorrow predicts a 75% chance of rain.
   a. Draw a tree diagram based on the information.
   b. Find *P*(it will rain tomorrow and there will be an accident). Show your work.
   c. Find *P*(there will be an accident tomorrow). Show your work.

Other

1. For events *A* and *B*, $P(A) = \frac{4}{13}$ and $P(B) = \frac{1}{4}$. Also, $P(A \text{ and } B) = \frac{1}{15}$. Are *A* and *B* independent? Explain.

Honors Math II Probability Unit Review
Answer Section

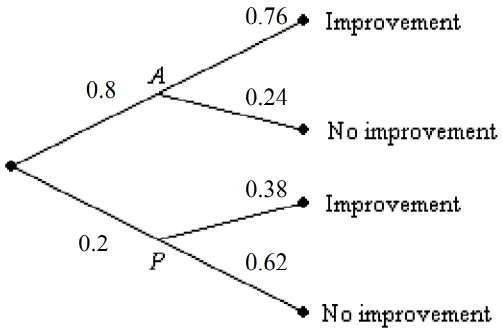
MULTIPLE CHOICE

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

SHORT ANSWER

1. $\frac{4}{13}$
2. 60
3. $\frac{1}{5}$ or 0.2
4. ***Part A:*** 2.1%

   Part B: The night shift did not have to stop production, since only 2.1% of the parts were faulty. The day shift did have to stop production because 3.9% of their parts were faulty.



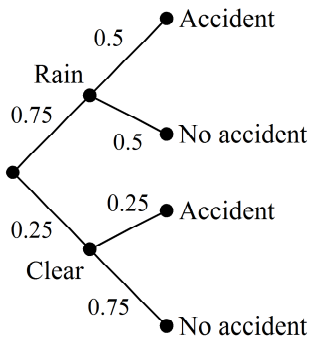
5.

P(placebo and improvement) = $0.2 \cdot 0.38 = 7.6\%$

ESSAY

1.

[4] **a.**



b. P(rain tomorrow and accident)

$= P(\text{rain}) \times P(\text{rain and accident})$

$= 0.75 \times 0.5$

$= 0.375 = 38\%$

c. P(accident)

$= P(\text{rain tomorrow and accident}) + P(\text{clear tomorrow and accident})$

$= 0.375 + (0.25 \times 0.25)$

$= 0.4375 = 44\%$

[3] one part incorrect
[2] two parts incorrect
[1] correct answers but no work shown

OTHER

1. No, A and B are not independent. If they were independent, then $P(A \text{ and } B)$ would be $\frac{4}{13} \cdot \frac{1}{4}$, or $\frac{1}{13}$. But $P(A \text{ and } B) = \frac{1}{15}$.