Math 30-2 Probability Lesson 1 Practice Questions [Solutions at the end]

1. The odds in favour of the Enforcers winning their first soccer game are listed as 12:5. The odds against the Enforcers winning their first soccer game are

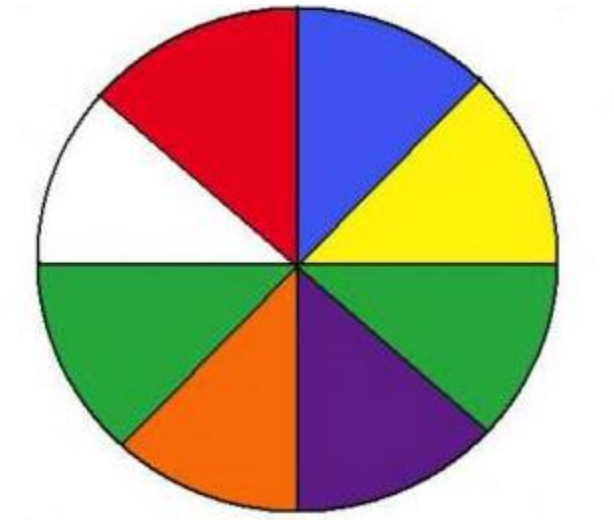
   A) 7:5 B) 5:12 C) 7:12 D) 12:7

Use the following information to answer the next question.

Suppose a Provincial Athletic Association uses a computer to randomly draw the name of an athlete from their database to award a $250 gift certificate to a local sporting goods store. The odds in favour of selecting a female are 68:72.

2. The probability, to one decimal, that a randomly selected athlete is male can be written in the form, KM.N%. The values of K, M, and N respectively, are ___, ___, and ___.

The circle below is divided into 8 equal parts. Suppose a spinner is placed in the middle and a person spins it.



3. A) The odds in favour of yellow are _____.
   B) The odds against green are _____.
   C) The probability of white or blue is _____.
   D) The probability of not red is _____.
   E) The color most likely to occur is _____.
   F) The odds in favour of white or purple or orange are _____.

Use the following information to answer the next question.

The table below shows the odds of four teams to win the league championships.

Team	Odds
Rattlesnakes	7:2
Cougars	12:3
Rockets	2:1
Jets	22:8

4. The team *least* likely to win **and** the team *most* likely to win is the
   A) Rockets and the Rattlesnakes
   B) Rockets and the Cougars
   C) Jets and the Cougars
   D) Jets and the Rattlesnakes

5. Statistics have shown that 8 out of 14 teens have admitted to talking on cell phones while driving. The odds against randomly selecting a teen who admits to talking on a cell phone while driving can be expressed in the form *a:b*. The value of *a* is ____.

Use the following information to answer the next question.

A recent survey of 100 high school students found that 75 own a smart phone and have their own Netflix account.

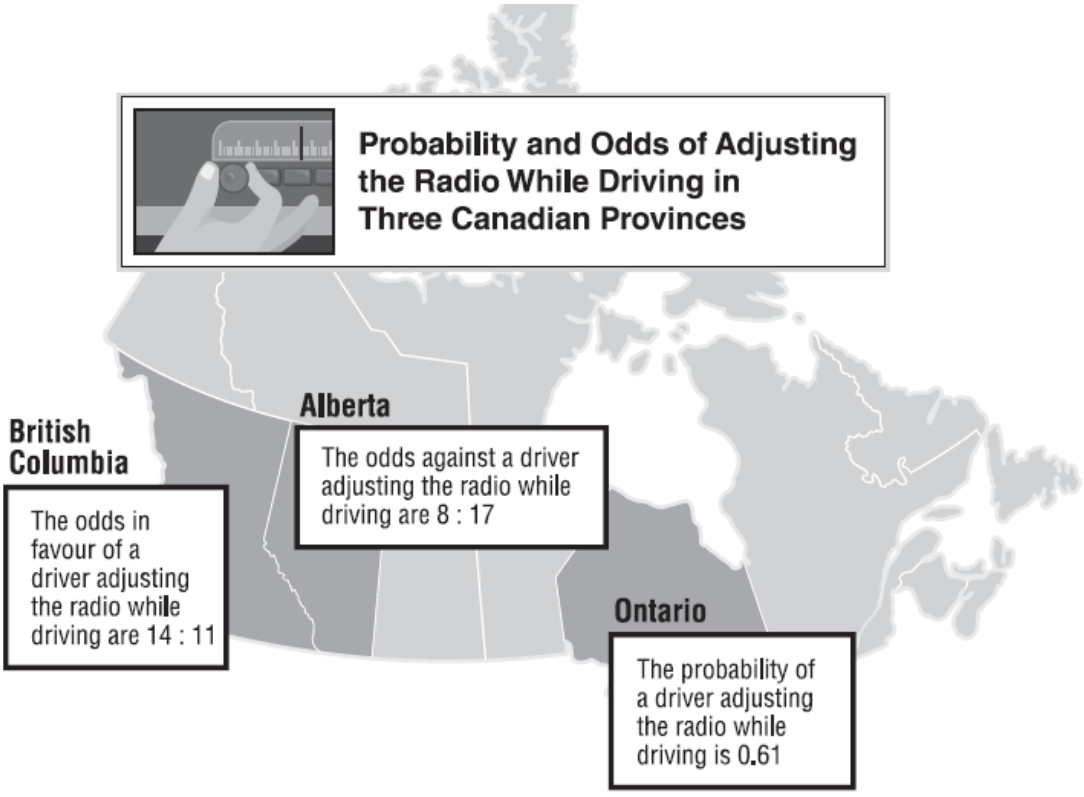
6. The odds in favour of randomly selecting a student who owns a smart phone and has their own Netflix account are

   A) 3:4 B) 4:3 C) 3:1 D) 1:3

7. What are the odds against randomly picking the most likely letter from the word SCHOOL?

   A) 2:4 B) 2:1 C) 2:6 D) 6:2

Use the diagram below to answer the next question.



8. Which two of these Provinces, in order, have the greatest likelihood of a driver adjusting the radio while driving?
   A) Alberta and Ontario
   B) Ontario and BC
   C) Ontario and Alberta
   D) Alberta and BC

9. If the odds in favour of event B are k:v, the P(B) not occurring is
   A) $\frac{k}{k+v}$ B) $\frac{v}{k+v}$ C) $\frac{k}{v}$ D) $\frac{v}{k}$

10. The weather forecaster says that there is an 80% probability of rain tomorrow. The odds, written in lowest terms, against rain tomorrow can be written in the form H:J.
    The value of J is ____.

11. When two dice are rolled, the odds of rolling a sum of 7 is 1:5. If two dice are rolled 250 times, the estimated number of times to roll a sum of 7 is ____.

12. Events A and B are complementary events. If the odds in favour of event A are 8:7, then which of the following best describes P(B)?
    A) $\frac{8}{15}$ B) $\frac{7}{15}$ C) $\frac{1}{15}$ D) $\frac{7}{8}$

Math 30-2 Probability Lesson 1 Practice Questions Solutions

1. The odds in favour of the Enforcers winning their first soccer game are listed as 12:5. The odds against the Enforcers winning their first soccer game are

   A) 7:5 B) 5:12 C) 7:12 D) 12:7

Solution

Odds can be thought of as "part-part". When the odds in favour are listed as 12:5, think of 12 parts for and 5 parts against. When asked for odds against, the order of the numbers are reversed. The parts against are now listed first because they are mentioned first in the question.

Use the following information to answer the next question.

Suppose a Provincial Athletic Association uses a computer to randomly draw the name of an athlete from their database to award a $250 gift certificate to a local sporting goods store. The odds in favour of selecting a female are 68:72.

2. The probability, to one decimal, that a randomly selected athlete is male can be written in the form, KM.N%. The values of K, M, and N respectively, are _5_, _1_, and _4_.

Solution

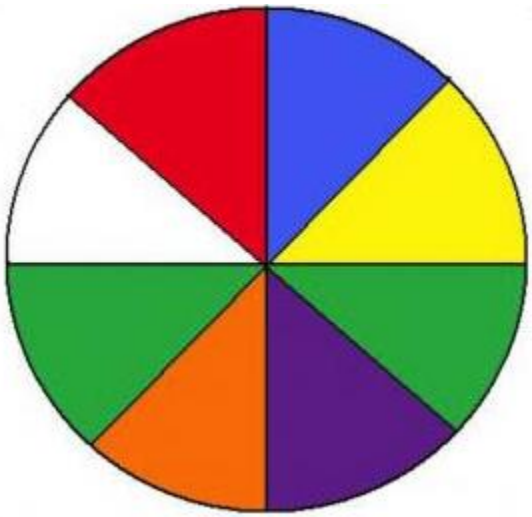
From the odds statement of 68:72, add these two parts together to find the total number of parts. The sum is 140.

The probability of selecting a female is $\frac{68}{140}$.

The probability of selecting a male is $\frac{72}{140}$, or 0.51428…or 51.4%.

The values of K, M, and N respectively, are _5_, _1_, and _4_.

The circle below is divided into 8 equal parts. Suppose a spinner is placed in the middle and a person spins it.



3. A) The odds in favour of yellow are __1:7__.
   B) The odds against green are __6:2, or 3:1__.
   C) The probability of white or blue is $\frac{2}{8} or \frac{1}{4}$
   D) The probability of not red is $\frac{7}{8}$
   E) The color most likely to occur is __green____.
   F) The odds in favour of white or purple or orange are __3:5__

Use the following information to answer the next question.

The table below shows the odds of four teams to win the league championships.

Team	Odds
Rattlesnakes	7:2
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4. The team *least* likely to win **and** the team *most* likely to win is the
   A) Rockets and the Rattlesnakes
   B) Rockets and the Cougars
   C) Jets and the Cougars
   D) Jets and the Rattlesnakes

Solution

Convert the odds to probabilities and compare their decimal equivalents.

	Odds	Probability	Decimal
Rattlesnakes	7:2	$\frac{7}{9}$	0.78
Cougars	12:3	$\frac{12}{15}$	0.8
Rockets	2:1	$\frac{2}{3}$	0.67
Jets	22:8	$\frac{22}{30}$	0.73

The Rockets are least likely to win and the Cougars are most likely to win.

5. Statistics have shown that 8 out of 14 teens have admitted to talking on cell phones while driving. The odds against randomly selecting a teen who admits to talking on a cell phone while driving can be expressed in the form *a*:*b*. The value of *a* is _6__.

Solution

With a probability of $\frac{8}{14}$ admitting to talking on a cell phone while driving, the odds are 8:6. Therefore, the odds against are 6:8. The value of a is 6.

Use the following information to answer the next question.

A recent survey of 100 high school students found that 75 own a smart phone and have their own Netflix account.

6. The odds in favour of randomly selecting a student who owns a smart phone and has their own Netflix account are

   A) 3:4 B) 4:3 C) 3:1 D) 1:3

Solution

The probability of randomly selecting a student who owns a smart phone and has a Netflix account is $\frac{75}{100} = \frac{3}{4}$. The equivalent odds statement is 3 part for and 1 part against; or 3:1.

7. What are the odds against randomly picking the most likely letter from the word SCHOOL?

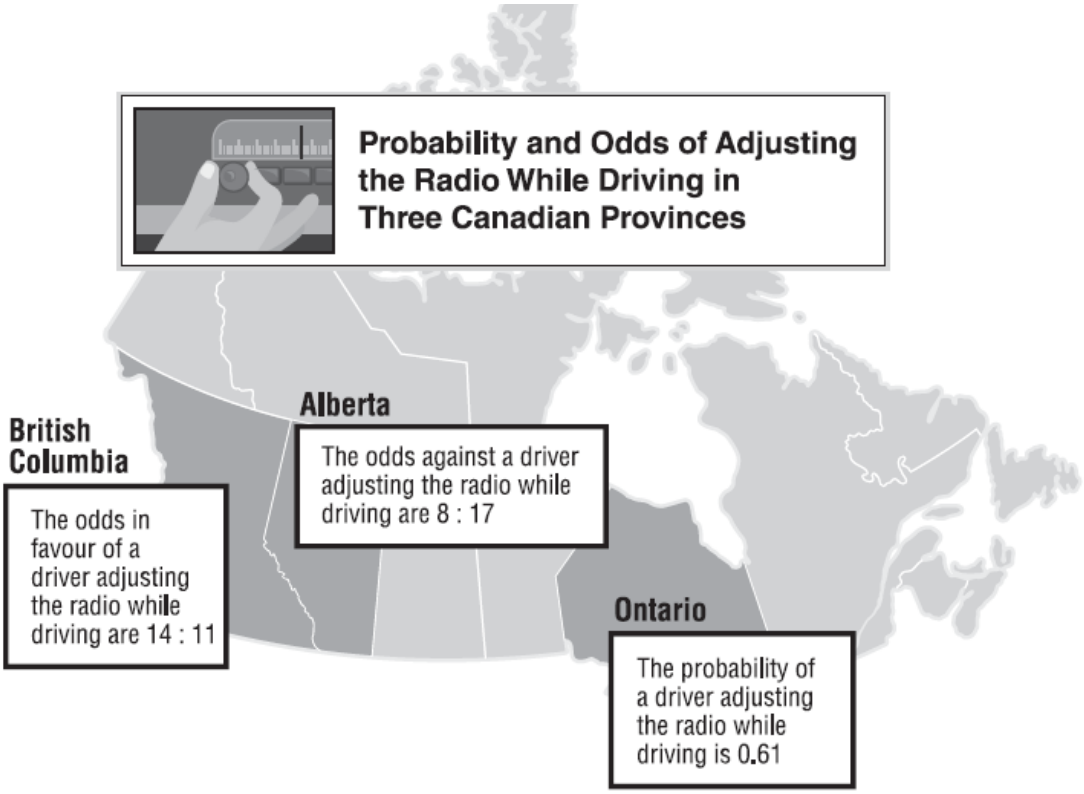
   A) 2:4 B) 2:1 C) 2:6 D) 6:2

Solution

The most likely letter to select is O because there are two O's and all the rest of the letters only occur once.

There are two O's out of 6 letters. The probability would be $\frac{2}{6} or \frac{1}{3}$. This means that there is one part **for** and 2 parts **against**. The odds in favour of picking an O are 1:2; which means that the odds against are 2:1.

Use the diagram below to answer the next question.



8. Which two of these Provinces, in order, have the greatest likelihood of a driver adjusting the radio while driving?
   A) Alberta and Ontario
   B) Ontario and BC
   C) Ontario and Alberta
   D) Alberta and BC

Solution

In BC, the odds *in favour* are 14:11, meaning that the probability is $\frac{14}{25} or 0.56$

In Alberta, the odds *against* are 8:17 (thus the odds *in favour* are 17:8), meaning that the probability is $\frac{17}{25} or 0.68$.

In Ontario, the probability is 0.61.

The correct answer is A, Alberta and then Ontario.

9. If the odds in favour of event B are k:v, the P(B) **not** occurring is

A) $\frac{k}{k+v}$ B) $\frac{v}{k+v}$ C) $\frac{k}{v}$ D) $\frac{v}{k}$

Solution

The odds against event B occurring are v:k. Since odds are considered to be "part-part", the sum of the two parts will be on the denominator in probability form, to represent the total.

The correct answer is B, $\frac{v}{k+v}$.

10. The weather forecaster says that there is an 80% probability of rain tomorrow. The odds, written in lowest terms, against rain tomorrow can be written in the form H:J.
The value of J is _4_.

Solution

Reduce $\frac{80}{100}$ to lowest terms. The equivalent fraction is $\frac{4}{5}$, which expressed as odds in favour of raining being 4:1. The odds against rain are 1:4.

The value of J is 4.

11. When two dice are rolled, the odds of rolling a sum of 7 is 1:5. If two dice are rolled 250 times, the estimated number of times to roll a sum of 7 is _42__.

Solution

The probability is $\frac{1}{6}$. Multiply the total number of rolls by the probability.

(250) ($\frac{1}{6}$) = 42.

12. Events A and B are complementary events. If the odds in favour of event A are 8:7, then which of the following best describes P(B)?

A) $\frac{8}{15}$ B) $\frac{7}{15}$ C) $\frac{1}{15}$ D) $\frac{7}{8}$

Solution

The probability of event A is $\frac{8}{15}$. Since the events are complementary, the probability of event B is 1 - $\frac{8}{15}$, or $\frac{7}{15}$.