Name: _____ Date: _____

Selena and Tracey play on a softball team. Selena has 8 hits out of 20 times at bat, and Tracey has 6 hits out of 16 times at bat. Based on their past performance, what is the probability that both girls will get a hit next time at bat?

1) 1
2) $\frac{14}{36}$
3) $\frac{31}{40}$
4) $\frac{48}{320}$

$P(S) \cdot P(T)$

$\frac{8}{20} \cdot \frac{6}{16} = \boxed{\frac{48}{320}}$

The probability that Jinelle's bus is on time is $\frac{2}{3}$, and the probability that Mr. Corney is driving the bus is $\frac{4}{5}$. What is the probability that on any given day Jinelle's bus is on time and Mr. Corney is the driver?

1) $\frac{2}{15}$
2) $\frac{8}{15}$
3) $\frac{10}{12}$
4) $\frac{6}{8}$

$P(J) \cdot P(C)$

$\frac{2}{3} \cdot \frac{4}{5} = \boxed{\frac{8}{15}}$

The probability that the Cubs win their first game is $\frac{1}{3}$. The probability that the Cubs win their second game is $\frac{3}{7}$. What is the probability that the Cubs win both games?

1) $\frac{16}{21}$
2) $\frac{1}{7}$
3) $\frac{6}{7}$
4) $\frac{2}{5}$

$P(1st) \cdot P(2nd)$

$\frac{1}{3} \cdot \frac{3}{7} = \boxed{\frac{1}{7}}$

The probability it will rain tomorrow is $\frac{1}{2}$. The probability that our team will win tomorrow's basketball game is $\frac{3}{5}$. Which expression represents the probability that it will rain and that our team will *not* win the game?

1) $\frac{1}{2} + \frac{3}{5}$
2) $\frac{1}{2} + \frac{2}{5}$
3) $\frac{1}{2} \times \frac{3}{5}$
4) $\frac{1}{2} \times \frac{2}{5}$

$P(R) \cdot P(\text{not } W)$

$\frac{1}{2} \cdot \frac{2}{5} =$

The probability that it will snow on Sunday is $\frac{3}{5}$. The probability that it will snow on both Sunday and Monday is $\frac{3}{10}$. What is the probability that it will snow on Monday, if it snowed on Sunday?

1) $\frac{9}{50}$
2) 2
3) $\frac{1}{2}$
4) $\frac{9}{10}$

$P(M|S) = \frac{3/10}{3/5}$

Bob and Laquisha have volunteered to serve on the Junior Prom Committee. The names of twenty volunteers, including Bob and Laquisha, are put into a bowl. If two names are randomly drawn from the bowl without replacement, what is the probability that Bob's name will be drawn first and Laquisha's name will be drawn second?

1) $\frac{1}{20} \cdot \frac{1}{20}$
2) $\frac{1}{20} \cdot \frac{1}{19}$
3) $\frac{2}{20}$
4) $\frac{2}{20!}$

$P(\text{Bob}) \cdot P(\text{Laquisha})$

$\frac{1}{20} \cdot \frac{1}{19}$

On a given school day, the probability that Nick oversleeps is 48% and the probability he has a pop quiz is 25%. Assuming these two events are independent, what is the probability that Nick oversleeps and has a pop quiz on the same day?

1) 73%
2) 36%
3) 23%
4) 12%

P(oversleeps) · P(pop quiz)
48% · 25%
12%

A student council has seven officers, of which five are girls and two are boys. If two officers are chosen at random to attend a meeting with the principal, what is the probability that the first officer chosen is a girl and the second is a boy?

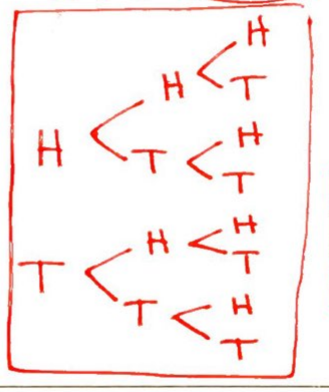
1) $\frac{10}{42}$
2) $\frac{2}{7}$
3) $\frac{7}{14}$
4) $\frac{7}{13}$

P(g) · P(b)
$\frac{5}{7} \cdot \frac{2}{6} = \frac{10}{42}$

Three fair coins are tossed. What is the probability that two heads and one tail appear?

1) $\frac{1}{8}$
2) $\frac{3}{8}$
3) $\frac{3}{6}$
4) $\frac{2}{3}$

HHH HHT HTH
HTT THH THT
TTH
TTT



$\frac{3}{8}$

Throughout history, many people have contributed to the development of mathematics. These mathematicians include Pythagoras, Euclid, Hypatia, Euler, Einstein, Agnesi, Fibonacci, and Pascal. What is the probability that a mathematician's name selected at random from those listed will start with either the letter *E* or the letter *A*?

1) $\frac{2}{8}$
2) $\frac{3}{8}$
3) $\frac{4}{8}$
4) $\frac{6}{8}$

P(E) + P(A)
$\frac{3}{8} + \frac{1}{8} = \frac{4}{8}$

The faces of a cube are numbered from 1 to 6. If the cube is tossed once, what is the probability that a prime number or a number divisible by 2 is obtained?

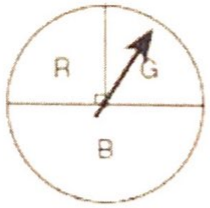
1) $\frac{6}{6}$
2) $\frac{5}{6}$
3) $\frac{4}{6}$
4) $\frac{1}{6}$

P(prime) + P(÷2) − P(both)
$\frac{3}{6} + \frac{3}{6} - \frac{1}{6}$
5/6

1 2 3 4 5 6

not prime because... not greater than 1
prime #s ... 2, 3, 5, 7, 11, 13 .....

At a school fair, the spinner represented in the accompanying diagram is spun twice.

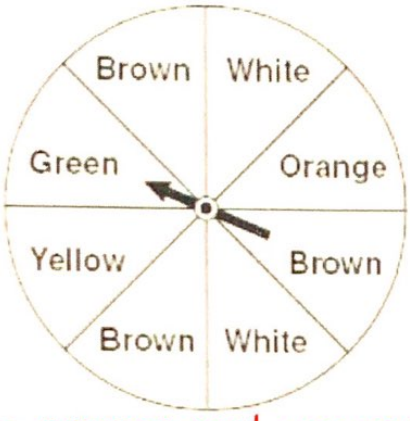


What is the probability that it will land in section *G* the first time and then in section *B* the second time?

1) $\frac{1}{2}$
2) $\frac{1}{4}$
3) $\frac{1}{8}$
4) $\frac{1}{16}$

P(G) · P(B)
$\frac{1}{4} \cdot \frac{2}{4} = \frac{1}{8}$

Keisha is playing a game using a wheel divided into eight equal sectors, as shown in the diagram below. Each time the spinner lands on orange, she will win a prize.



both = orange and orange

If Keisha spins this wheel twice, what is the probability she will win a prize on *both* spins?

1) $\frac{1}{64}$
2) $\frac{1}{56}$
3) $\frac{1}{16}$
4) $\frac{1}{4}$

$P(O) \cdot P(O)$

$\frac{1}{8} \cdot \frac{1}{8} = \boxed{\frac{1}{64}}$

Monique has three sons who play football, two sons who play baseball, and one son who plays both sports. If all of her sons play baseball or football, how many sons does she have?

1) 5
2) 6
3) 3
4) 4

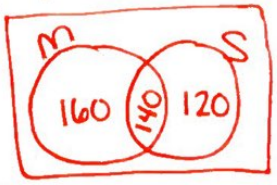
F + B − both

3 + 2 − 1

4

In a class of 450 students, 300 are taking a mathematics course and 260 are taking a science course. If 140 of these students are taking both courses, how many students are *not* taking either of these courses?

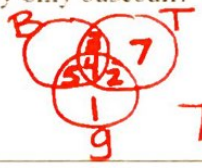
1) 30
2) 40
3) 110
4) 140



450 − 160 − 140 − 120 = 30

Seventy-eight students participate in one or more of three sports: baseball, tennis, and golf. Four students participate in all three sports; five play both baseball and golf, only; two play both tennis and golf, only; and three play both baseball and tennis, only. If seven students play only tennis and one plays only golf, what is the total number of students who play only baseball?

1) 12
2) 44
3) 56
4) 60

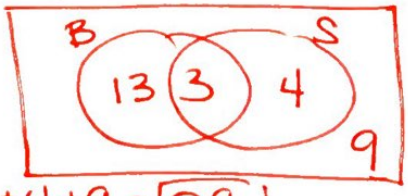


56

78 = X + 22

In Ms. Wright's English class, 16 students are in band, 7 students play sports, 3 students participate in both activities, and 9 students are not in band and do not play sports. How many students are in Ms. Wright's English class?

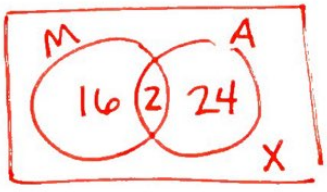
1) ~~10~~
2) 26
3) 29
4) 35



13 + 3 + 4 + 9 = 29

In a class of 50 students, 18 take music, 26 take art, and 2 take both art and music. How many students in the class are not enrolled in either music or art?

1) 6
2) 8
3) 16
4) 24



50 = X + 42

A school newspaper took a survey of 100 students. The results of the survey showed that 43 students are fans of the Buffalo Bills, 27 students are fans of the New York Jets, and 48 students do not like either team. How many of the students surveyed are fans of both the Buffalo Bills and the New York Jets?

1) 16
2) 18
3) 52
4) 70

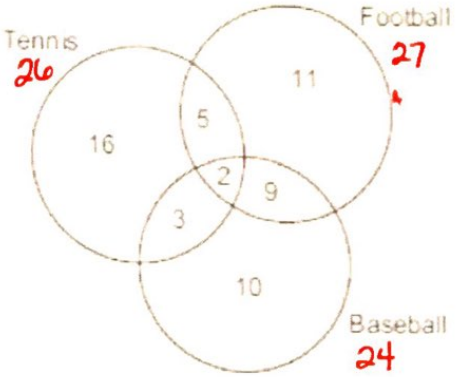
100 − 48 = 52

43 + 27 − X = 52

X = 18

The accompanying diagram shows the results of a survey asking which sports the members of the Key Club watch on television.

Sports Watched on Television



Which statement or statements are true?

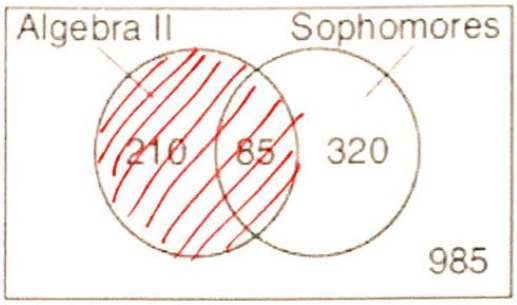
~~I The most watched sport is tennis.~~

II The least watched sport is baseball. ✓

~~III More Key Club members watch tennis than football.~~

1) I, only
2) II, only
3) I and II, only
4) II and III, only

Data for the students enrolled in a local high school are shown in the Venn diagram below.



If a student from the high school is selected at random, what is the probability that the student is a sophomore given that the student is enrolled in Algebra II?

1) $\frac{85}{210}$
2) $\frac{85}{295}$
3) $\frac{85}{405}$
4) $\frac{85}{1600}$

$P(S|Alg2)$

$85/295$

At an all-county music competition, 150 students participated. If 90 students sang in the chorus and 90 played in the band, how many students both sang in the chorus and played in the band?

1) 0
2) 30
3) 60
4) 240

$90+90-x=150$

$x=30$

Sean's team has a baseball game tomorrow. He pitches 50% of the games. There is a 40% chance of rain during the game tomorrow. If the probability that it rains given that Sean pitches is 40%, it can be concluded that these two events are

1) independent
2) dependent
3) ~~mutually exclusive~~
4) ~~complements~~

The probability that Gary and Jane have a child with blue eyes is 0.25, and the probability that they have a child with blond hair is 0.5. The probability that they have a child with both blue eyes and blond hair is 0.125. Given this information, the events blue eyes and blond hair are

~~I: dependent~~

II: independent

~~III: mutually exclusive~~

~~1) I, only~~
2) II, only
~~3) I and III~~
~~4) II and III~~

$P(\text{blue} \cap \text{blond}) = P(b) \cdot P(\text{blond})$

$0.125 = (0.25)\cdot(0.5)$

$0.125 = 0.125$ ✓

$P(b+b) = P(b)+P(b)-P(\text{both})$

$= 0.25 + 0.5 - 0.125$

$= 0.625$

m.e... $0.625 \neq 0.5 + 0.25$

$0.625 \neq 0.75$ X

The set of data in the table below shows the results of a survey on the number of messages that people of different ages text on their cell phones each month.

Age Group	Text Messages per Month		
	0–10	11–50	Over 50
15–18	4	37	68
19–22	6	25	87
~~23–60~~	~~25~~	~~47~~	~~157~~

229

If a person from this survey is selected at random, what is the probability that the person texts over 50 messages per month given that the person is between the ages of 23 and 60?

1) $\frac{157}{229}$
2) $\frac{157}{312}$
3) $\frac{157}{384}$
4) $\frac{157}{456}$

157/229

A fast-food restaurant analyzes data to better serve its customers. After its analysis, it discovers that the events D, that a customer uses the drive-thru, and F, that a customer orders French fries, are independent. The following data are given in a report:

$$P(F) = 0.8$$
$$P(F \cap D) = 0.456$$

Given this information, $P(F|D)$ is

1) 0.344
2) 0.3648
3) 0.57
4) 0.8

★ if F and D are independent, then $P(F) = P(F|D)$

A bag contains five green gumdrops and six red gumdrops. If Kim pulls a green gumdrop out of the bag and eats it, what is the probability that the next gumdrop she pulls out will be red?

1) $\frac{5}{11}$
2) $\frac{5}{10}$
3) $\frac{6}{11}$
4) $\frac{6}{10}$

P(r|g)

$\frac{6}{10}$

A cube with faces numbered 1 through 6 is rolled 75 times, and the results are given in the table below.

Number	Frequency
1	7
2	22
3	14
4	6
5	20
6	6

Based on these results, which statement is true?

1) ~~$P(\text{odd}) < P(\text{even})$~~ 41/75 < 34/75
2) ~~$P(3 \text{ or less}) < P(\text{odd})$~~ 43/75 < 41/75
3) ~~$P(\text{even}) < P(2 \text{ or } 4)$~~ 34/75 < 28/75
4) $P(2 \text{ or } 4) < P(3 \text{ or less})$ 28/75 < 43/75

Gabriella has 20 quarters, 15 dimes, 7 nickels, and 8 pennies in a jar. After taking 6 quarters out of the jar, what will be the probability of Gabriella randomly selecting a quarter from the coins left in the jar?

1) $\frac{14}{44}$
2) $\frac{30}{44}$
3) $\frac{14}{50}$
4) $\frac{20}{50}$

$\frac{14}{44}$

Suppose events A and B are independent and $P(A \text{ and } B)$ is 0.2. Which statement could be true?

1) $P(A) = 0.4, P(B) = 0.3, P(A \text{ or } B) = 0.5$
2) $P(A) = 0.8, P(B) = 0.25$
3) $P(A|B) = 0.2, P(B) = 0.2$
4) $P(A) = 0.15, P(B) = 0.05$

$0.2 \stackrel{?}{=} (0.8)(0.25)$

$0.2 = 0.2$

A cube, with faces numbered 1 to 6, is rolled, and a penny is tossed at the same time. How many elements in the sample space consist of an even number and a tail?

1) 12
2) 2
3) 3
4) 4

A sandwich consists of one type of meat, one type of condiment, and one type of cheese. The possible choices are listed below:
Meat: beef, chicken, turkey (3)
Condiment: ketchup, mustard, mayonnaise (3)
Cheese: American, cheddar, provolone, mozzarella (4)
In the sample space of all the possible different sandwiches consisting of one type of meat, one type of condiment, and one type of cheese, how many sandwiches do *not* include provolone cheese?

1) 27
2) 9
3) 3
4) 36

$3 \cdot 3 \cdot 3 = 27$

Throughout history, many people have contributed to the development of mathematics. These mathematicians include Pythagoras, Euclid, Hypatia, Euler, Einstein, Agnesi, Fibonacci, and Pascal. What is the probability that a mathematician's name selected at random from those listed will start with either the letter E or the letter A?

1) $\frac{2}{8}$
2) $\frac{3}{8}$
3) $\frac{4}{8}$
4) $\frac{6}{8}$

The faces of a cube are numbered from 1 to 6. If the cube is tossed once, what is the probability that a prime number or a number divisible by 2 is obtained?

1) $\frac{6}{6}$
2) $\frac{5}{6}$
3) $\frac{4}{6}$
4) $\frac{1}{6}$

Throughout history, many people have contributed to the development of mathematics. These mathematicians include Pythagoras, Euclid, Hypatia, Euler, Einstein, Agnesi, Fibonacci, and Pascal. What is the probability that a mathematician's name selected at random from those listed will start with either the letter E or the letter A?

1) $\frac{2}{8}$
2) $\frac{3}{8}$
3) $\frac{4}{8}$
4) $\frac{6}{8}$

There are 12 tomato plants in a garden. Each plant has 7 branches and each branch has four (4) tomatoes growing on it. If one-third of the tomatoes are picked, how many tomatoes were picked?

1) 23 2) 112 3) 224 4) 336

$\frac{12 \cdot 7 \cdot 4}{3}$

When the Smith family decided to have their new house built, they found that there were 60 different choices involving location, style, and color. If they had their choice of 2 locations and 5 styles, how many choices of color did they have?

1) 6 2) 12 3) 50 4) 53

$60 = 2 \cdot 5 \cdot x$