

11) Find the slope of a line parallel to $y = \frac{1}{2}x + 3$.

A) -2

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

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

D) 2

12) Line A: $y = \frac{1}{2}x + 2$

Line B: $y = -\frac{1}{2}x + 7$ $(m_1)(m_2) = -1$

Line C: $y = 2x + 4$

Line D: $y = \frac{1}{2}x + \frac{5}{4}$

create \perp lines

Which lines are perpendicular?

A) A and B

B) A and C

C) B and C

D) A and D

$(m_1)(m_2) = -1$
 $2(-\frac{1}{2}) = -1$

13) Write an equation of the line that is perpendicular to $y = \frac{1}{2}x + 3$ and passes through the point (10, -5).

$m_1 = \frac{1}{2}$

A) $y = -2x + 15$ ✓

~~B) $y = 2x - 15$~~

C) $y = -2x - 5$

~~D) $y = -\frac{1}{2}x$~~

14) Write an equation of the line that is parallel to $y = \frac{1}{2}x + 3$ and passes through the point (10, -5).

~~A) $y = 2x - 15$~~

~~B) $y = -2x + 15$~~ $m_1 = \frac{1}{2}$

~~C) $y = -\frac{1}{2}x$~~

D) $y = \frac{1}{2}x - 10$ slopes are =

15) Find the point, M, that divides segment AB into a ratio of 5:3 if A is at (-4, -2) and B is at (4, -10).

A) (1, -7)

B) (2, -7) $\Delta x = 4 - (-4) = 8$

C) (2, -8)

D) (1, -8) $\Delta y = -10 - (-2) = -8$



$x: \frac{8(\frac{5}{8}) = 5$
 $y: \frac{-8(\frac{3}{8}) = -5$
 $\rightarrow + \begin{pmatrix} -4, -2 \\ 5, -5 \\ \hline 1, -7 \end{pmatrix}$

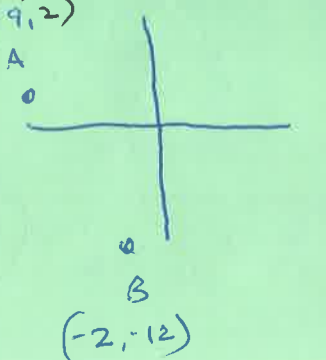
16) Find the point, M, that is two-sevenths of the distance from A(-9, 2) to B(-2, -12).

A) (-6, -2)

B) (-7, -2)

C) (-7, -3)

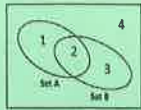
D) (-6, -3)



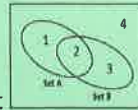
$\Delta x: -2 - (-9) = 7$
 $\Delta y: -12 - 2 = -14$
 $x: 7(\frac{2}{7}) = 2$
 $y: -14(\frac{2}{7}) = -4$
 $\begin{pmatrix} -9, 2 \\ + 2, -4 \\ \hline -7, -2 \end{pmatrix} *$

Unit 5 - Probability

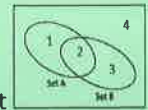
Key Concepts



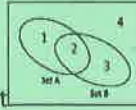
Given $A \cup B$ shade the set



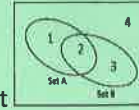
, Given $A \cap B$ shade the set



, Given \bar{A} or A' shade the set



Given $(A \cup B)'$ shade the set



, Given $(A \cap B)'$ shade the set

Addition Rule (aka mutually exclusive): $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

Multiplication Rule for Independent Events: $P(A \cap B) = P(A) * P(B)$

Conditional Probability: $P(A \cap B) = P(A) * P(B|A)$ or $P(B|A) = \frac{P(A \cap B)}{P(A)}$

Independent Events do not affect one another while Dependent Events do and means non-replacement.

- 1) Find the probability that a randomly selected student will be a junior, given that the student owns a car.

$$P(J|C) = \frac{6}{18} = \frac{1}{3} = 33\frac{1}{3}\%$$

- 2) Find the probability that a randomly selected student will own a car, given that the student is a senior.

$$P(\text{own} | SR) \Rightarrow \frac{12}{20} = \frac{3}{5} = 60\%$$

	Car Ownership by Grade	
	Owens a Car	Does Not Own a Car
Junior	6	10
Senior	12	8
TOTAL	18	18

16
20
36

- 3) For two events B and C, it is known that $P(C|B) = 0.65$ and $P(C \cap B) = .43$. Find $P(B)$.

$$.43 = P(B) * .65$$

$$.66 = P(B)$$

- 4) For two events X and Y, it is known that $P(X) = \frac{5}{24}$ and $P(X \cap Y) = \frac{1}{8}$. Find $P(Y|X)$.

$$P(Y|X) = \frac{\frac{1}{8}}{\frac{5}{24}} = 0.6$$

- 4) A sock drawer contains 5 pairs of each color socks: white, green and blue. What is the probability of randomly selecting a pair of blue socks, replacing it, and then randomly selecting a pair of white socks?

$$\frac{5}{15} * \frac{5}{15} = \frac{25}{225} = 11.1\%$$

- 5) Randy has 8 pennies, 3 nickels, and 5 dimes in his pocket. If he randomly chooses 2 coins, what is the probability that they are both pennies if he doesn't replace the first one?

$$\frac{8}{16} * \frac{7}{15} = \frac{56}{240} = 23\frac{1}{3}\%$$

- 6) Using the letters in the state MISSISSIPPI. Find the probability of picking an S and then a P without replacement.

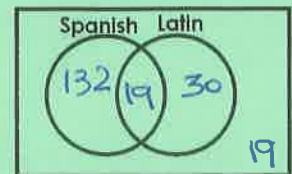
$$\frac{4}{11} * \frac{2}{10} = \frac{8}{110} = 7.3\%$$

- 7) Determine if the following events are independent.

$$P(A) = \frac{3}{4}, P(B) = \frac{5}{6}, P(A \cap B) = \frac{5}{8}$$

$\frac{3}{4} * \frac{5}{6} = \frac{5}{8}$
 $.625 = .625$
 YES, IND

A guidance counselor is planning schedules for 200 students. 151 want to take Spanish and 49 want to take Latin. 19 say they want to take both. Display this information on the Venn Diagram.



- 8) What's the probability that a student studies at least one subject? $P(SL)$

$$\frac{181}{200}$$

- 9) What's the probability that a student studies exactly one subject?

$$\frac{162}{200}$$

- 10) What's the probability that a student studies neither subject? $P(SL)'$

$$\frac{19}{200}$$

- 11) What's the probability that a student studied Spanish if it is known that he, she studies Latin?

$$P(S|L) \Rightarrow \frac{19}{49}$$

- 12) If you roll two die, find:

$P(\text{Odd number or a number greater than 8})$

$$\frac{18}{36} + \frac{10}{36} = \frac{28}{36} - \frac{6}{36}$$

$$= \frac{22}{36}$$

- 13) If you roll two die, find:

$P(\text{Doubles or a sum of 6})$

$$\frac{6}{36} + \frac{5}{36} - \frac{1}{36} = \frac{10}{36}$$

USE formula

15 TOTAL

11 TOTAL

16 TOTAL