Honors CCGPS Geometry Unit 7 – Probability

Name Half Date: _____

1. In a bowl of marbles, there are 9 reds, 7 greens, and 10 blues. $n = 26$

   a. If a marble is chosen at random from the bowl, what is the probability of choosing a red one OR a blue one?

   OR → ADD

   $\frac{9}{26} + \frac{10}{26} = \frac{19}{26} \approx .731$

   b. If two marbles are chosen at random with replacement, what is the probability of picking a red marble AND then, a blue marble?

   with replacement → put it back

   $\frac{9}{26} \cdot \frac{10}{26} = \frac{90}{676} = 15/46 \approx .326$

   c. If two marbles are chosen at random without replacement, what is the probability that they are both red?

   without replacement → don't put it back

   $\frac{9}{26} \cdot \frac{8}{25} = \frac{72}{650} = 36/325 \approx .111$

2. A person rolls two dice, one after the other. Find the probability of the following events.

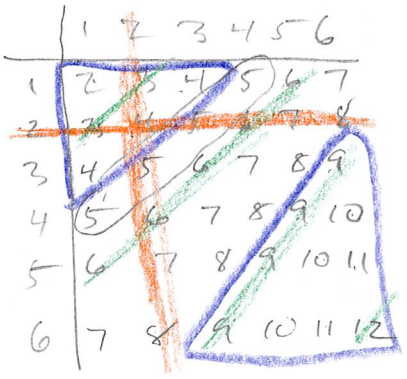
   a. P(sum of 5) $= 5/36$

   b. P(sum ~~is a multiple of 3~~) $= 12/36 = 1/3$

   c. P(~~sum less than 5 or more than 8~~)

   $\frac{6}{36} + \frac{10}{36} = \frac{16}{36} = 4/9$

   d. P(sum is even given that ~~one die showed a 2~~) $\frac{5}{11}$



3. In a Coordinate Algebra class, 18 students were male and 13 students were female. Out of those students, 14of the guys and 9 of the girls passed the EOC. Construct a contingency table with this information:

	Males	Females	
Passed	14	9	23
Did not Pass	4	4	8
	18	13	31

4. Find the following probabilities:

   A. P(Girl who passed the EOC) (Girl AND Passing) $= \boxed{9/31}$

   B. P(Boy or someone who didn't pass) $P(B) + P(\sim P) - OL = P(B \cup \sim P)$

   $\frac{18}{31} + \frac{8}{31} - \frac{4}{31} = \boxed{22/31}$

5. In a class of 32 student, 22 are wearing blue jeans and 19 are wearing orange shirts. 3 are not wearing jeans or an orange shirt.

a. Draw a Venn diagram to represent this situation.

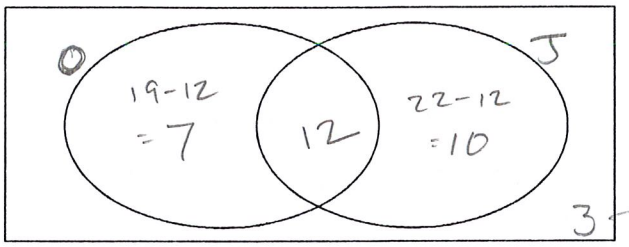
$O + J - (O \text{ and } J) = (O \text{ or } J)$

$19 + 22 - x = 29$

$x = 12$

$32 - 3$

O = wearing orange shirt
J = wearing jeans



Find the following:

b. P(O) = $19/32 \approx .594$

c. P(~J)= $\frac{7+3}{32} = \frac{10}{32} = \frac{5}{16} \approx .313$

d. P(O∩J)= $12/32 = 3/8 = .375$

e. P(O∪J) = $\frac{29}{32} \approx .906$

f. P(O | J)= $\frac{12}{22} = \frac{6}{11} \approx .545$

6. In a certain neighborhood, the probability of owning a bike is .736 and the probability of owning a skateboard is .385. The probability of owning a bike and a skateboard is .283. Are owning a bike and owning a skateboard independent?

$(.736) \times (.385) \stackrel{?}{=} (.283)$

$.283 = .283$ they are indep.

6. Use the conditional probability formula to answer the following.

- The probability that a student is wearing a hoodie given that they're a boy is .211
- The probability that a student is a boy is .495. ← lonely

A student is picked at random. What's the probability that a student is picked who is a boy and is wearing a hoody?

$P(A|B) = \frac{P(A \cap B)}{P(B)}$ given = And / lonely

$.211 = \frac{x}{.495}$

$.104 \approx x$

8. If V represents the set all license plates beginning with a vowel, and 0 represents the set of all license plates that end with an odd number, which license plate belongs to the set V ∩ O' ?

Vowel & not odd

A. 

B. 

C. 

D. 

9. Which of the following events are independent?

a. P(A) = 0.25; P(B) = 0.25; P(A and B) = 0.5 $\neq .0625$ nope
b. P(A) = 0.08; P(B) = 0.4; P(A and B) = 0.12 $\neq .032$ nope
c. P(A) = 0.16; P(B) = 0.24; P(A and B) = 0.32 $\neq .038$ nope
d. P(A) = 0.3; P(B) = 0.15; P(A and B) = 0.045 $= .045$ yes independent

Calculate the following from a deck of cards.

10. Drawing 1 card P(Ace or face card) P(A) + P(FC) no overlap

$$\frac{4}{52} + \frac{12}{52} = \frac{16}{52} \quad \boxed{4/13 \approx .308}$$

11. Drawing 1 card P(Ace or a red card) P(A) + P(Red) − overlap

$$\frac{4}{52} + \frac{26}{52} - \frac{2}{52} = \frac{28}{52} \quad \boxed{\frac{7}{13} \approx .538}$$

12. Drawing 2 cards without replacement P(Ace and a face card)

P(A) * P(FC)

$$\frac{4}{52} \cdot \frac{12}{51} = \frac{36}{2652} \quad \boxed{1/221 \approx .014}$$

12. Drawing 2 cards with replacement P(Face card and a 2)

P(FC) * P(2)

$$\frac{12}{52} \cdot \frac{4}{52} = \frac{36}{2704} \quad \boxed{9/676 \approx .013}$$