TEST NAME: **AFM Practice EOC**
TEST ID: **3663467**
GRADE: **09 - Ninth Grade - 12 - Twelfth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **My Classroom**

Student: _____

Class: _____

Date: _____

1. **The table below shows the number of men and women who said in a recent survey that their favorite color was either blue or red.**

	Blue	**Red**
Men	48	30
Women	17	35

17 **+** 35 = **52**

One person is chosen at random and is a woman. If favorite color is independent of gender, what is the probability that her favorite color will be blue?

A. 0.33 *(circled)*

$\frac{17}{52} = .326..$

B. 0.37

C. 0.40

D. 0.50

2. **The table below shows the number of boys and girls who passed or failed a recent test in history class.**

	Passed	**Failed**
Boys	10	5
Girls	8	2

10 **+** 5 = **15**

One person is chosen at random and is a boy. If passing the test is independent of gender, what is the probability that he passed the test?

A. 0.32

$\frac{10}{15} = .67$

B. 0.60

C. 0.67 *(circled)*

D. 0.72

3. **Which event could BEST be represented with conditional probabilities?**

   A. the probability that a science chemical is salt given that the chemical is white *Closest to dependent*
   B. the probability that a student is tardy to school on Monday given that the student was tardy to school on Friday *Independent*
   C. the probability that a student will take Advanced Algebra as a sophomore given that the student took Biology as a freshman *Independent*
   D. the probability that a pink card is drawn twice from a deck of 40 cards where 14 of the cards are pink given that the first card is replaced *Independent*

4. **A cooler at a picnic contains 12-ounce cans and 16-ounce bottles of both lemonade and apple juice.**
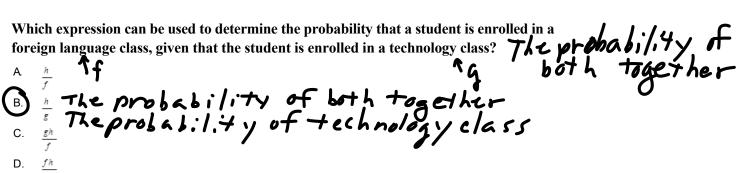
   Drinks

Type	Number
12-ounce lemonade	4
12-ounce apple juice	5
16-ounce lemonade	3
16-ounce apple juice	6

   > 9 $\frac{6}{9} = \frac{2}{3}$

   Adam was very thirsty, so he randomly grabbed a 16-ounce bottle from the cooler. What is the probability that his randomly selected bottle will be apple juice?

   A. $\frac{3}{7}$
   B. $\frac{5}{11}$
   C. $\frac{5}{9}$
   D. $\frac{2}{3}$

5. At Central High School, the following probabilities have been determined.

• The probability that a student is enrolled in a foreign language class is equal to f.
• The probability that a student is enrolled in a technology class is equal to g.
• The probability that a student is enrolled in both a foreign language class and a technology class is equal to h.

Which expression can be used to determine the probability that a student is enrolled in a foreign language class, given that the student is enrolled in a technology class? *The probability of both together*

A. $\frac{h}{f}$ *↑f*   *↑g*

B. $\frac{h}{g}$ *The probability of both together* / *The probability of technology class*

C. $\frac{gh}{f}$

D. $\frac{fh}{g}$

6. The conditional probability $P(B|A)$ is the probability that Event B occurs given that Event A has occurred. Which formula can be used to determine this conditional probability?

A. $P(B|A) = \frac{P(B)}{P(A)}$

B. $P(B|A) = \frac{P(A)}{P(B)}$

C. $P(B|A) = \frac{P(A \text{ and } B)}{P(A)}$ *The question says they are both occurring so P(A and B)*

D. $P(B|A) = \frac{P(A \text{ or } B)}{P(A)}$

7. To win a prize in a game, a player must throw a ball into a basket or kick a ball through a goal.

• The probability that the player will throw the ball into the basket is 0.30.
• The probability that the player will kick the ball through the goal is 0.20.
• The probability that the player will throw the ball into a basket and kick the ball through the goal is 0.06.

What is the probability that the player will either throw the ball into the basket or kick the ball through the goal, but NOT both?

A. 0.04
B. 0.44   *.3 + .2 = .5*   *.5 − .06 = .44*
C. 0.50
D. 0.56

8. Based on past experiences, Miss Olenik knows that $\frac{1}{5}$ of the mistakes on the essays she grades are grammar mistakes, $\frac{1}{8}$ of the mistakes are spelling mistakes, and $\frac{1}{12}$ of the mistakes are both grammar and spelling mistakes. If an essay is selected at random, what is the probability that the essay contains a grammar mistake or a spelling mistake?

A. $\frac{19}{120}$

B. $\frac{29}{120}$

C. $\frac{39}{120}$

D. $\frac{49}{120}$

$$\frac{1}{5} + \frac{1}{8} - \frac{1}{12} = \frac{24}{120} + \frac{15}{120} - \frac{10}{120} = \frac{29}{120}$$

9. Nick randomly selects a digit from the set $\{0, 1, 2, \ldots, 9\}$ and a letter from the set $\{A, B, C, \ldots, Z\}$. Matthew will try to guess both the digit and the letter. Which expression gives the probability that Matthew will __incorrectly__ guess both the digit and the letter?

A. $\frac{1}{10} + \frac{1}{26}$

B. $\frac{1}{10} \times \frac{1}{26}$

C. $\frac{9}{10} + \frac{25}{26}$

D. $\frac{9}{10} \times \frac{25}{26}$

The complement

The probability something will not happen.

10. **The table gives information about the sandwiches that customers ordered one week at a sandwich shop.**

Sandwich Orders

Type of Sandwich	Number Ordered
Turkey	176
Roast Beef	145
Pastrami	118
Ham	159
Veggie	105
Other	142
Total	**845**

$$\frac{159}{845} \cdot \frac{176}{844} = .039$$

According to this data, what is the approximate probability that on a given day, the first sandwich ordered is a ham sandwich, and the second sandwich ordered is a turkey sandwich?

A. 0.020

B. 0.039 ⟵ (circled)

C. 0.061

D. 0.396

11. **When Mike and Travis go fishing, the probability that Mike catches at least one fish is $\frac{2}{3}$. The probability that Travis catches at least one fish is $\frac{3}{5}$. The probability that both Mike and Travis catch at least one fish is $\frac{1}{2}$.**

Let M = the event that Mike catches at least one fish.
Let T = the event that Travis catches at least one fish.

Are M and T independent events? Why or why not?

A. yes, because $P(M) \times P(T) = P(M \text{ and } T)$

B. yes, because $P(M) + P(T) > P(M \text{ and } T)$

C. no, because $P(M) \times P(T) \neq P(M \text{ and } T)$ ⟵ (circled)

D. no, because $P(M) + P(T) > P(M \text{ and } T)$

There is an overlap so the two multiplied does not equal the combined probability

12. **Jackson has received at least one text from Pedro on 45 of the last 50 days, and at least one text from Max on 40 of the last 50 days. Jackson has received at least one text from both Pedro and Max on 36 of the last 50 days.**

    According to this data, are the events of getting at least one text from Pedro and at least one text from Max dependent or independent?

    A. dependent, because $\frac{45}{50} \times \frac{40}{50} = \frac{36}{50}$

    B. independent, because $\frac{45}{50} \times \frac{40}{50} = \frac{36}{50}$

    C. dependent, because $(50 - 45) + (50 - 40) \neq (50 - 36)$

    D. independent, because $(50 - 45) + (50 - 40) \neq (50 - 36)$