Print Questions

1.	An ordinary deck of playing cards has 52 cards. There are four suits—spades, hearts, diamonds, and clubs—with 13 cards in each suit. Spades and clubs are black; hearts and diamonds are red. One of these cards is selected at random. Let A denote the event that a heart card is chosen. Find the probability that a heart card is chosen, and express your answer in probability notation.			
	The probability that a heart card is chosen is (1) = (Type an integer or a decimal. Round to three decimal places as needed.)			
	$(1) \bigcirc P_A \\ \bigcirc P(A) \\ \bigcirc [A] \\ \bigcirc A_P $			
	ID: 4.3.77			
2.	Find the probability P(E or F) if E and F are mutually exclusive, P(E) = 0.34, and P(F) = 0.45.			
	The probability P(E or F) is (Simplify your answer.)			
	ID: 4.3.79			
3.	Find the probability $P(not E)$ if $P(E) = 0.29$.			
	The probability P(not E) is . (Simplify your answer.)			
	ID: 4.3.81			
4.	Find the probability of the indicated event if $P(E) = 0.30$ and $P(F) = 0.45$.			
	Find P(E or F) if P(E and F) = 0.05.			
	P(E or F) = (Simplify your answer.)			
	ID: 4.3.83			
5.	Suppose A and B are events such that $P(A) = \frac{1}{3}$, $P(B) = \frac{1}{4}$, and $P(A \text{ or } B) = \frac{1}{2}$. Complete parts (a) and (b) below.			
	a. Are events A and B mutually exclusive? Explain your answer.			
	○ A. Yes; P(A or B) is greater than P(A).			
	B. No; P(A) is not equal to P(B).			
	C. No; $P(A) + P(B)$ is not equal to $P(A \text{ or } B)$.			
	D . Ites, $\Gamma(A) \neq \Gamma(D)$ is equal to $\Gamma(A \cup D)$.			
	D (A, B, D) = $(T_{\text{transmitted}}, T_{\text{transmitted}}, T_{tra$			
	$P(A \alpha D) = $ (Type an integer or a simplified fraction.)			
	ID: 4.3.86			

Print Questions

6. A national center for education statistics publishes information about school enrollment and employment statistics. According to that document, 86.2% of high school students attend public school, 29.1% of high school students have a part-time job, and 20.8% of high school students are in public school and have a part-time job. What percentage of high school students either attend a public school or have a part-time job? %. The percentage of high school students that either attend a public school or have a part-time job is (Type an integer or a decimal. Do not round.) ID: 4.3.99 7. Suppose that A and B are mutually exclusive events. Complete parts (a) and (b) below. a. Use the special addition rule to express P(A or B) in terms of P(A) and P(B). Complete the equation below. P(A or B) = (1) b. Show that the general addition rule gives the same answer as that in part (a). Select the correct answer below. ○ A. Since A and B are mutually exclusive events, then the probability that both A and B occur is 0. That is, P(A)P(B) = 0. Under these conditions, the general addition rule gives the same answer as that in part (a). ○ B. Since A and B are mutually exclusive events, then the probability that A or B occur is 1. That is, P(A & B) = 1. Under these conditions, the general addition rule gives the same answer as that in part (a). ○ C. Since A and B are mutually exclusive events, then the probability that both A and B occur is 0. That is, P(A & B) = 0. Under these conditions, the general addition rule gives the same answer as that in part (a). ○ D. Since A and B are mutually exclusive events, then the probability that A or B occur is 1. That is, P(A) + P(B) = 1. Under these conditions, the general addition rule gives the same answer as that in part (a). (1) \bigcirc P(A) + P(B) + P(A)P(B) \bigcirc P(A) + P(B) - P(A)P(B) O P(A)P(B) O P(A)P(B) + P(A & B) O P(A) + P(B) O P(A) – P(B) ID: 4.3.100

8. Fifty-seven teachers from a certain region were surveyed. The contingency table cross-classifies these teachers by highest degree obtained and whether they offer field trips.

	Field Trips		
	Yes (F_1)	No (F ₂)	Total
Bachelor's (D_1)	16	16	32
Master's (D ₂)	20	5	25
Total	36	21	57

a. How many of these teachers offered field trips?

There are teachers who offered field trips.

b. How many of these teachers have master's degrees?

There are teachers with a master's degree.

c. How many teachers with only bachelor's degrees offered field trips?

There are teachers with only a bachelor's degree who offered field trips.

d. Compute the probability of event D₁.

 $P(D_1) =$ (Round to three decimal places as needed.)

Compute the probability of event $(D_2 \& F_2)$.

 $P(D_2 \& F_2) =$ (Round to three decimal places as needed.)

ID: 4.4.115

9. Answer the following questions regarding permutations and combinations.

a. What is a permutation?

b. What is a combination?

c. What is the major distinction between the two?

a. Choose the correct answer below.

○ A. A permutation of r objects from a collection of m objects is any ordered arrangement of r of the m objects.

 \bigcirc **B.** A permutation, _NP_n, is the number of possible samples of size n from a population of size N.

○ C. A permutation is the product of the first k positive integers (counting numbers) and is denoted k!.

○ D. A permutation of r objects from a collection of m objects is any unordered arrangement of r of the m objects.

b. Choose the correct answer below.

- A. A combination of r objects from a collection of m objects is any unordered arrangement of r of the m objects.
- \bigcirc **B.** A combination, ${}_{N}C_{n}$, is the number of possible samples of size n from a population of size N.
- C. A combination of a counting number is obtained by successively multiplying it by the next smaller counting number until reaching
 1.
- D. A combination of r objects from a collection of m objects is any ordered arrangement of r of the m objects.

c. Choose the correct answer below.

- O A. Order matters in combinations but not in permutations.
- **B.** Order matters in permutations but not in combinations.
- C. More combinations of r objects from a collection of m objects can be made than permutations.
- **D.** Permutations can only be used when r is greater than 10.

ID: 4.8.231

10. The owner of a stereo store wants to advertise that he has many How many different sound systems can the owner advertise? different sound systems in stock. The store carries 7 different CD players, 10 different receivers, and 8 different speakers. Assuming (Simplify your answer.) a sound system consists of one of each, how many different sound systems can he advertise? ID: 4.8.233 11. Find 0!, 6!, and 7!. 0! = (Type a whole number.) 6! = (Type a whole number.) 7! = (Type a whole number.) ID: 4.8.235 12. Determine the value of each quantity. **c.** $_{8}P_{6}$ **d.** $_{18}P_{0}$ **e.** $_{9}P_{9}$ **a.** ₂P₁ **b.** ₁₆P₄ **a.** ₂P₁ = (Simplify your answer.) **b.** ₁₆P₄ = (Simplify your answer.) **c.** ₈P₆ = (Simplify your answer.) **d.** ₁₈P₀ = (Simplify your answer.) **e.** _oP_o = (Simplify your answer.) ID: 4.8.237 13. Determine the value of each quantity. **a**. ₆C₅ **b.** ₁₉C₂ **c.** $_9C_4$ **d.** $_{18}C_0$ **e.** $_{19}C_{19}$ **a.** ₆C₅ = (Simplify your answer.)

14. There are many choices to make when buying a new car. For a specific model of a new car, choices are available, among others, for roof (5), exterior color (14), seat fabric/color (6), interior trim (7), and wheels (7). How many possibilities are there altogether, taking into account choices for the five aforementioned items?

There are different possibilities. (Type a whole number.)

(Simplify your answer.)

(Simplify your answer.)

(Simplify your answer.)

(Simplify your answer.)

ID: 4.8.246

b. ₁₉C₂ =

c. ₉C₄ =

d. $_{18}C_0 =$

e. ₁₉C₁₉ =

ID: 4.8.239

15. At a movie festival, a team of judges is to pick the first, second, and third place winners from the 22 films entered. How many possibilities are there?

	are there?				
	There are possibilities for picking the first, second, and third place winners. (Type a whole number.)				
	ID: 4.8.254				
16.	A team is being formed that includes ten different people. There are ten different positions on the teams. How many different ways are there to assign the ten people to the ten positions?				
	There are ways to assign the ten people to the ten positions. (Type a whole number.)				
	ID: 4.8.255				
17.	In a certain state, through the observation of female black bears and their litters, the following estimate is given for the probability distribution of the number of young per litter for female black bears in the state. Complete parts (a) and (b) below.				
	Litter size 1 2 3 4 Probability 0.192 0.603 0.131 0.074				
	a. Explain why the probabilities in the table provide only an estimate of the true probabilities. Choose the correct answer below.				
	A. The probabilities are only an estimate of the true probabilities because the data were calculated theoretically based on previous observations of female black bears from the state.				
	B. The probabilities are only an estimate of the true probabilities because the data were gathered from a sample of female black bears from the state.				
	C. The probabilities are only an estimate of the true probabilities because the data were obtained from the complete population of female black bears in the state.				
	D. The probabilities are only an estimate of the true probabilities because the data were obtained from the complete population of black bears including both males and females in the state.				
	b. Estimate the probability that a black bear in this state has a litter of either one or three cubs.				
	(Type an integer or a decimal. Do not round.)				
	ID: 5.1.19				
18.	The table below shows the probability distribution of the random variable X. a . Find the mean of the random variable. b . Obtain the standard deviation σ of the random variable.				
	$\frac{\mathbf{x}}{\mathbf{P}(\mathbf{x}-\mathbf{x})} = 0.1 = 0.1 = 0.0$				
	a . Find the mean of the random variable.				
	μ = (Round to two decimal places as needed.)				
	b . Obtain the standard deviation σ of the random variable.				
	σ = (Round to two decimal places as needed.)				
	ID: 5.2.27				

19. In a sporting event, the championship is won by the first team to win four games. The lengths of the championship games are given in the table. Let X denote the number of games that it takes to complete a championship, and Y denote the number of games that it took to complete a randomly selected championship from among those considered in the table. Use this information to answer parts (a) and (b) below.

¹ Click the icon to view the frequency table for the number of games required to complete previous championship series.

a. Determine the mean and standard deviation of the random variable Y.

The mean is games. (Round to three decimal places as needed.)

The standard deviation is games.

(Round to three decimal places as needed.)

b. Provide an estimate for the mean and standard deviation of the random variable X. Explain your reasoning. Choose the correct answer below.

- **A.** The best estimate we can make is that $\mu_X = \mu_Y$ and $\sigma_X = \sigma_Y$ because the information we have about X is that obtained for Y.
- <u>о</u>с.

The best estimate we can make is $\mu_X = \frac{\mu_Y}{89}$ and $\sigma_X = \sigma_Y$ because μ_Y is an average of 89 series and μ_X is an average of just 1.

- **B.** The best estimate we can make is that $\mu_X = \mu_Y$ and $\sigma_X = \sigma_Y$ because X and Y have the same random distribution.
- 🔿 D.
 - The best estimate we can make is $\mu_X = \mu_Y$ and $\sigma_X = \frac{\sigma_Y}{89}$ because σ_Y represents the spread in games played over 89 series and σ_X represents the spread in games played over just 1.

1: Frequency table for past championship series data

Number of games	Frequency	Relative frequency
4	15	0.169
5	21	0.236
6	22	0.247
7	31	0.348

ID: 5.2.36

20. A factory manager collected data on the number of equipment breakdowns per day. From those data, she derived the probability distribution shown to the right, where W denotes the number of breakdowns on a given day. Answer parts a through c.

w	0	1	2
P(W = w)	0.55	0.35	0.10

a. Determine μ_W and σ_W .

- μ_{W} = (Type an integer or a decimal.)
 - (Round to three decimal places as needed.)
- b. On average, how many breakdowns occur per day?
 - (Type an integer or a decimal.)
- c. About how many breakdowns are expected during a 1-year period, assuming 250 work days per year?

(Type an integer or a decimal.)

ID: 5.2.43