the mean.	ie mean, whereas a negative z	
a. A standardized variable always has a mean of	and a standard deviation of	
<b>b.</b> The z-score corresponding to an observed value of a variable	tells you (1)	
c. A positive z-score indicates that the observation is (2)	the mean, whereas a	a negative z-score indicates that the
observation is (3) the mean.		
(1) O how far the observation is from the maximum value in t	terms of standard deviations.	(2) O less than or equal to
how far the observation is from the minimum value in te	erms of the mean.	◯ greater than
O how far the observation is from the mean in units of sta	indard deviation.	O greater than or equal to
how far the observation is from the sample mean in ter	ms of the population mean.	<ul> <li>less than</li> </ul>
(3) 🔿 less than		
○ greater than		
○ greater than or equal to		
less than or equal to		
ID: 3 5 195		

2. The manager at a golf course found that the population mean length of the holes at the golf course is 408.1 yd. In this context, is the number 408.1 a parameter or a statistic? Explain your answer.

Choose the correct answer below.

- A. It is a statistic because it was calculated based on a sample of holes at one golf course.
- **B.** It is a parameter because it is a descriptive measure for a population.
- C. It is a parameter because it was calculated based on a sample of holes at one golf course.
- D. It is a statistic because it is a descriptive measure for a population.

ID: 3.5.197

4.

3. Researchers collected information on the body parts of a new species of frog. The thumb length for the female frog has a mean of 8.96 mm and a standard deviation of 0.78 mm. Let x denote thumb length for a female specimen.

a. Find the standardized version of x.

b. Determine and interpret the z-scores for thumb lengths of 10.5 mm and 8.7 mm. Round your answers to two decimal places.

a. Find the standardized version of x.
z = (Do not simplify. Use integers or decimals for any numbers in the expression. Do not round.)
b. Determine and interpret the z-scores for thumb lengths of 10.5 mm and 8.7 mm. Round your answers to two decimal places.
Determine and interpret the z-score for a thumb length of 10.5 mm.
The z-score for a thumb length of 10.5 is This is standard deviations (1) the mean thumb length. (Round to two decimal places as needed.)
Determine and interpret the z-score for a thumb length of 8.7 mm.
The z-score for a thumb length of 8.7 is This isstandard deviations (2) the mean thumb length. (Round to two decimal places as needed.)
(1) ○ below (2) ○ above ○ above ○ below
ID: 3.5.215
Suppose you buy a new car whose advertised mileage is 27 miles per gallon (mpg). After driving your car for several months, you find that its mileage is 23.7 mpg. You telephone the manufacturer and learn that the standard deviation of gas mileages for all cars of the model you bought is 1.02 mpg. <b>a.</b> Find the z-score for the gas mileage of your car, assuming the advertised claim is correct. <b>b.</b> Does it appear that your car is getting unusually low gas mileage?
<b>a.</b> z = (Round to two decimal places as needed.)
<b>b.</b> Does it appear that your car is getting unusually low gas mileage?
◯ Yes
○ No
ID: 3.5.217

5. Suppose that you take an exam with 439 possible points and are told that that mean score is 290 and that the standard deviation is 27. You are also told that you got 390. Did you do well on the exam? Explain your answer.

Determine the z-score and interpret this score.						
A score of 390 has a	z-score of This is	standard deviations (1)	the mean for this exam.			
The (2)	states that approximately 99.7% of t	the observations lie within (3)	standard deviations of the			
mean. Since this scor (Round to two decima	mean. Since this score is (4) standard deviations (5) the mean, this is a (6) score. (Round to two decimal places as needed.)					
(1) O below ( O above	<ul> <li>(2) O empirical rule</li> <li>O three-standard-deviation rule</li> <li>O Chebyshev's rule</li> </ul>	(3) three four (4) five two one	more than three less than three ) less than two			
(5) O above ( O below	6) O bad O good					
ID: 3.5.218						

6. What is an experiment? What is an event?

What is an experiment? Choose the correct answer below.

- A. An action whose outcome cannot be predicted with certainty.
- O B. An action whose outcome can be predicted with certainty.
- **C.** A mathematical description based on certain events.
- O D. A mathematical description based on certain primary aspects and assumptions.

What is an event? Choose the correct answer below.

- A. The set of all possible results when an experiment is performed.
- **B.** A set of one or more possible experiments.
- C. Some specified result that may or may not occur when an experiment is performed.
- **D.** The result of a single probability experiment.

ID: 4.1.1

7. What is the difference between selecting a member at random from a finite population and taking a simple random sample of size 1?

Choose the correct answer below.

- A. The simple random sample is repeatable while the selection from the finite population is not.
- O B. A random member cannot be selected from a finite population.
- C. Each member of the finite population does not have the same probability of being selected.
- D. There is no difference.

## ID: 4.1.3

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8. Select the correct choice that completes the sentence below.

	If a member is selected at random from a finite population, probabilities are identical to (1)						
	(1) O experiments.						
	○ events.						
	o percentages.						
	frequencies.						
	ID: 4.1.4						
9. An experiment has 4 possible outcomes, all equally likely. An event can occur in 2 ways. Find the probability that the event occurs.							
	The probability that the event occurs is . (Type an integer or a decimal. Do not round.)						
	ID: 4.1.5						
10.	Which of the following numbers could not possibly be a probability? Justify your answer.						
	0.892 - 0.453 1						
	What must be true for a number to be a probability?						
	◯ A. The number must be between 0 and 1, exclusive.						
	◯ B. The number must be between 0 and 1, inclusive.						
	◯ <b>C.</b> The number must be rational.						
	◯ <b>D.</b> The number must be between −1 and 1, exclusive.						
	○ E. The number must be positive.						
	○ F. The number must be between - 1 and 1, inclusive.						
	Which of these numbers could not possibly be a probability? Select all that apply.						
	<b>A.</b> -0.453						
	<b>B.</b> 0.892						
	<b>C.</b> 1						
	<b>D.</b> All of the above numbers are possible probabilities.						
	ID: 4.1.10						
11.	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. If one of these cards is selected at random, what is the probability that it is						
	a. a jack?b. black?c. not a club?						
	<b>a.</b> The probability of selecting a jack is (Type an integer or a simplified fraction.)						
	<b>b.</b> The probability of selecting a black card is .						
	(Type an integer or a simplified fraction.)						
	<b>c.</b> The probability of selecting a card that is not a club is (Type an integer or a simplified fraction.)						

ID: 4.1.14

12. The accompanying figure shows the 36 equally likely outcomes when two balanced dice are rolled. Complete parts (a) through (d) below.

<sup>1</sup> Click the icon to view the figure that shows the 36 equally likely outcomes when two balanced dice are rolled.

a. Determine the probability that the sum of the dice is 9.

The probability that the sum of the dice is 9 is

(Type an integer or a decimal. Round to three decimal places as needed.)

**b.** Determine the probability that the sum of the dice is a multiple of 3.

The probability that the sum of the dice is a multiple of 3 is (Type an integer or a decimal. Round to three decimal places as needed.)

c. Determine the probability that the sum of the dice is 5 or 11.

The probability that the sum of the dice is 5 or 11 is \_\_\_\_\_. (Type an integer or a decimal. Round to three decimal places as needed.)

d. Determine the probability that the sum of the dice is 4, 8, or 6.

The probability that the sum of the dice is 4, 8, or 6 is \_\_\_\_\_. (Type an integer or a decimal. Round to three decimal places as needed.)

1: Outcomes of Two Balanced Dice

•	•	•	•	•
•••	•	•	•	::
• •.	•	•		•
•				
•				
•				

ID: 4.1.25

13.	A balanced dime is tossed three times. The possible outcomes are represented in the table. Complete parts (a) through (d) below.	ННН ННТ	НТН НТТ	тнн тнт	ттн ттт
	<b>a.</b> Find the probability that all three of the tosses come up heads.				
[	(Type an integer or a simplified fraction.)				
	<b>b.</b> Find the probability that the last two tosses come up the same.				
	(Type an integer or a simplified fraction.)				
	<b>c.</b> Find the probability that all three tosses come up the same.				
	(Type an integer or a simplified fraction.)				
	d. Find the probability that the third toss comes up tails.				
	(Type an integer or a simplified fraction.)				
	ID: 4.1.26				

14. Use the Biased-Coin Simulation applet to answer the question.

Click the **Animate** button and run the simulation 10,000 times (Set **n** = 10,000 and click Flip). Record the proportion of times that the coin lands with heads facing up. According to the graph on the applet, what value does the proportion of times that the coin lands with heads facing up approach as the number of flips get larger?

Click here for the Biased-Coin Simulation.<sup>2</sup>

Choose the correct answer below.

- 0 10,000
- 0.5
- 0.2
- 0

2: http://https://media.pearsoncmg.com/aw/aw\_weiss\_introstats\_10TE/applets/Applet\_4.2.html

ID: 4.1.App3

<ul> <li>15. When one die is rolled, the following six outcomes are possible.</li> <li>A = event the die comes up odd</li> <li>B = event the die comes up 5 or more</li> <li>C = event the die comes up at most 2</li> <li>List the outcomes that constitute each of the following events.</li> <li>a. (not A)</li> <li>b. (A &amp; B)</li> <li>c. (B or C)</li> <li>ID: 4.2.57</li> </ul>	<ul> <li>a. What outcomes constitute event (not A)?</li> <li>(Use a comma to separate answers as needed. Use ascending order.)</li> <li>b. What outcomes constitute event (A &amp; B)?</li> <li>(Use a comma to separate answers as needed. Use ascending order.)</li> <li>c. What outcomes constitute event (B or C)?</li> <li>(Use a comma to separate answers as needed. Use ascending order.)</li> </ul>
<ul> <li>16.</li> <li>When one die is rolled, the following six outcomes are possible.</li> <li> <ul> <li> <ul> <li> <li> <ul> <li> <ul></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></ul></li></li></ul></li></ul></li></li></ul></li></li></ul></li></li></ul></li></li></ul></li></li></ul></li></li></ul></li></ul>	What outcomes constitute event A?          (Use a comma to separate answers as needed. Use ascending order.)         What outcomes constitute event B?         (Use a comma to separate answers as needed. Use ascending order.)         What outcomes constitute event C?         (Use a comma to separate answers as needed. Use ascending order.)         What outcomes constitute event C?         (Use a comma to separate answers as needed. Use ascending order.)         What outcomes constitute event D?         (Use a comma to separate answers as needed. Use ascending order.)

1	7	

The following table provides a frequency distribution for the number of rooms in this country's housing units. The frequencies are in thousands.

Among the events A, B, C, and D, identify the collections of events that are mutually exclusive.

Are each of the following pairings of events mutually exclusive?

	Dearway Manafamilia	Are each or the following painings of events mutually exclusive?				
	RoomsNo. of units1527	A and B (1)				
	2 1,486 3 10,904	A and C (2)				
	4 23,322 5 27,942	A and D (3)				
	6 24,657 7 14,680	B and C (1)				
	8+ 17,225	(4)				
	A = event that the unit has at most 4 rooms B = event that the unit has at least 2 rooms	(5)				
	C = event that the unit has between 4 and 6 rooms, inclusive $D = event$ that the unit has more than 5 rooms	(6)				
		Are each of the following groupings of events mutually exclusive?				
		A, B, and C (7)				
		A, B, and D (8)				
		A, C, and D (9)				
		B, C, and D (10)				
		A, B, C, and D (11)				
	$(1) \bigcirc Yes (2) \bigcirc Yes (3) \bigcirc No (4) \bigcirc Yes (3) \bigcirc No (4) \bigcirc Yes (5) \bigcirc No (5) \bigcirc Yes (5) $	$(5) \bigcirc \text{Yes}  (6) \bigcirc \text{Yes}  (7) \bigcirc \text{Yes} \\ \bigcirc \text{No} \qquad \bigcirc \text{No} \qquad \bigcirc \text{No} $				
	(8) Yes (9) No (10) Yes (11) No No No Yes (11) Yes (11) Yes ID: 4.2.69					
18.	Suppose that A and B are independent events such that $P(A) = 0.5$ a	nd P(B)=0.3. Find P(A & B).				
	P(A & B) = (Type an integer or a decimal. Do not rou	nd.)				
	ID: 4.6.161					
19.	9. Based on the given information, decide whether or not the two events in question are independent or whether it is not possible to tell.					
	P(C) = 0.2, P(D) = 0.2, and P(C & D) = 0.04					
	Choose the correct answer below.					
	$\bigcirc$ <b>A.</b> The two events are independent because P(C D) = P(D).					
	<b>B.</b> The two events are independent because $P(C \& D) = P(C) \cdot P(D)$ .					
	$\bigcirc$ <b>D</b> . The two events are not independent because P(C D) $\neq$ P(C).					
	$\bigcirc$ E. It is not possible to tell if the two events are independent.					
	ID: 4.6.173					

20. According to a research corporation, 45% of women in a particular region suffer from holiday depression, and, from a population report, 48% of adults in this region are women. Find the probability that a randomly selected adult in this region is a woman who suffers from holiday depression. Interpret your answer in terms of percentages.

Select the correct choice below and fill in the answer boxes to complete your choice. (Type integers or decimals. Do not round.)
A. The probability is \_\_\_\_\_\_. This means that \_\_\_\_\_\_% of all adults in this region are women who suffer from holiday depression.

- O B. The probability is . This means that % of all women suffer from holiday depression.
- C. The probability is . This means that % of women in this region suffer from holiday depression.
- O D. The probability is \_\_\_\_\_\_. This means that \_\_\_\_\_% of all adults who suffer from holiday depression are women.

ID: 4.6.179