Review 5 AP Statistics Name:

1. The probability of rolling two six-sided dice and having the sum on the two dice equal 7 is $\frac{1}{6}$.

(a) Interpret this probability.

(b) You roll two dice six times. Are you guaranteed to get a sum of 7 once? Explain.

2. To pass the time during a long drive, you and a friend are keeping track of the makes and models of cars that pass by in the other direction. At one point, you realize that among the last 20 cars, there hasn't been a single Ford. (Currently, about 16% of cars sold in America are Fords). Your friend says, "The law of averages says that the next car is almost certain to be a Ford." Explain to your friend what he doesn't understand about probability.

3. A bag contains 10 equally-sized tags numbered 0 to 9. You reach in and, without looking, pick 3 tags without replacement. We want to use simulation to estimate the probability that the sum of the 3 numbers is at least 18. Describe the simulation procedure, then use the random number table below to carry out 10 trials of you simulation and estimate the probability. Mark on or above each line of the table so that someone can clearly follow your method.

128	15689	14227	06565	14374	13352	49367	81982	87209
129	36759	58984	68288	22913	18638	54303	00795	08727
130	69051	64817	87174	09517	84534	06489	87201	97245
131	05007	16632	81194	14873	04197	85576	45195	96565

4. Suppose you choose a random U.S. resident over the age of 25. The table below is a probability model for the education level the selected person has attained, based on data from the American Community Survey from 2006-2008.

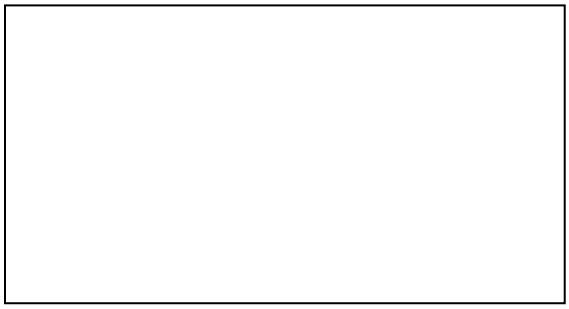
Education level attained	**Probability**
No high school diploma	0.20
High School diploma or GED	0.22
Some college	0.29
Bachelor's degree	0.19
Graduate or professional degree	?

(a) What is the probability that a randomly selected person has a graduate or professional degree? (That is, fill in the space marked with a "?") Show your work.

(b) What is the probability that a randomly-selected person has at least a high school diploma? Show your work.

5. There are 35 students in Ms. Ortiz's Precalculus class. One day, 24 students turned in their homework and 14 turned in test corrections. Eight of these students turned in both homework and test corrections. Suppose we randomly select a student from the class.

(a) Fill in the Venn diagram below so that it describes the chance process involved here. Let H = the event "turned in homework" and C = the event "turned in corrections."



(b) What is the probability that a randomly-chosen student turned in neither homework nor corrections? Justify you answer with appropriate calculations.

6. Below is a two-way table that describes responses of 120 subjects to a survey in which they were asked, "Do you exercise for at least 30 minutes four or more times per week?" and "What kind of vehicle do you drive?"

		Car type			
		Sedan	SUV	Truck	Total
Exercise?	Yes	25	15	12	52
	No	20	24	24	68
	Total	45	39	36	120

Suppose one person from this sample is randomly selected.

(a) List two mutually exclusive events for this chance process.

(b) What is the probability that the person selected drives an SUV?

(c) What is the probability that the person selected drives either a sedan or a truck?

(d) What is the probability that the person selected drives a truck or exercises four or more times per week?

7. Ivy conducted a taste test for four different brands of chocolate chip cookies. Below is a two-way table that describes which cookie each subject preferred and their gender.

	Cookie Brand				
	A	B	C	D	Totals
Female	4	6	13	13	36
Male	22	11	11	14	58
Totals	26	17	24	27	94

Suppose one subject from this experiment is selected at random.

(a) Find the probability that the selected subject preferred Brand C.

(b) Find the probability that the selected subject preferred Brand C, given that she is female.

(c) Are the events "preferred Brand C" and "female" independent? Explain.

(d) Are the events "preferred Brand C" and "female" mutually exclusive? Explain.

(e) If a random sample of two subjects is selected, what is the probability that neither preferred Brand A?

8. Officials at Dipstick College are interested in the relationship between participation in interscholastic sports and graduation rate. The following table summarizes the probabilities of several events when a male Dipstick student is randomly selected.

Event	Probability
Student participates in sports	0.20
Student participates in sports and graduates	0.18
Student graduates, given no participation in sports	0.82

(a) Find the probability that a student graduates, given that he participates in sports.

(b) Find the probability that the individual does not graduate, given that he participates in sports.

(c) Draw a tree diagram to summarize the given probabilities and those you determined above.

(d) Find the probability that the individual does not participate in sports, given that he graduates.