

SHOW SETUP FOR EACH PROBLEM AND THEN LEAVE EACH ANSWER AS AN INTEGER OR SIMPLIFIED FRACTION

- 1) Determine the number of ways a computer can randomly generate two integers from 1 to 12 whose sum is 6.

- 2) In a certain state, each automobile license plate number consists of three letters followed by a four-digit number. How many distinct license plate numbers can be formed?

- 3) A small college needs two additional faculty members: a chemist and a statistician. In how many ways can these positions be filled if there are four applicants for the chemistry position and six for the position in statistics?

- 4) How many four-digit *even* numbers can be formed if the leading digit cannot be zero?

- 5) In how many ways can six children line up in one row to have their picture taken?

- 6) In order to conduct a certain experiment, five students are randomly selected from a class of 25. How many *different* groups of five students are possible?

- 7) An employer interviews ten people for four openings in the company. Four of the ten people are women. If all ten are qualified, in how many ways could the employer fill the four positions if exactly two are women?

- 8) Determine the sample space for the given experiment. A coin and a *six*-sided die are tossed.

- 9) A coin is tossed three times. Find the probability of getting no more than one head. Use the sample space $S = \{HHH, HHT, HTH, HTT, THH, THT, TTH, TTT\}$.

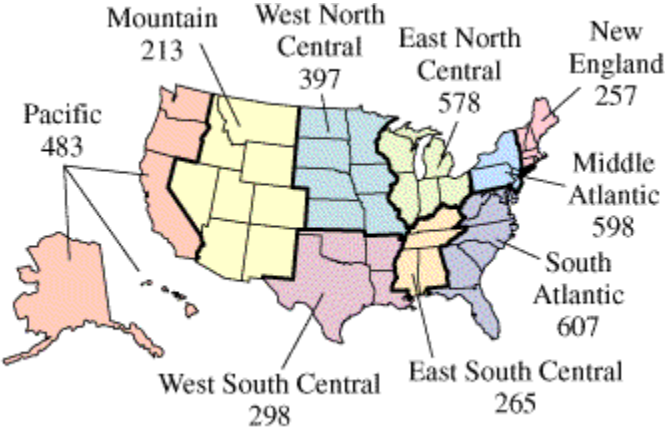
- 10) One card is selected from a standard deck of 52 playing cards. Find the *probability* of getting a red card that is a face card

- 11) A *six*-sided die is tossed twice. Find the *probability* that the sum is 9.

- 12) Two marbles are drawn (the first is *not* replaced before the second is drawn) from a bag containing one green, two yellow, and three red marbles. Find the probability of drawing none of the red marbles.

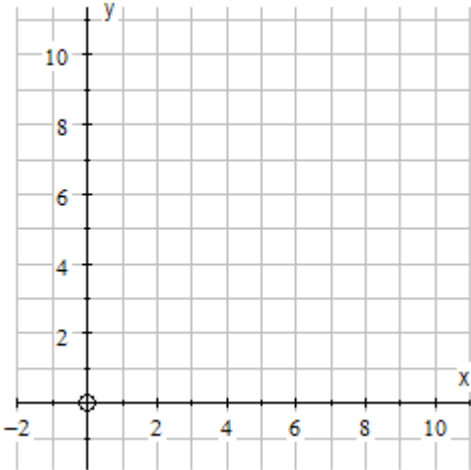
- 13) In how many *distinguishable* ways can the letters in RanchoMirage be written?

14) The numbers of colleges and universities in various regions of the United States in 1996 are shown in the figure. One institution is selected at random. What is the probability that the institution is in one of the two south central regions?



15) One card is selected from a standard deck of 52 playing cards. What is the probability that the card is either a club or an ace?

16) Sketch the graph of the first 10 terms of the sequence $a_n = \frac{2^n}{n!}$



17) Find the ninth term in the sequence: $\frac{4}{3}, -\frac{8}{9}, \frac{16}{27} \dots$ and leave in fraction form.

18) Find the first five terms of the sequence if $a_1 = 52, a_2 = 40, a_{n+2} = 2a_{n+1} - a_n$.

19) Write in sigma notation and find the sum of the series: $3 + 7 + 11 + 15 + \dots + 79$ (assume $n = 1$)

20) Determine the seating capacity of an auditorium with 30 rows of seats if there are 17 seats in the first row, 26 seats in the second row, 35 seats in the third row, and so on.