

SG Key

Wednesday, December 9, 2015 8:49 AM

1. A coin is tossed, a die is rolled, and a card is drawn from a deck. How many possible outcomes does this experiment have?

$$2 \cdot 6 \cdot 52 = \boxed{624}$$

- 2a. How many different 2-letter combinations do the vowels (A, E, I, O and U) have?

$$5^C_2 = \boxed{10}$$

- b. How many different two-letter "words" can be made using the letters from the set in part 'a'?

$$5P_2 = \boxed{20}$$

3. An airline company overbooks a particular flight and seven passengers are "bumped" from the flight. If 120 passengers are booked on the flight, in how many ways can the airline choose the seven passengers to be bumped?

$$120^C_7 = \boxed{5.949 \times 10^{10}}$$

4. A quiz has ten true-false questions and five multiple-choice questions with four choices for each. How many different answer keys does this test have?

$$1465 \cdot 2^{10} \cdot 4^5 = \boxed{1,048,576}$$

5. If you must answer only eight of ten questions on a test, how many ways do you have of choosing the questions you will omit?

$$10^C_2 = \boxed{45}$$

6. Find the number of permutations of the letters of the word "OAKBROOK."
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$$\frac{8!}{3!2!} = \boxed{3360}$$

7. From a well-shuffled deck of 52 cards, two cards are dealt. Find the probability of getting:

a. two face cards

$$\frac{12C_2}{52C_2} = \boxed{.0498}$$

b. two tens

$$\frac{4C_2}{52C_2} = \boxed{0.004525}$$

b. two diamonds

$$\frac{13C_2}{52C_2} = \boxed{0.0588}$$

d. two face cards or two diamonds

$$\frac{12C_2 + 13C_2 - 3C_2}{52C_2} = \boxed{0.1063}$$

e. two face cards or two tens

$$\frac{12C_2 + 4C_2}{52C_2} = \boxed{0.0543}$$

f. one face card and one ten

$$\frac{(12C_1)(4C_1)}{52C_2} = \boxed{0.0362}$$

8. In a class of 50 students,

- 11 are business majors
- 15 are humanities majors
- 9 are political science majors
- 6 are education majors
- 9 are undecided

a. Find the probability of picking one student whose major is education or political science

$$\frac{9}{50} + \frac{6}{50} = \frac{15}{50} = \boxed{\frac{3}{10} \text{ or } .3}$$

b. Find the probability of selecting two students who are NOT humanities nor business majors $50 - 15 - 11 = 24$

$$\frac{24C_2}{50C_2} = \frac{276}{1225} = \boxed{.23}$$

9. A box contains 3 red and 5 green holiday pencils. One lucky student will get to randomly select two pencils without replacement. Find the probability that:

a. both pencils are the same color.

$$\frac{3C_2 + 5C_2}{8C_2} = \boxed{0.4643}$$

b. one pencil is red and the other is green.

$$\frac{(3C_1)(5C_1)}{8C_2} = \boxed{0.5357}$$