Algebra 2 Bellwork Friday, May 15, 2015

Find the number of outcomes for each situation.

1. A company has ten board members. In how many ways can it elect a president, vice-president, secretary, and treasurer?

2. You are taking a 10 question multiple choice test where there are four choices for each question. Since you didn't study you must guess at all ten questions. How many different ways can you answer the ten questions?

3. For the school production of Grease there are eight actors considered for the roles of Danny, Kenickie, and Marty. In how many ways can the director cast these three male roles?

4. You go the polls to vote and on the ballot you are asked to vote for three judges and there are 8 to choose from. In how many ways can you vote?

5. You've decided to buy a new car. You know which car you want but must choose exterior color, interior color, and accessory package. There are 9 exterior colors, 4 interior colors, and 7 accessory packages. How many different cars are there to choose from if you must choose one of each?

6. A medical researcher needs six people to test the effectiveness of an experimental drug. if 13 people have volunteered for the test, in how many ways can the researcher select sixe people?

7. You are going on a short weekend trip and need to pack. You have room to pack 3 pairs of shorts, 4 shirts, and 2 hats. If you have 5 pairs of shorst, 10 shirts, and 6 hats to choose from find the number of different ways you could pack for the trip.

Algebra 2 Bellwork Friday, May 15, 2015 ANSWERS

Find the number of outcomes for each situation.

1. A company has ten board members. In how many ways can it elect a president, vice-president, secretary, and treasurer?

Permutation

$${}_{10}P_4 = \boxed{5040 \text{ ways}}$$

2. You are taking a 10 question multiple choice test where there are four choices for each question. Since you didn't study you must guess at all ten questions. How many different ways can you answer the ten questions?

multiplication Counting Principle

$$\underline{4}\cdot\underline{4}\cdot\underline{4}\cdot\underline{4}\cdot\underline{4}\cdot\underline{4}\cdot\underline{4}\cdot\underline{4}\cdot\underline{4}\cdot\underline{4} = 4^{10} = \boxed{1{,}048{,}576 \text{ ways}}$$

3. For the school production of Grease there are eight actors considered for the roles of Danny, Kenickie, and Marty. In how many ways can the director cast these three male roles?

Permutation

$${}_8P_3 = \boxed{336 \text{ ways}}$$

4. You go the polls to vote and on the ballot you are asked to vote for three judges and there are 8 to choose from. In how many ways can you vote?

Combination

$${}_8C_3 = \boxed{56 \text{ ways}}$$

5. You've decided to buy a new car. You know which car you want but must choose exterior color, interior color, and accessory package. There are 9 exterior colors, 4 interior colors, and 7 accessory packages. How many different cars are there to choose from if you must choose one of each?

Multiplication Counting Principle

$$\underline{9}\cdot\underline{4}\cdot\underline{7} = \boxed{252 \text{ ways}}$$

6. A medical researcher needs six people to test the effectiveness of an experimental drug. if 13 people have volunteered for the test, in how many ways can the researcher select sixe people?

Combination

$${}_{13}C_6 = \boxed{1716 \text{ ways}}$$

7. You are going on a short weekend trip and need to pack. You have room to pack 3 pairs of shorts, 4 shirts, and 2 hats. If you have 5 pairs of shorst, 10 shirts, and 6 hats to choose from find the number of different ways you could pack for the trip.

Combinations & Mult. Count. Princ.

$$\underbrace{{}_5C_3}_{\text{shorts}}\cdot\underbrace{{}_{10}C_4}_{\text{shirts}}\cdot\underbrace{{}_6C_2}_{\text{hats}}$$

$$= \underline{10}\cdot\underline{210}\cdot\underline{15} = \boxed{31{,}500 \text{ ways}}$$