Algebra 2 Bellwork Thursday, March 24, 2016

1. Over a vacation you want to get caught up on some of the movies you've missed over the past year. Your list of movies contains 3 Comedy's, 4 Action, and 6 Mystery's.

a) How many ways can you choose watch one of each?

b) How many ways can you choose 1 Comedy, 2 Action, and 2 Mystery's?

2. You and a group of 10 friends are going to an amusement park. You can take 5 friends in your car.

a) How many ways can you choose 5 friends to go with you?

b) How many ways can your 5 friends decide where they are going to sit in your car?

3. On a trip you want to take some books to read. You have a pile of 8 books that you haven't read yet. How many ways can you take at least 6 books to read?

4. For a school play there are 6 roles to fill. If 12 students try out for the play how many ways could these roles be filled?

5. A group of 8 people run a race. The top 3 finishers move on the finals. How many ways can this happen?

6. You get a new ATM card and have to come up with a password that has 3 letters followed by 3 numbers. The password is NOT case-sensitive but you can't use the letters "O" or "L". Letters CAN repeat but numbers can't. How many different passwords are possible?

Algebra 2 Bellwork Thursday, March 24, 2016 Answers

1. Over a vacation you want to get caught up on some of the movies you've missed over the past year. Your list of movies contains 3 Comedy's, 4 Action, and 6 Mystery's.

a) How many ways can you choose watch one of each?

$3 \cdot 4 \cdot 6 =$ 72 ways to watch one of each

b) How many ways can you choose 1 Comedy, 2 Action, and 2 Mystery's?

$\underset{1\text{ Comedy}}{3} \cdot \underset{{}_4C_2}{\underset{2\text{ Action}}{6}} \cdot \underset{{}_6C_2}{\underset{2\text{ mystery}}{15}} =$ 270 ways

2. You and a group of 10 friends are going to an amusement park. You can take 5 friends in your car.

a) How many ways can you choose 5 friends to go with you?

${}_{10}C_5 =$ 252 ways

b) How many ways can your 5 friends decide where they are going to sit in your car?

$5! \text{ or } {}_5P_5 =$ 120 ways

3. On a trip you want to take some books to read. You have a pile of 8 books that you haven't read yet. How many ways can you take at least 6 books to read?

At least 6 means 6 or more → 6, 7, or 8

${}_8C_6 + {}_8C_7 + {}_8C_8 = 28 + 8 + 1 =$ 37 ways

4. For a school play there are 6 roles to fill. If 12 students try out for the play how many ways could these roles be filled?

${}_{12}P_6 =$ 665,280

5. A group of 8 people run a race. The top 3 finishers move on the finals. How many ways can this happen?

${}_8C_3 =$ 56 ways

6. You get a new ATM card and have to come up with a password that has 3 letters followed by 3 numbers. The password is NOT case-sensitive but you can't use the letters "O" or "L". Letters CAN repeat but numbers can't. How many different passwords are possible?

$\underbrace{24 \cdot 24 \cdot 24}_{\text{Letters can repeat}} \cdot \underbrace{10 \cdot 9 \cdot 8}_{\#\text{'s can't repeat}} =$ 9,953,280