PROBLEM SOLVING

48. MUSIC You want to purchase 3 CDs from an online collection that contains the types of music shown at the right. You want each CD to contain a different type of music such that 2 CDs are different types of contemporary music and 1 CD is a type of classical music. How many different sets of music types can you choose?

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Contemporary	Classical
⊖ Blues	⊖ Opera
⊖ Country	⊖ Concerto
⊖ Jazz	⊖ Symphony
⊖ Rap	
⊖ Rock & Roll	

(49.) FLOWERS You are buying a bouquet. The florist has 18 types of flowers that you can use to make the bouquet. You want to use *exactly* 3 types of flowers. How many different combinations of flower types can you use in your bouquet?

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50. ARCADE GAMES An arcade has 20 different arcade games. You want to play at least 14 of them. How many different combinations of arcade games can you play?

51. MULTI-STEP PROBLEM A televised singing competition picks a winner from 20 original contestants over the course of five episodes. During each of the first, second, and third episodes, 5 singers are eliminated by the end of the episode. The fourth episode eliminates 2 more singers, and the winner is selected at the end of the fifth episode.

a. How many combinations of 5 singers out of the original 20 can be eliminated during the first episode?

b. How many combinations of 5 singers out of the 15 singers who started the second episode can be eliminated during the second episode?

c. How many combinations of singers can be eliminated during the third episode? during the fourth episode? during the fifth episode?

d. Find the total number of ways in which the 20 original contestants can be eliminated to produce a winner.

52. ★ TAKS REASONING A group of 15 high school students is volunteering at a local fire station. Of these students, 5 will be assigned to wash fire trucks, 7 will be assigned to repaint the station's interior, and 3 will be assigned to do maintenance on the station's exterior.

a. Calculate One way to count the number of possible job assignments is to find the number of permutations of 5 *W*'s (for "wash"), 7 *R*'s (for "repainting"), and 3 *M*'s (for "maintenance"). Use this method to write the number of possible job assignments first as an expression involving factorials and then as a number.

b. Calculate Another way to count the number of possible job assignments is to first choose the 5 *W*'s, then choose the 7 *R*'s, and then choose the 3 *M*'s. Use this method to write the number of possible job assignments first as an expression involving factorials and then as a number.

c. Analyze *Compare* your results from parts (a) and (b). *Explain* why they make sense.

Volunteers in Aniak, Alaska

⬤ = **WORKED-OUT SOLUTIONS**
on p. WS1

★ = **TAKS PRACTICE
AND REASONING**