Math Q3W3

Activity 8. Decide if each scenario involves a permutation or a combination.

1. Permutation
2. Combination
3. Permutation
4. Combination
5. Combination
6. Permutation
7. Combination
8. Permutation
9. Permutation
10. Combination

Activity 9. Solve for the unknown in each item.

1. 4
2. 1
3. 126
4. 35
5. 10
6. 30
7. 1960
8. 2268
9. 1200
10. 4500

Activity 10. Apply the formula ${}_nC_r$ to solve each problem.

1. 20
2. 2118760
3. 8568
4. 2598960
5. 210

Activity 10 Solutions:

n = 6, r = 3 (points in a triangle): $${}_nC_r = \frac{6!}{3!(6-3)!} = \frac{6!}{3!\cdot 3!} = \frac{720}{36} = 20$$

n = 50, r = 5:

$${}_nC_r = \frac{50!}{5!(50-5)!} = \frac{50!}{5!\cdot 45!} = \frac{50\cdot 49\cdot 48\cdot 57\cdot 46\cdot \cancel{45!}}{5!\cdot \cancel{45!}} = \frac{50\cdot 49\cdot 48\cdot 57\cdot 46}{5!} = \frac{254251200}{120} = 2118760$$

n = 18 (total students), r = 5: $${}_nC_r = \frac{18!}{5!(18-5)!} = \frac{18!}{5!\cdot 13!} = \frac{6402373705728000}{747242496000} = 8568$$

n = 52, r = 5:

$${}_nC_r = \frac{52!}{5!(52-5)!} = \frac{52!}{5!\cdot 47!} = \frac{52\cdot 51\cdot 50\cdot 49\cdot 48\cdot \cancel{47!}}{5!\cdot \cancel{47!}} = \frac{52\cdot 51\cdot 50\cdot 49\cdot 48}{5!} = \frac{311875200}{120} = 2598960$$

n = 10 (total balls), r = 4: $${}_nC_r = \frac{10!}{4!(10-4)!} = \frac{10!}{4!\cdot 6!} = \frac{3628800}{17280} = 210$$