Combinations/Permutations worksheet

Indicate whether each situation involves a combination or permutation.

1. In how many ways can five apples chosen at random from a case of 80 apples?

2. In how many ways can ten applicants line up for a job interview?

3. In how many ways can 3 from a class of 20 be elected president, secretary, and treasurer?

4. Four students chosen at random from a student body of 1000

Evaluate each expression

5. ${}_{12}C_{11}$ 6. ${}_{12}C_{10}$ 7. ${}_{12}C_{5}$ 8. ${}_{12}C_{1}$

How many samples of five different items can you select from each set?

9. Jim, Ben, Sue, Tom, and Rita 10. {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}

11. 14 novels on a reading list 12. 50 states

Evaluate each expression.

13. 7! 14. $\frac{11!}{9!}$ 15. ${}_{12}C_{5}(0.3)^{5}(0.7)^{7}$ 16. ${}_{12}P_{3}$ 17. ${}_{12}P_{5}$

18. In how many ways can three medals (gold, silver, and bronze) be awarded for a race involving nine runners?

19. A committee must choose 3 finalists from 15 scholarship candidates. How many ways can the committee choose the three finalists?

20. A traveler can choose from three airlines, five hotels, and four rental car companies. How many arrangements of these services are possible?

Combinations/Permutations worksheet

Indicate whether each situation involves a combination or permutation.

1. In how many ways can five apples chosen at random from a case of 80 apples?
   Combination – ${}_{80}C_5$
2. In how many ways can ten applicants line up for a job interview?
   Permutation – ${}_{10}P_{10}$
3. In how many ways can 3 from a class of 20 be elected president, secretary, and treasurer?
   Permutation – ${}_{20}P_3$
4. Four students chosen at random from a student body of 1000
   Combination – ${}_{1000}C_4$

Evaluate each expression

5. ${}_{12}C_{11}$ 12

6. ${}_{12}C_{10}$ 66

7. ${}_{12}C_5$ 792

8. ${}_{12}C_1$ 12

How many samples of five different items can you select from each set?

9. Jim, Ben, Sue, Tom, and Rita
   1

10. {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}
    252

11. 14 novels on a reading list
    2002

12. 50 states
    2,118,760

Evaluate each expression.

13. $7!$ 5040

14. $\frac{11!}{9!}$ 110

15. ${}_{12}C_5(0.3)^5(0.7)^7$ 0.1585

16. ${}_{12}P_3$ 1320

17. ${}_{12}P_5$ 95,040

18. In how many ways can three medals (gold, silver, and bronze) be awarded for a race involving nine runners?
    504

19. A committee must choose 3 finalists from 15 scholarship candidates. How many ways can the committee choose the three finalists?
    455

20. A traveler can choose from three airlines, five hotels, and four rental car companies. How many arrangements of these services are possible?
    60