Factorials, permutations and combinations worksheet – Grade 10

Grade 10 · Mixed level · 20 questions · **Version X5840**

Name: _____ Date: _____ Score: ___ / 20

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1. Work out $\frac{12!}{9!}$.

   Answer: _____

2. A school has 17 teachers and 24 rooms. How many teacher-room pairs are possible?

   Answer: _____

3. Picking 3 pizza toppings from 10: does order matter?

   A. No, use combinations **B.** Yes, use permutations

4. Find the value of $8!$.

   Answer: _____

5. A club of 18 chooses a president and a treasurer. How many ways are there?

   Answer: _____

6. Evaluate $\frac{10!}{8!}$.

   Answer: _____

7. In how many orders can 5 runners finish a race?

   Answer: _____

8. How many ways can Mateo choose 3 books from 7 to take on a trip?

   Answer: _____

9. In how many ways can the letters of BANANA be arranged?

   Answer: _____

10. Work out ${}_7P_2$.

    Answer: _____

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11. How many ways can gold, silver and bronze go to 10 swimmers?

    Answer: _____

12. In how many ways can the letters of MATH be arranged?

    Answer: _____

13. In how many ways can the letters of OTTAWA be arranged?

    Answer: _____

14. How many ways can a committee of 3 be chosen from 8 students?

    Answer: _____

15. A committee of 3 is chosen at random from 6 girls and 4 boys. What is the probability all are girls? Write it in lowest terms.

    Answer: _____

16. A team of 4 is picked from 6 girls and 8 boys, with 2 of each. How many teams are possible?

    Answer: _____

17. A password has 2 letters from A to Z then 2 digits, with no repeats. How many are possible?

    Answer: _____

18. 5 friends sit in a row, and two of them must sit together. How many arrangements are there?

    Answer: _____

19. A lottery picks 6 numbers from 1 to 31. How many tickets are possible?

    Answer: _____

20. A committee of 3 is chosen at random from 8 girls and 7 boys. What is the probability all are girls? Write it in lowest terms.

    Answer: _____

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Answer key · Version X5840

Factorials, permutations and combinations worksheet – Grade 10 · Grade 10 · to reprint this sheet or check the answers, enter X5840 on the skill page.

1. **1320**
2. **408**
3. **A (No, use combinations)**
4. **40320**
5. **306**
6. **90**
7. **120**
8. **35**
9. **60**
10. **42**
11. **720**
12. **24**
13. **180**
14. **56**
15. **1/6**
16. **420**
17. **58500**
18. **48**
19. **736281**
20. **8/65**

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