

Simple Permutations and Combinations Worksheet

1. How many ways can you arrange the letters of the word FACTOR?
2. How many ways can you choose two jellybeans from a bag of 15?
3. How many ways can five different textbooks be arranged on a shelf?
4. How many groups of 3 toys can a child choose to take on a vacation from a toy box containing 11 toys?
5. How many different sets of 6 questions for a test can be chosen from a file containing 22 questions?
6. How many ways can Laura colour a map with 4 adjacent regions if she has 15 coloured pencils?
7. How many ways can a teacher select 5 students from a class of 23 students to create a bulletin board display?
8. There are seven children to be lined up in a straight line for a photograph
 - a) How many different ways are possible?
 - b) How many different ways are possible if Sally must be in the middle?
 - c) How many different ways are possible if Ahmed is on the far left?
 - d) How many different ways are possible if Hannah and Brian must be together?
9. A 12 set encyclopedia is to be arranged on a shelf. How many incorrect arrangements are possible?
10. A video store has 27 new release movie posters. How many ways can the manager choose 8 for a promotion that gives them away to the same person?
11. If you have a standard deck of cards in how many different ways can you deal out
 - a) 5 cards
 - b) 10 cards
 - c) 5 red cards
 - d) 4 queens
12. If you have a standard deck of cards in how many different hands exists of
 - a) 5 cards
 - b) 10 cards
 - c) 5 red cards
 - d) 4 queens
13. How many ways can 12 volleyball teams members line up if the captain and assistant captain must be together?
14. The game of euchre uses only 24 cards from a standard deck. How many different 5 card euchre hands are possible?
15. A club has 11 members.
 - a) How many different 2 member committees could be formed from this club?
 - b) How many different 3 member committees could be formed from this club?
 - c) How many ways could a president, treasurer and secretary be chosen?
16. How many ways can 7 people be arranged around a circular table?
17. Mr. Wilson has a briefcase with a three digit combination lock. He can set the combination himself. His favourite digits are 3,4,5,6 and 7. Each digit can be used at most once. He his only going to use these numbers for his combinations.

- a) How many different combinations are possible?
- b) How many of these combinations would be odd?
- c) How many of these combinations are even?

18. There are 15 technicians and 11 chemists working in a research lab. They need to form a 5 person safety committee. In how many ways can this committee be formed if

- a) May be chosen in any way?
- b) May be all technicians
- c) May be all chemists

Answers

1) $6!$

2) $\binom{15}{2}$

3) $5!$

4) $\binom{11}{3}$

5) $\binom{22}{6}$

6) $P(15,4)$

7) $\binom{23}{5}$

8)

- a) $7!$
- b) $6!$
- c) $6!$
- d) $6! \times 2!$

9) $12! - 1$

10) $\binom{27}{8}$

11)

- a) $P(52,5)$
- b) $P(52,10)$
- c) $P(26,5)$
- d) $P(4,4)$

12)

a) $\binom{52}{5}$

b) $\binom{52}{10}$

c) $\binom{26}{5}$

d) $\binom{4}{4}$

13) $11! \times 2!$

14) $\binom{24}{5}$

15)

a) $\binom{11}{2}$

b) $\binom{11}{3}$

c) $P(11,3)$

16) $1 \times 6!$

17)

a) $P(5,3)$

b) 36

c) 24

18)

a) $\binom{26}{5}$

b) $\binom{11}{0} \binom{15}{5}$

c) $\binom{11}{5} \binom{15}{0}$