Easy Worksheet on Permutation and Combination

1. Evaluate **(i)** C_2^n **(ii)** C_3^{n+1}

2. Simplify: $P_0^n + P_1^n + P_2^n$

3. Two colours are chosen from the colours red (R), yellow (Y), green (G) and blue (B) to be the colours of a logo. **(a)** List the possible combinations of two colours.
(b) How many combinations of two colours are available?

4. A Mark Six lottery ticket consists of marking 6 different numbers ranging from 1 to 49.
(a) How many different lottery tickets can you mark?
(b) If each ticket costs $5, then how much do you pay for buying all lottery tickets in **(a)**?

5. A relay team of 4 persons is selected from a group of 9 runners. How many different teams can be formed if
(a) an outstanding runner must be included in the team?
(b) a wounded runner must also be excluded from the team?

6. In how many ways can a group of 5 printers be selected from 6 inkjet and 9 laser printers if the group must contain
(a) exactly 3 laser printers?
(b) at least 3 laser printers?

7. **(a)** Find the number of diagonals that can be drawn in an 4-sided polygon.

(b) Find the number of diagonals that can be drawn in an 5-sided polygon.

(c) Find the number of diagonals that can be drawn in an 6-sided polygon.

(d) Try to generalize the above cases, find the number of diagonals that can be drawn in an n-sided polygon.

8. In the Legislative Council, a special committee of 5 members has to be formed from 10 non-official members and 7 official members. In how many ways can the committee be formed if it consists of

(a) 5 non-official members?   **(b)** 3 non-official and 2 official members?   **(c)** Non-official members in majority?

9. A poker hand of 5 cards are selected from a deck of 52 playing cards. How many different poker hands contain

(a) all spades?   **(b)** 3 Aces and 2 Kings?   **(c)** 4 cards with identical number or letter?