

Question #15386 In a group of 15 boys, there are 6 scouts. In how many ways can 8 boys be selected, so as to include

- (i) exactly 3 scouts
- (ii) at least 3 scouts
- (iii) at the most 3 scouts

Solution. The logic is the following choose scouts and then choose the rest boys. and then use combinatorial rule of product.

- i) $\binom{6}{3} \binom{9}{5}$
- ii) $\sum_{k=3}^6 \binom{6}{k} \binom{9}{8-k}$.
- iii) $\sum_{k=0}^3 \binom{6}{k} \binom{9}{8-k}$