



7. What is the **minimum number** of objects such that at least  $r$  of these objects must be in one of  $k$  boxes when these objects are distributed among the boxes?

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8. a) How many cards must be selected from a standard deck of 52 cards to guarantee that at least three cards of the same suit are selected?

(What happens if there are only 8 cards selected?)

b) How many must be selected from a standard deck of 52 cards to guarantee that at least three hearts are selected?

9. Show that if five integers are selected from the first eight positive integers, there must be a pair of these integers with a sum equal to 9.

10. During a month with 30 days, a baseball team plays at least one game a day, but no more than 45 games. Show that there must be a period of some number of consecutive days during which the team must play exactly 14 games.