

- 1) Mr. Karadimos and ten other teachers are on a committee. In how many ways can a subcommittee of 6 be chosen from 10 people given that Mr. Karadimos must be in the subcommittee?

- 2) A special type of password consists of five **different** letters of the alphabet, where each letter is used only once. How many different possible passwords are there?

- 3) How many ways can 6 people be placed at a circular table?

- 4) A password consists of five letters of the alphabet (capitol or small case) followed by three digits chosen from 1 to 9. Repeats are allowed. How many different possible passwords are there?

- 5) An encyclopedia has ten volumes. In how many ways can the eight volumes be replaced on the shelf?

- 6) There are 42 people who were surveyed about their favorite sport. Here was the result of the survey: 29 people like mixed martial arts (MMA), 25 people like hockey, and 17 people like both hockey and MMA. Make a Venn Diagram to determine how many people did not like hockey.

Answers:

120

$52^5 \cdot 9^3$

$3! 5! 4! 3!$

17

${}_{26}P_5$

5!

${}_{10}P_8$

${}_5P_3$

${}_{10}C_5$

${}_{14}C_5$

$\frac{10!}{4! 2!}$

160

- 7) A restaurant offers 4 choices of appetizer, 8 choices of main meal and 5 choices of dessert. How many different possible meals does the restaurant offer if a customer chooses one appetizer, one main meal, and one dessert?
- 8) There are 14 technicians and 10 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 they are all technicians?
- 9) Dr. Evil has a briefcase with a three digit combination lock. He set the combination using only his favorite digits (3, 4, 5, 6 and 7). Each digit can be used at most once. How many possible lock codes can there be?
- 10) If there are 3 English books, 5 math books, and 4 science books (all of them are different), how many ways can these books be arranged on a shelf by subject?
- 11) How many ways can the letters from the word "assessment" be written?

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