Mathematics 174

Quiz # 26 Name: Key

You must show your work to get full credit.

A test has 15 questions on it. Students are to select 10 questions to do.

1. How many sets of 10 questions is it possible to choose?

The number is $\binom{15}{10} = 3003.$

2. If 4 of the questions require a calculator and 11 do not,

(a) How many selections of 10 questions have exactly 3 calculator problems?

The answer is $\binom{4}{3}\binom{11}{7} = 1320.$

(b) How many selections of 10 questions have at most two calculator questions

(# with none) + (# with one) + (# with 2)

$= \binom{4}{0}\binom{11}{10} + \binom{4}{1}\binom{11}{9} + \binom{4}{2}\binom{11}{8}$

The answer is $\binom{4}{0}\binom{11}{10} + \binom{4}{1}\binom{11}{9} + \binom{4}{2}\binom{11}{8}$

$= 1049$

3. If it is required that the students do either Problem 1 or Problem 2, but not both, then how many selections of 10 questions are there?

(#1 not 2) + (#2 not 1)

$= \binom{13}{8} + \binom{13}{8}$

The number is $\binom{13}{8} + \binom{13}{8} = 2574.$