Course Selection

To fulfill the requirements for a certain degree, a student can choose to take any 5 out of a list of 21 courses, with the constraint that at least 1 of the 5 courses must be a Mathemetics course.

Suppose that 8 of the 21 courses are Mathemetics courses.

How many choices are there for which 5 courses to take?

Answer = number (3 significant figures)

Save & Grade

Save only

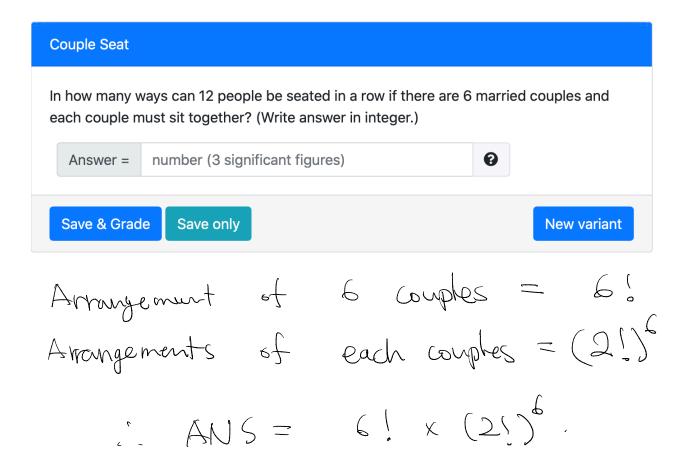
New variant

Solution

The number of choosing 5 out of 21 courses

The number of choosing 5 from 21 without Moth $= \left(\begin{array}{c} 21 - 8 \\ 5 \end{array}\right) = \left(\begin{array}{c} 13 \\ 5 \end{array}\right)$

= 19062.



(Version 1) Friends and Party A person has 12 friends, of whom 5 will be invited to a party. How many choices are there if 2 of the friends are feuding and will not attend together? Write only integer answer. Answer= number (3 significant figures) 0 Save & Grade Save only New variant Total number = $\begin{pmatrix} 12\\ 5 \end{pmatrix}$ Number of invitation that 2 friends attend together = $\begin{pmatrix} 12-2\\ 5-2 \end{pmatrix} = \begin{pmatrix} 10\\ 2 \end{pmatrix}$

= 672

How mar	has 12 friend		
Answe	er= numbe	er (3 significant figures	s) 2
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It v	od Níc	e either	
(i)	two	Frends	attend to gether
		. (ottend together $= (12-2) = (10)$ $= (5-2) = (3)$
78	-(1,)~	Friends	don't attend
	1000	11101000	$= \begin{pmatrix} 12-2 \\ 5 \end{pmatrix} = \begin{pmatrix} 6 \\ 5 \end{pmatrix}$

$$\therefore ANSWER = \begin{pmatrix} 10 \\ 3 \end{pmatrix} + \begin{pmatrix} 10 \\ 5 \end{pmatrix} = 132$$

Block Arrangements

A child has 16 blocks, of which 8 are black, 4 are red, 2 is white, and 2 is blue. (Blocks in each color are indistinguishable.)

If the child puts the blocks in a line, how many arrangements are possible?

Write only integer answer.

number (4 significant figures) 0 Answer=

Save & Grade

Save only

New variant

This is the second interpretation of

multinomial coefficient.

M = 16, $M_1 = 8$, $M_2 = 4$, $M_3 = M_4 = 2$

(8,4,2,2) is the answer. 5405400,