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Take three from five

- This problem can be solved by using modular arithmetic
If a number a multiple of 3, we can write
$a \equiv 0 \pmod 3$
where a is the number
If a number has the remainder of 1, we can write
$a \equiv 1 \pmod 3$
If a number has the remainder of 2, we can write
$a \equiv 2 \pmod 3$

Case 1:	Case 2	Case 3
$n_1 \equiv 0 \pmod 3$	$n_1 \equiv 1 \pmod 3$	$n_1 = 2 \pmod 3$
$n_2 \equiv 0 \pmod 3$	$n_2 \equiv 1 \pmod 3$	$n_2 = 2 \pmod 3$
$n_3 \equiv 0 \pmod 3$	$n_3 \equiv 1 \pmod 3$	$n_3 = 2 \pmod 3$
$n_1+n_2+n_3 \equiv 0 \pmod 3$	$n_1+n_2+n_3 \equiv 3 \equiv 0 \pmod 3$	$n_1+n_2+n_3 \equiv 6 \equiv 0 \pmod 3$
That means that the sum is a multiple of 3.	Also a multiple of 3	Also a multiple of 3

Case 4
$n_1 \equiv 0 \pmod 3$
$n_2 \equiv 1 \pmod 3$
$n_3 \equiv 2 \pmod 3$
$n_1+n_2+n_3 \equiv 3 \equiv 0 \pmod 3$

(P2/2)

Choose 3 numbers from 5, sum them up. The sum of the three congruents are shown here (Mod 3)

n_1	n_2	n_3	n_4	n_5	Sum of 3 numbers
0	0	0	0	0	$\equiv 0$
1	1	1	1	1	$\equiv 3 \equiv 0$
2	2	2	2	2	$\equiv 6 \equiv 0$
0	0	0	0	1	$\equiv 0$
0	0	0	1	1	
0	0	1	1	1	
0	1	1	1	1	
1	1	1	1	2	
1	1	1	2	2	
1	1	2	2	2	
1	2	2	2	2	
0	1	2	2	2	
0	1	1	2	2	
0	1	1	1	2	
0	0	1	2	2	
0	0	1	1	2	
0	0	0	1	2	

Congruent

Sum of (Congruent $\equiv 0$ (mod 3))

i.e a multiple of 3

Legend:

✓ The 3 numbers chosen

✓ Alternative choices. (In some there are more than two)

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