

Here is a new definition:

**Definition:** Let  $x$  and  $y$  be integers. Then we say that  $x$  **divides**  $y$  if there exists an integer  $k$  such that  $xk = y$ .

Hint: Note that this is defined in terms of multiplication, NOT division. Thus there should not be division in your proof when it involves “divides”!

Hint 2: Be sure to use all your hypotheses!

**Question:** Using this new definition, prove the following:

For all integers  $a$ ,  $b$  and  $c$  with  $a \neq 0$ , if  $a$  divides  $b$  and  $a$  divides  $c$ , then  $a$  divides  $3b - 4c$ .