$\boxed{\text{Case 1:}}$ $a=3p,\ b=3q,\ c=3r$ $a^2+b^2+c^2=9(p^2+q^2+r^2)$

$\therefore 9 \mid (a^2+b^2+c^2)$.

$a-b=3(p-q)$ $b-c=3(q-r)$ $a-c=3(p-r)$

If $p-q$ or $q-r$ or $p-r$ takes the form of $3x$, for some $x\in\mathbb{Z}$, we are done.

i) Let, $p-q=3x+1$ $q-r=3y+1$ $p-r=3(x+y)+2$

ii) $p-q=3x+1$ $q-r=3y+2$ $p-r=3(x+y+1)$

$\hookrightarrow$ Symmetric case is similar

iii) $p-q=3x+2$ $q-r=3y+2$ $p-r=3(x+y+1)+1$

$\to p-q=3x+1$ implies $p=3x_1+2$ $q=3x_2+1$

or, $p=3x_1+1$ $q=3x_2$

$q-r=3y+1$ implies $q=3y_1+2$ $r=3y_2+1$

or, $q=3y_1+1$ $r=3y_2$

$(15,12,9)$ is a counterexample

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$\boxed{\text{Prob 26:}}$ Prove that if we decrease by 7 the sum of the squares of any three natural, then the result cannot be div by 8.

- By div algo, $\forall x,y,z\in\mathbb{N},\ \exists a,b,c\in\mathbb{N}$ s.t. $x=2a$ or $2a+1$, $y=2b$ or $2b+1$, $z=2c$ or $2c+1$

$\boxed{\text{Case 1:}}$ $x=2a, y=2b, z=2c$ $x^2+y^2+z^2-7=4a^2+4b^2+4c^2-7$
$=4(a^2+b^2+c^2-2)+1$

$\because 4\nmid x^2+y^2+z^2$ $\therefore 8\nmid x^2+y^2+z^2$

$\boxed{\text{Case 2:}}$ $x=2a,\ y=2b,\ z=2c+1$ $x^2+y^2+z^2-7=4a^2+4b^2+4c^2+4c-6$
$=4(a^2+b^2+c^2+c-2)+2$

$\because 4\nmid x^2+y^2+z^2$ $\therefore 8\nmid x^2+y^2+z^2$

$\boxed{\text{Case 3:}}$ $x=2a,\ y=2b+1,\ z=2c+1$ $x^2+y^2+z^2-7=4a^2+4b^2+4b+4c^2+4c-5$
$=4(a^2+b^2+c^2+c+b-2)+3$ $\because 4\nmid x^2+y^2+z^2$
$\therefore 8\nmid x^2+y^2+z^2$