Answer on Question #50080, Math, Other

Task:

a, b and c are positive integers. a and b have LCM 30 and GCD 5. Again b and c have LCM 60 and GCD 3.If a is an even number then find LCM of a and c.

Solution:

$$LMC(a,b) = \frac{a \cdot b}{GCD(a,b)} = \frac{ab}{5} = 30 \Rightarrow ab = 150$$

$$LMC(c,b) = \frac{c \cdot b}{GCD(c,b)} = \frac{cb}{3} = 60 \Rightarrow bc = 180$$

$$150 = 2 \cdot 5 \cdot 3 \cdot 5$$

$$180 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5$$

$\Rightarrow$ b=15, so a=10 and c=12.

$$LMC(c,a) = \frac{c \cdot a}{GCD(c,a)} = \frac{12 \cdot 10}{2} = 60$$

Answer: LCM(a,c)=60.