Let f $= (\lambda rx.r\ x)\ ((\lambda x.PLUS\ x\ x)\ 12)\ In\ TIMES$ f 256

$=$ $(\lambda f.TIMES\ f\ 256)\ ((\lambda rx.r\ x)\ ((\lambda x.PLUS\ x\ x)\ 12))$

$\rightarrow_\beta$ $(\lambda f.TIMES\ f\ 256)\ (\lambda x.(\lambda x.PLUS\ x\ x)\ 12\ x)$

$\rightarrow_\beta$ $(\lambda f.TIMES\ f\ 256)\ (\lambda x.PLUS\ 12\ 12\ x)$

$\rightarrow_\delta$ $(\lambda f.TIMES\ f\ 256)\ (\lambda x.24\ x)$

$\rightarrow_\beta$ $TIMES\ (\lambda x.24\ x)\ 256$

$\rightarrow_\eta$ $TIMES\ 24\ 256$

$\rightarrow_\delta$ 6144

The current term is in βη-normal form. *Untyped*