Let f = (λrx.r x) ((λx.*PLUS* x x) *12*) *In TIMES* f *256*

= (λf.*TIMES* f *256*) ((λrx.r x) ((λx.*PLUS* x x) *12*))

$\rightarrow_\beta$ (λf.*TIMES* f *256*) (λx.(λx.*PLUS* x x) *12* x)

$\rightarrow_\beta$ (λf.*TIMES* f *256*) (λx.*PLUS 12 12* x)

$\rightarrow_\delta$ (λf.*TIMES* f *256*) (λx.*24* x)

$\rightarrow_\beta$ *TIMES* (λx.*24* x) *256*

$\rightarrow_\eta$ *TIMES 24 256*

$\rightarrow_\delta$ *6144*

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