A simple language of arithmetic expressions

$$x, y, z \in \textbf{Var}$$
$$n, m \in \textbf{Int}$$
$$e \in \textbf{Exp}$$

$$e ::= x \mid n \mid e_1 + e_2 \mid e_1 \times e_2 \mid x := e_1; e_2$$

$$\textsc{Var}\ \frac{}{\langle x, \sigma\rangle \longrightarrow \langle n, \sigma\rangle}\ \text{where } n = \sigma(x)$$

$$\textsc{LAdd}\ \frac{\langle e_1, \sigma\rangle \longrightarrow \langle e_1', \sigma'\rangle}{\langle e_1 + e_2, \sigma\rangle \longrightarrow \langle e_1' + e_2, \sigma'\rangle} \qquad \textsc{RAdd}\ \frac{\langle e_2, \sigma\rangle \longrightarrow \langle e_2', \sigma'\rangle}{\langle n + e_2, \sigma\rangle \longrightarrow \langle n + e_2', \sigma'\rangle}$$

$$\textsc{Add}\ \frac{}{\langle n + m, \sigma\rangle \longrightarrow \langle p, \sigma\rangle}\ \text{where } p \text{ is the sum of } n \text{ and } m$$

$$\textsc{LMul}\ \frac{\langle e_1, \sigma\rangle \longrightarrow \langle e_1', \sigma'\rangle}{\langle e_1 \times e_2, \sigma\rangle \longrightarrow \langle e_1' \times e_2, \sigma'\rangle} \qquad \textsc{RMul}\ \frac{\langle e_2, \sigma\rangle \longrightarrow \langle e_2', \sigma'\rangle}{\langle n \times e_2, \sigma\rangle \longrightarrow \langle n \times e_2', \sigma'\rangle}$$

$$\textsc{Mul}\ \frac{}{\langle n \times m, \sigma\rangle \longrightarrow \langle p, \sigma\rangle}\ \text{where } p \text{ is the product of } n \text{ and } m$$

$$\textsc{Asg1}\ \frac{\langle e_1, \sigma\rangle \longrightarrow \langle e_1', \sigma'\rangle}{\langle x := e_1; e_2, \sigma\rangle \longrightarrow \langle x := e_1'; e_2, \sigma'\rangle} \qquad \textsc{Asg}\ \frac{}{\langle x := n; e_2, \sigma\rangle \longrightarrow \langle e_2, \sigma[x \mapsto n]\rangle}$$

We write $\longrightarrow^*$ for the reflexive transitive closure of the relation $\longrightarrow$.