

## Using array

Simple commutative diagrams can be constructed very easily as arrays, but the results are ugly:

$\begin{array}{ccc} A & \xrightarrow{a} & B \\ \downarrow b & & \downarrow c \\ C & \xrightarrow{d} & D \end{array}$	<pre> <math>\begin{array}[c]{ccc} A&amp;\stackrel{a}{\rightarrow}&amp;B\\ \downarrow\scriptstyle{b}&amp;&amp;\downarrow\scriptstyle{c}\\ C&amp;\stackrel{d}{\rightarrow}&amp;D \end{array}</math> </pre>
$\begin{array}{ccccc} A & \rightarrow & B & \leftarrow & C \\ & \searrow & \downarrow & \swarrow & \\ & & D & & \end{array}$	<pre> <math>\begin{array}[c]{ccccc} A&amp;\rightarrow&amp;B&amp;\leftarrow&amp;C\\ &amp;\searrow&amp;\downarrow&amp;\swarrow&amp;\\ &amp;&amp;D&amp;&amp;&amp; \end{array}</math> </pre>
$\begin{array}{ccccc} A \times A' & \rightarrow & R \\ \cup & \cup & \cup \\ B \times B' & \rightarrow & S. \end{array}$	<pre> <math>\renewcommand{\arraystretch}{1.3}</math> <math>\begin{array}[c]{ccccc} A&amp;\times&amp;A^{\prime}&amp;\rightarrow&amp;R\\ \cup&amp;&amp;\cup&amp;&amp;\cup\\ B&amp;\times&amp;B^{\prime}&amp;\rightarrow&amp;S. \end{array}</math> </pre> <p>(rotatebox requires graphicx.)</p>

The quality can be improved a bit by using various tricks:

$$\begin{array}{ccccc} A & \xrightarrow{\text{label}} & B & \xleftarrow{\text{label}} & C \\ & \searrow & \downarrow \alpha & \swarrow & \\ & & D & & \end{array}$$

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 $\renewcommand{\arraystretch}{1.5}$ 
 $\begin{array}[c]{ccccc}
A & \xrightarrow{\text{label}} & B & \xleftarrow{\text{label}} & C \\
& \searrow & \downarrow \alpha & \swarrow & \\
& & D & & \end{array}$ 

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However, there is not much point since there are better alternatives.