Exercises (October 30, 2017):

1. Exercise: try typesetting this
   It does not work with beamer
   
   > The first entry here
   > Then the second
   > etc
   
   • The first entry here
   • Then the second
   • etc

   *Hint: Use \textgreater for “>” and $\bullet$ for “•”.

2. Make a triple nested list.

3. How do you get this default:
   
   > First level
   * Second level
   • Third level

   Check that it works by typesetting the triple ensted list of the previous exercise.

   *Hint: Symbols used: \textgreater, $\star$, $\bullet$.

4. Typeset this:
   
   **First**  The first entry here
   **Second** Then the second
   **Last**   Then the last

   with the descriptors “First” in red color, “Second” in blue and “Last” in black.

   *Hint: \usepackage{color}
Solutions

Exercise 1: \texttt{\renewcommand{\labelitemi}{\textgreater}}

\begin{itemize}
\item The first entry here
\item Then the second
\item etc
\end{itemize}
\renewcommand{\labelitemi}{$\bullet$}

\begin{itemize}
\item The first entry here
\item Then the second
\item etc
\end{itemize}

Exercise 2: Here is an example of a tripple nested list:

\begin{itemize}
\item The first entry here
\begin{itemize}
\item The first sub-entry here
\begin{itemize}
\item The first sub-sub-entry here
\item Then the second sub-sub-entry
\end{itemize}
\item etc
\end{itemize}
\item Return to original list, etc
\end{itemize}

Exercise 3: \texttt{\renewcommand{\labelitemi}{\textgreater} \renewcommand{\labelitemii}{$\star$} \renewcommand{\labelitemiii}{$\bullet$}}

Exercise 4: Per the hint place \texttt{\usepackage{color}} in the preamble. Then

\begin{description}
\item[\textcolor{red}{First}] The first entry here
\item[\textcolor{blue}{Second}] Then the second
\item[\textcolor{black}{Last}] Then the last
\end{description}
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Exercises (November 13, 2017):

1. Typeset

\[ a = b \quad c = d \quad e = f \]
\[ g = b \quad h = d \quad k = f \]

2. Typeset

\[ a^2 = b^2 + c^2 \]

3. Typeset

\[ F = G_N \frac{m_1 m_2}{r^2} \]

4. Typeset

\[ n_\pm(E, T) = \frac{1}{e^{\frac{E}{k_B T}} \pm 1} = \frac{1}{e^{\hbar \omega/k_B T} \pm 1} \]

*Note: This uses the greek letter \( \omega \) and the symbol \( \hbar \).*

5. Typeset

\[ F_{\mu\nu} = [D_\mu, D_\nu] = \partial_\mu A_\nu - \partial_\nu A_\mu = \partial_{[\mu} A_{\nu]} \]

*Note: This uses the greek letters \( \mu \) and \( \nu \), and the symbol \( \partial \).*

6. Typeset these (the first is inline, the next two are separate displayed equations):

“Taylor expansion \( e^x = \sum_{n=0}^{\infty} \frac{1}{n!} x^n \).”

\[ \int_0^1 \frac{df}{dx} \, dx = f(1) - f(0) \]

\[ e^{\zeta(s)} = \prod_{n=1}^{\infty} e^{1/n^s} \]

*This uses the greek letter zeta.*
Exercise 1: \begin{align*}
  a &= b & c &= d & e &= f \\
  g &= b & h &= d & k &= f
\end{align*}

Note: the star in \texttt{align*} is used in order to omit equation numbering.

Exercise 2: \item Typeset
  
  \[
  a^2 = b^2 + c^2
  \]

Exercise 3: \[
  F = G_N \frac{m_1 m_2}{r^2}
  \]

Exercise 4: \[
  n_{\pm}(E,T) = \frac{1}{e^{\frac{E}{k_BT}} \pm 1} = \frac{1}{e^{\frac{\hbar \omega}{k_BT}} \pm 1}
  \]

Exercise 5: \[
  F_{\mu\nu} = [D_\mu, D_\nu] = \partial_\mu A_\nu - \partial_\nu A_\mu = \partial_{[\mu} A_{\nu]} \]

Exercise 6: `'Taylor expansion $e^x = \sum_{n=0}^{\infty} \frac{n!}{n^x} x^n$.''

\[
  \int_{0}^{1} \frac{df}{dx} dx = f(1) - f(0)
  \]

\[
  e^{\zeta(s)} = \prod_{n=1}^{\infty} e^{1/n^s}
  \]
Exercises (November 20, 2017):

1. Typeset this:
   "Taylor expansion \( e^x = \sum_{n=0}^{\infty} \frac{1}{n!}x^n. \)"

   \[
   \int_{0}^{1} \frac{df}{dx} \, dx = f(1) - f(0)
   \]

   \[
   e^{\zeta(s)} = \prod_{n=1}^{\infty} e^{1/n^s}
   \]

   (This uses the greek letter zeta).

2. Typeset these two expressions as separate \textit{displayed equations}:

   \[
   2 \left[ 3 \frac{a}{z} + 2 \left( \frac{a}{d} + 7 \right) \right] \\
   x^2 \left( \sum_n A_n + 3 \left( b + \frac{1}{c} \right) \right)
   \]

3. Typeset this, using the \texttt{multline*} environment:

   \[
   2 \left( 1 + \frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} + \frac{1}{2^4} + \frac{1}{2^5} + \frac{1}{2^6} + \frac{1}{2^7} + \frac{1}{2^8} + \frac{1}{2^9} \right. \\
   + \frac{1}{2^{10}} + \frac{1}{2^{11}} \right) = \frac{4095}{1024}
   \]

4. Make the first entry of Exercise 2 look like this:

   \[
   2 \left[ 3 \frac{a}{z} + 2 \left( \frac{a}{d} + 7 \right) \right]
   \]
Exercise 1: \[ \text{Taylor expansion } e^x = \sum_{n=0}^{\infty} \frac{1}{n!} x^n. \]
\[ \int_0^1 \frac{df}{dx} \, dx = f(1) - f(0) \]
\[ e^{\zeta(s)} = \prod_{n=1}^{\infty} e^{1/n^s} \]

Exercise 2:
\[ 2\left[ 3\frac{a}{z} + 2\left( \frac{a}{d} + 7 \right) \right] \]
and
\[ x^2 \left( \sum_n A_n + 3 \left( b + \frac{1}{c} \right) \right) \]

Exercise 3:
\[
\begin{aligned}
2\left(1 + \frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} + \frac{1}{2^4} \\
+ \frac{1}{2^5} + \frac{1}{2^6} + \frac{1}{2^7} \\
+ \frac{1}{2^8} + \frac{1}{2^9}\right) &= \frac{4095}{1024}
\end{aligned}
\]

Exercise 4:
\[ 2\bigg[ 3\frac{a}{z} + 2\left( \frac{a}{d} + 7 \right) \bigg] \]