

# LaTeX Workshop: Figures

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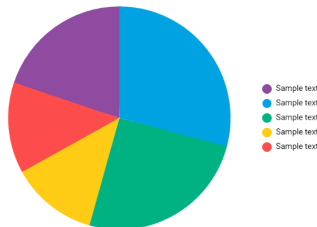
## Including Figures in LaTeX

To insert images in LaTeX, use the `graphicx` package. Here's how to do it:

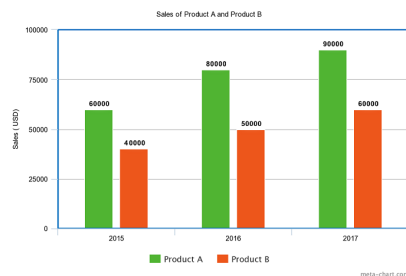
```
\begin{figure}[h]
  \centering
  \includegraphics[width=0.7\textwidth]{image.png}
  \caption{A sample image}
\end{figure}
```

## Side-by-Side Figures

You can place multiple images side-by-side using the `subcaption` package:



(a) First Image



(b) Second Image

Figure 1: Two charts side-by-side

## Resizing and Rotating Images

You can resize or rotate images easily using the `graphicx` package. Here are examples of resizing and rotating an image:

### Resizing an Image:

```
\includegraphics[width=0.5\textwidth]{image.png}
```

## Rotating an Image:

```
\includegraphics[angle=90, width=0.5\textwidth]{image.png}
```

Example of a rotated image:



Figure 2: Rotated Image by 90 degrees

## Wrapping Text Around Figures

Sometimes you may want text to flow around an image. You can use the `wrapfig` package to achieve this:

This figure is wrapped with text flowing around it. You can adjust the position and size of the figure using the `wrapfig` package.

## Using External Images from URLs

You can also include images from URLs using the `graphicx` package, although this requires special support from Overleaf or other online compilers:

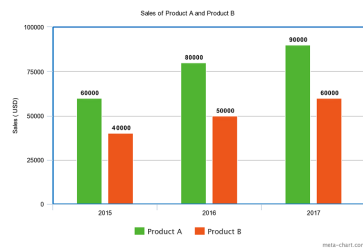
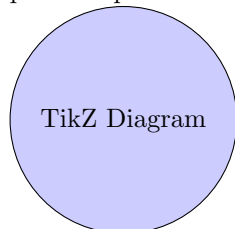


Figure 3: Wrapped Figure

```
\includegraphics[width=0.5\textwidth]{https://example.com/image.png}
```

## Creating Diagrams with TikZ

LaTeX also allows you to create vector graphics natively using the **TikZ** package. Here's a simple example of drawing a circle with text inside it:



You can create much more complex diagrams, flowcharts, and shapes with TikZ, which is very powerful for vector-based graphics.

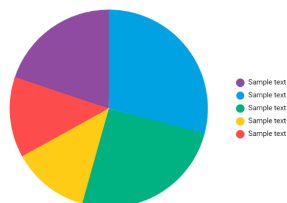
## Floating Figures and Exact Placement

Sometimes, you may want precise control over figure placement. The **float** package allows you to use the **H** option to force a figure to appear exactly where you specify in the document:

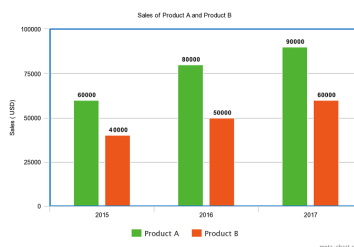
```
\begin{figure}[H] % Use 'H' to force the figure here
  \centering
  \includegraphics[width=0.6\textwidth]{image.png}
  \caption{Forced Figure Placement}
\end{figure}
```

## Subfigures with Different Captions

You can create a single figure with multiple images (subfigures) using the **subcaption** package:



(a) Pie Chart



(b) Bar Chart

Figure 4: Comparison between Pie and Bar Charts