Author Name

A Textbook For

Subject Name

Subtitle

More Text Can Go here

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Chapter 1 Basics

1.1 Functions and Environments

Objectives

In this section, we learn how to use basic environments. We will

- learn how to use the benumerate environment for lists.
- learn how to use the ienumerate environment for lists.
- learn how to use the theorem, definition, example, solution, exercise, and remark environments

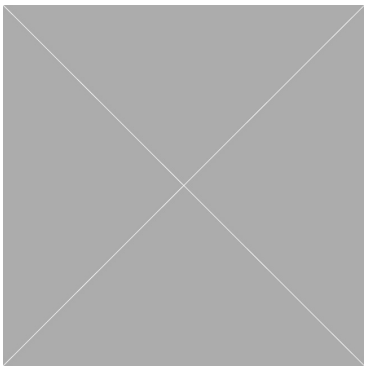


Figure 1.1: This is a how you put a figure in the margin.

Some text...

This is how you refer to Table 1.2, which is defined below in the ".tex" file.

This is how you make a list to denote an example with parts. This paragraph will be indented. It uses the environment `benumerate` to start the list environment on the second level and with bold styling.

a. first

b. second

c. third

If your list is small enough to fit one line, use the `ienumerate` environment.

a. first **b.** second **c.** third

Theorem 1.1 — Pythagorean Theorem. For any right triangle with legs a, b and hypotenuse c, the following is always true:

$$c^2 = a^2 + b^2$$

Definition 1.1 — Triangle. A **triangle** is a polygon with three sides.

Example 1.1 — Optional Name of Example. Text goes here. Solve the equation $x + 1 = 4$.

Solution. To solve we subtract 1.

$$\begin{aligned} x + 1 &= 3 \\ x &= 3 - 1 \\ x &= 2 \end{aligned}$$

Do not leave blank lines at the end of the solution environment. Otherwise, the black square will be misplaced. ∎

Example 1.2. Find the derivatives of the following functions.

a. $f(x) = 3x^2$ **b.** $g(x) = e^{3x}$ **c.** $h(x) = \cos(5x)$

Solution. The derivatives are as follows.

a. $f'(x) = 6x$ **b.** $g'(x) = 3e^{3x}$ **c.** $h'(x) = -5\sin(5x)$ ∎

Exercise 1.1 — Optional Name. I would imagine this environment will be rarely used.

Remark 1.1. This is an example of the remark environment. I would imagine this environment will be rarely used.

1.2 Examples of Figures and Tables

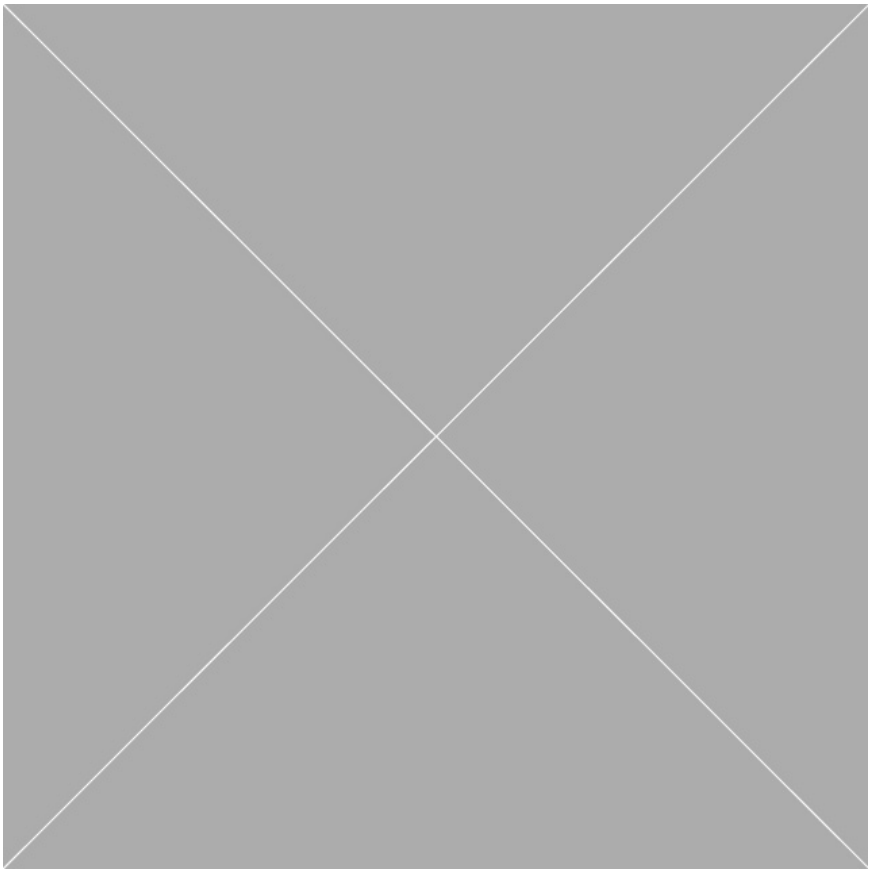
Objectives

In this section, we learn how to create useful layouts. We will

- learn to place figures within the main column of text.
- learn to place figures that go into the margin.
- learn to place figures within the margin.
- learn to place figures side-by-side in different ways.

Dealing with figures in LaTeXis not easy. This is a collection of all the ways to create figures. Figures are usually intended to be "floating," which means that LaTeXhas discretion on where to place them within the document.

This is how you include an image, that is not intended to be a figure.



The following will have a non-floating figure. The figure will not move from the position it's placed

x	y	z
1	2	3

Table 1.1: This is a caption for a table that will be placed in the margin.

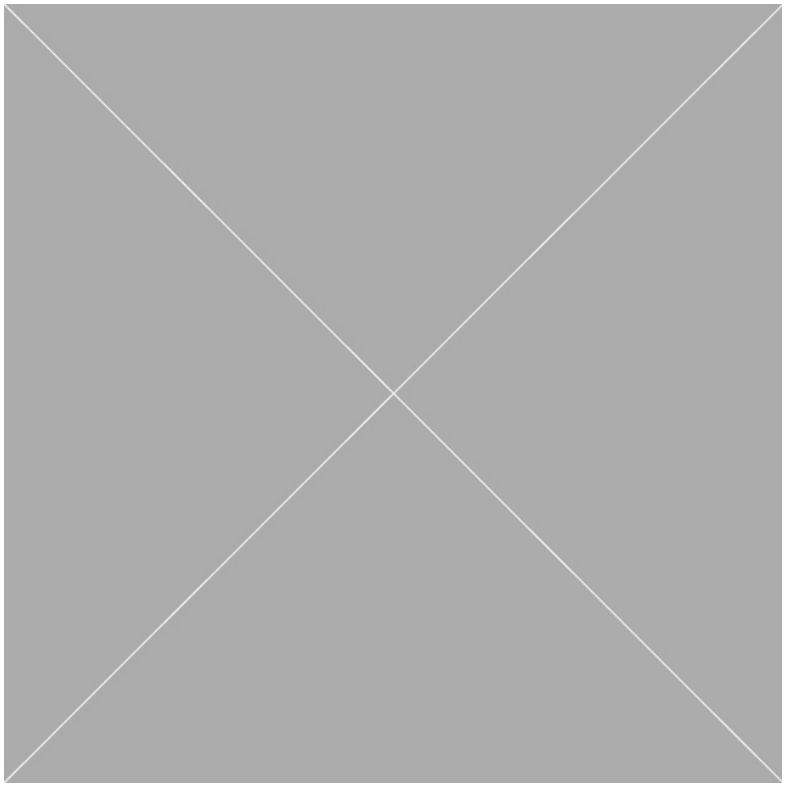


Figure 1.2: A non-floating figure. The figure will not move from the position it's placed

x	y	z
1	2	3

Table 1.2: This is a caption for a table that will be placed in the main text.

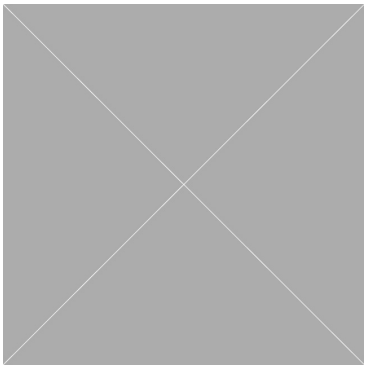


Figure 1.3: This is a how you put a figure in the margin.

This is a non-floating side-by-side figure.

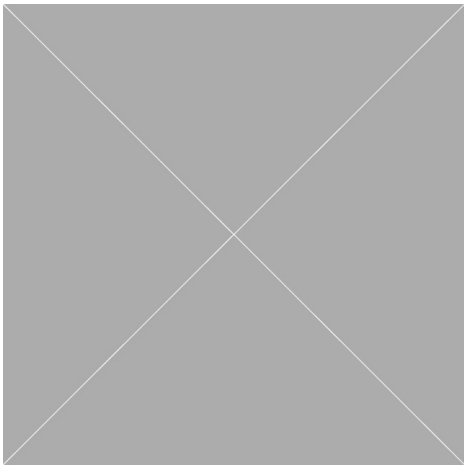


Figure 1.11: Side-by-side figures.

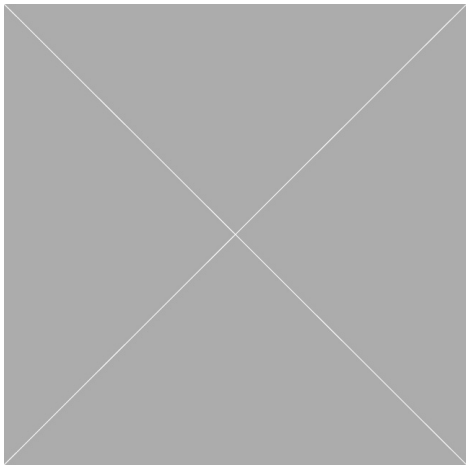


Figure 1.12: Side-by-side figures.

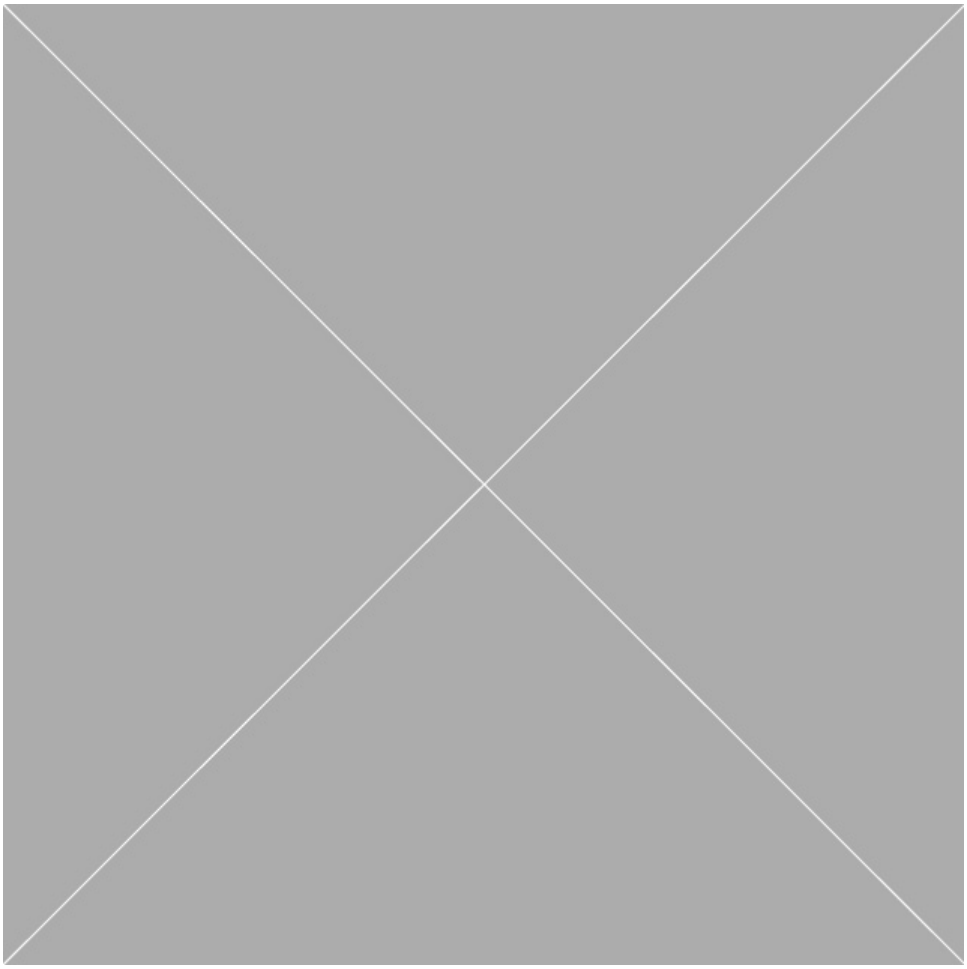


Figure 1.4: This is a how you put a floating figure in the main text.

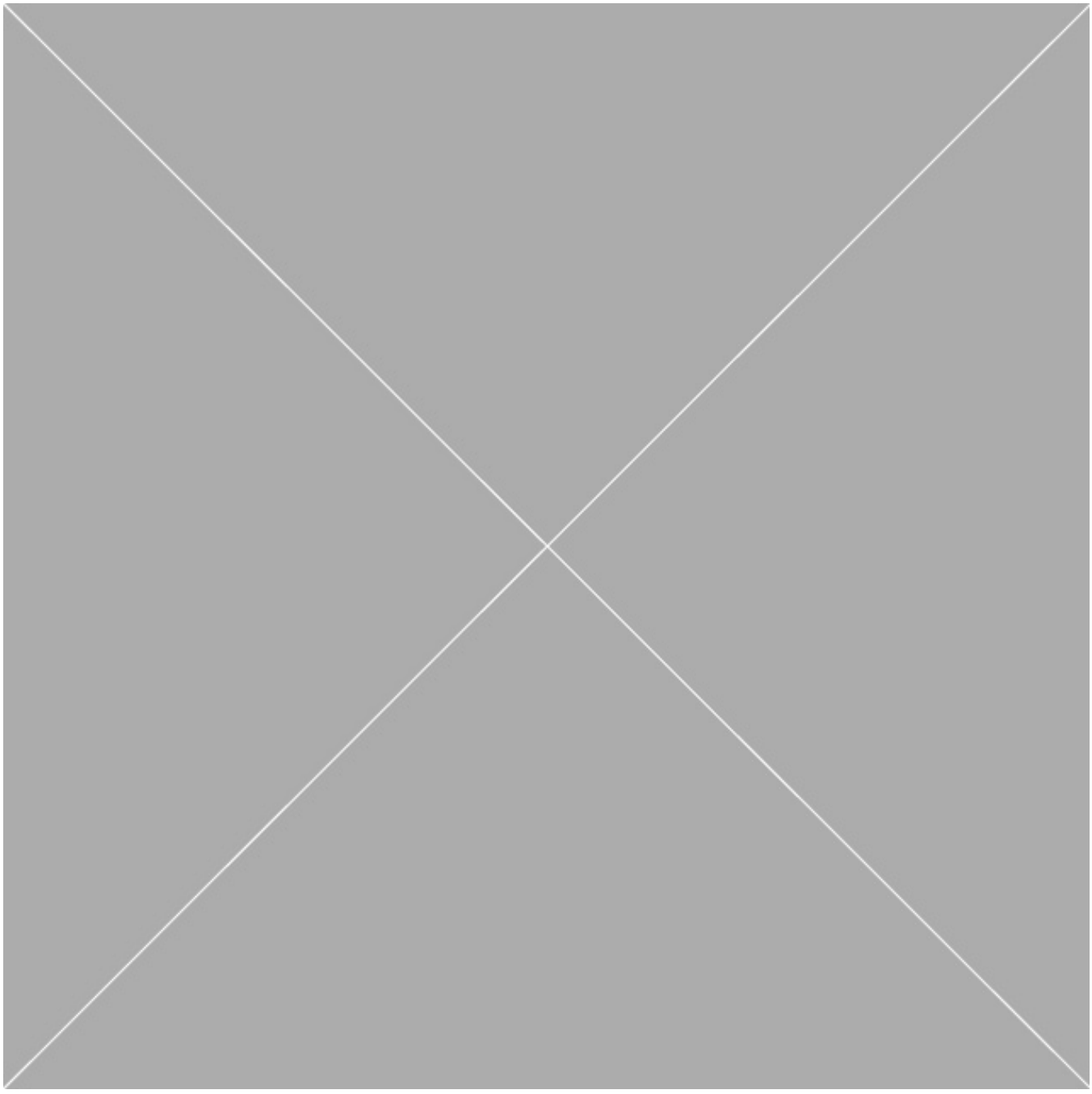
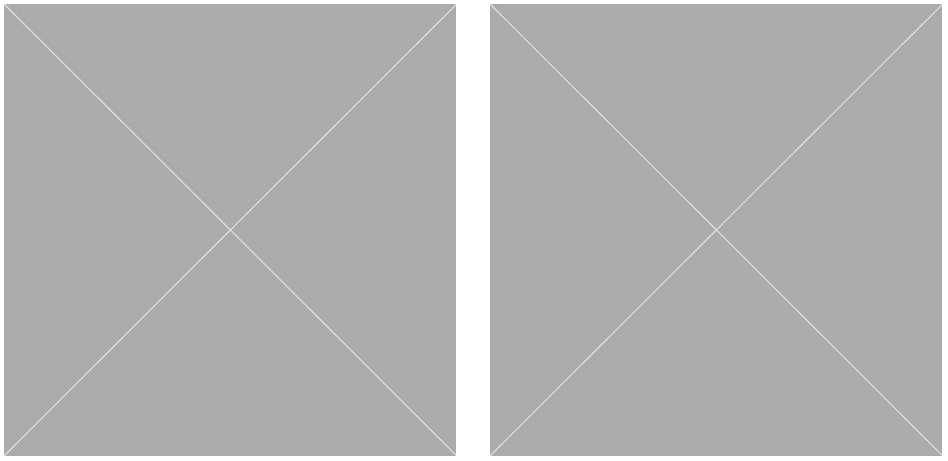
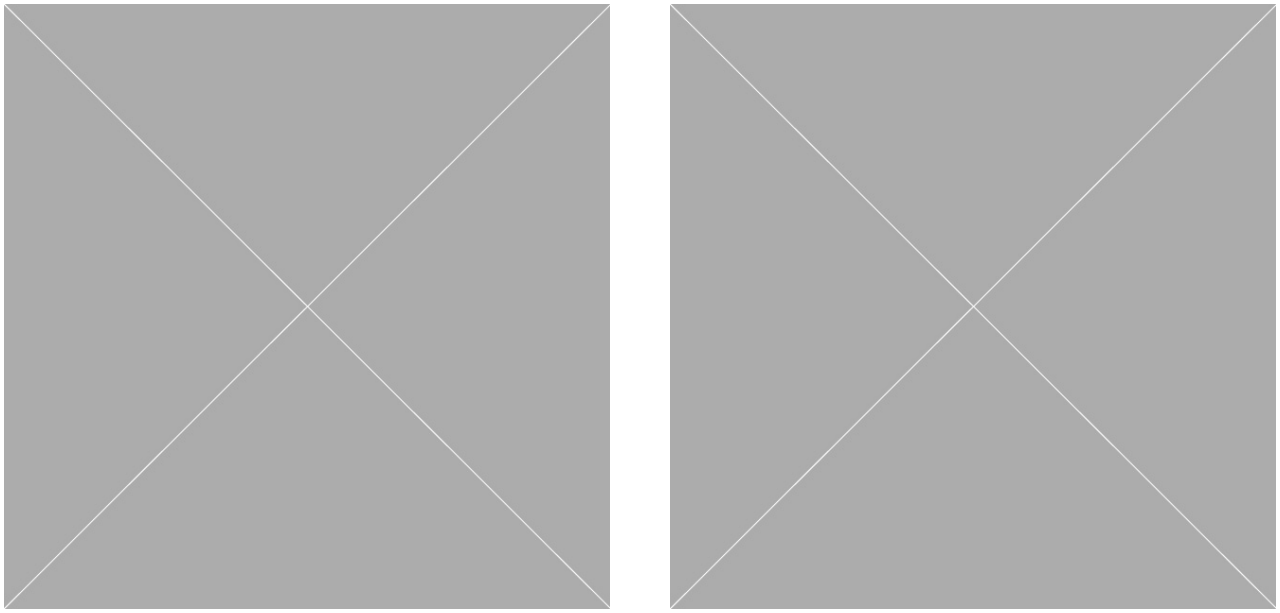


Figure 1.5: This is a how you put a **wide** floating figure in the main text.



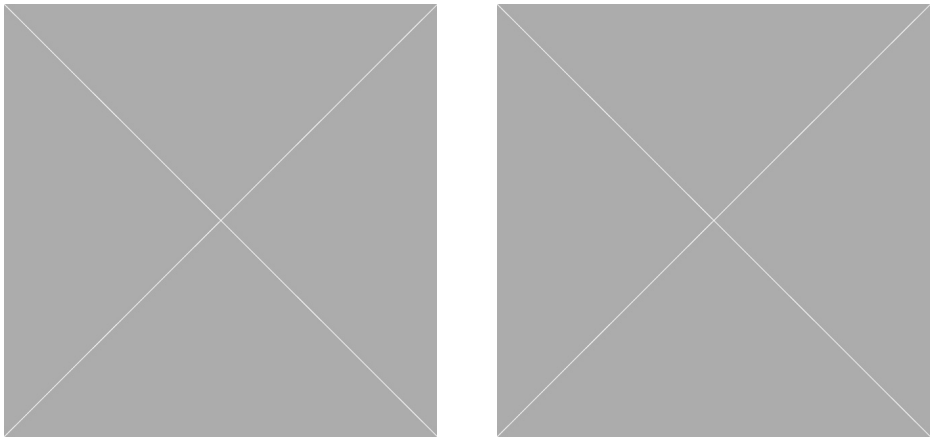
(a) This is a subcaption. **(b)** This is another subcaption.

Figure 1.6: This is a how you put subfigures in a figure.



(a) This is a subcaption. **(b)** This is another subcaption.

Figure 1.7: This is a how you put subfigures in a wide figure.



There is no subcaption heading here. There is no subcaption heading here, either.

Figure 1.8: This is a how you put subfigures without a subcaption heading.

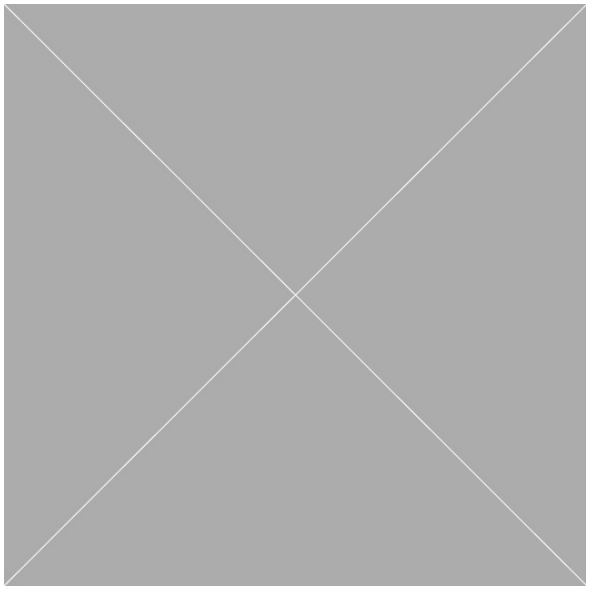


Figure 1.9: This is how you put side-by-side figures.

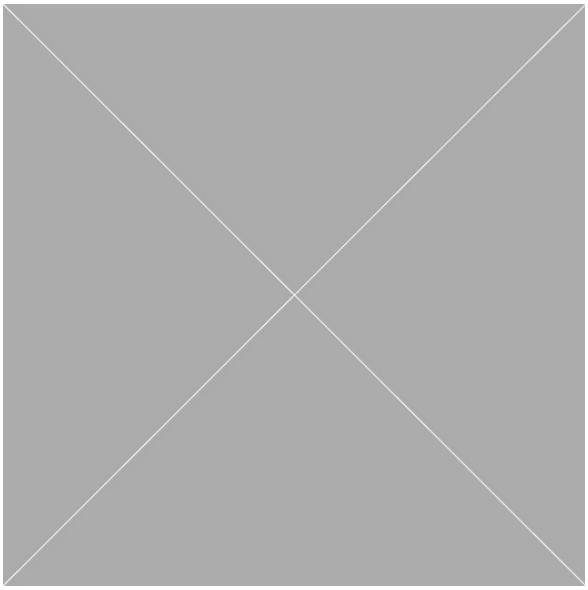


Figure 1.10: This is how you put side-by-side figures.

This is a floating table next to a figure.

x	y	z
1	2	3

Table 1.4: This is a caption for a table.

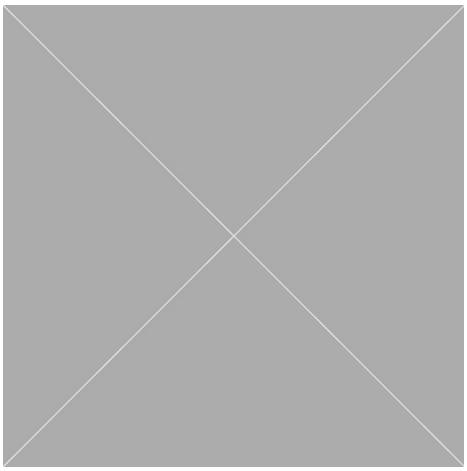


Figure 1.14: Side-by-side figures.

This is a non-floating table next to a figure.

x	y	z
1	2	3

Table 1.3: This is a caption for a table.

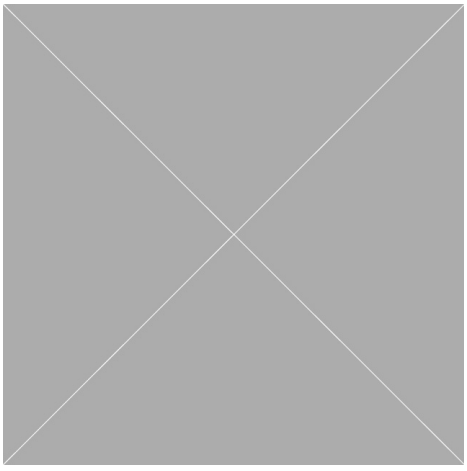


Figure 1.13: Side-by-side figures.

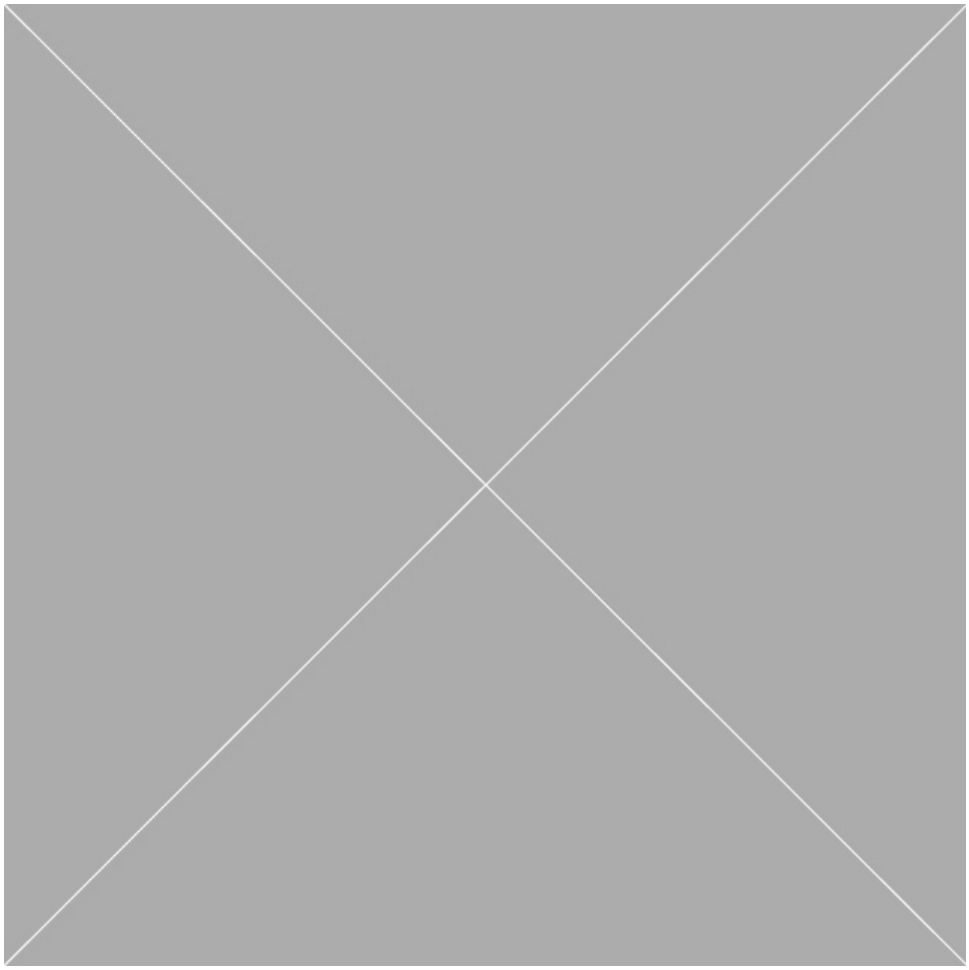


Figure 1.15: This is a figure with a caption in the margin.

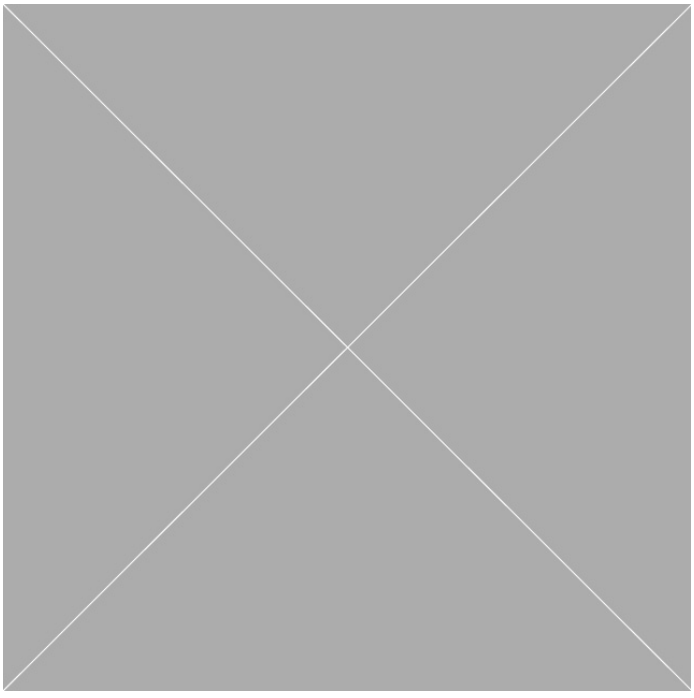


Figure 1.16: This is a figure with a caption in the margin.