


# introduction

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## OVERVIEW

### Questions

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- How do you write a lesson using R Markdown and [sandpaper](#)?
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### Objectives

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- Explain how to use markdown with the new lesson template
- Demonstrate how to include pieces of code, figures, and nested challenge blocks

## Introduction

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This is a lesson created via The Carpentries Workbench. It is written in [Pandoc-flavored Markdown](#) for static files (with extension `.md`) and [R Markdown](#) for dynamic files that can render code into output (with extension `.Rmd`). Please refer to the [Introduction to The Carpentries Workbench](#) for full documentation.

What you need to know is that there are three sections required for a valid Carpentries lesson template:

1. **questions** are displayed at the beginning of the episode to prime the learner for the content.
2. **objectives** are the learning objectives for an episode displayed with the questions.
3. **keypoints** are displayed at the end of the episode to reinforce the objectives.

## CHALLENGE 1: CAN YOU DO IT?

What is the output of this command?

```
paste("This", "new", "lesson", "looks", "good")
```

R < >

Solution

```
[1] "This new lesson looks good"
```

OUTPUT < >

## CHALLENGE 2: HOW DO YOU NEST SOLUTIONS WITHIN CHALLENGE BLOCKS?

Solution

You can add a line with at least three colons and a **solution** tag.

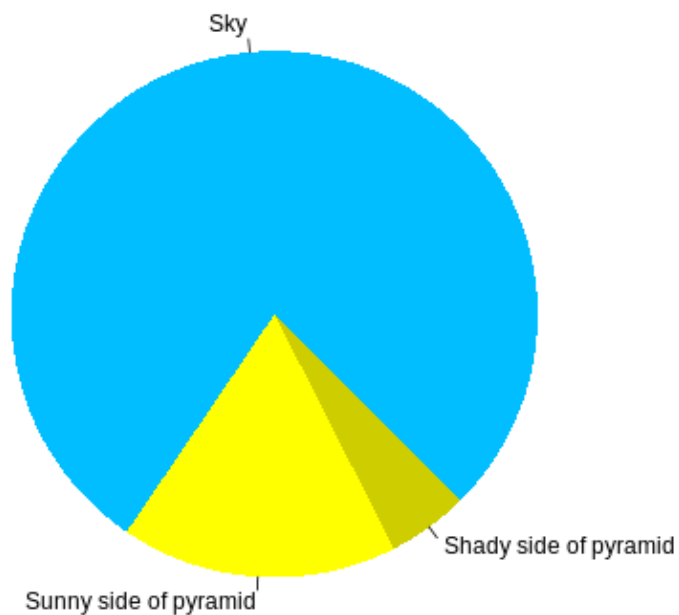
## Figures

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You can include figures generated from R Markdown:

R < >

```
pie(  
  c(Sky = 78, "Sunny side of pyramid" = 17, "Shady side of pyramid" = 5),  
  init.angle = 315,  
  col = c("deepskyblue", "yellow", "yellow3"),  
  border = FALSE  
)
```



Sun arise each and every morning

Or you can use pandoc markdown for static figures with the following syntax:

```
![optional caption that appears below the figure](figure url){alt='alt text  
for accessibility purposes'}
```



You belong in The Carpentries!

## Math

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One of our episodes contains *L<sup>A</sup>T<sub>E</sub>X* equations when describing how to create dynamic reports with {knitr}, so we now use mathjax to describe this:

`\alpha = \dfrac{1}{(1 - \beta)^2}` becomes:  $\alpha = \frac{1}{(1 - \beta)^2}$

Cool, right?

### KEY POINTS

- Use `.md` files for episodes when you want static content
- Use `.Rmd` files for episodes when you need to generate output
- Run `sandpaper::check_lesson()` to identify any issues with your lesson
- Run `sandpaper::build_lesson()` to preview your lesson locally