## Lesson 13: When Is the Same Size Not the Same Size?

* Let’s figure out how aspect ratio affects screen area.

### 13.1: Three Figures

How are these shapes the same? How are they different?



### 13.2: A $4:3$ Rectangle

A typical aspect ratio for photos is $4:3$. Here’s a rectangle with a $4:3$ aspect ratio.



1. What does it mean that the aspect ratio is $4:3$? Mark up the diagram to show what that means.
2. If the shorter side of the rectangle measures 15 inches:
	1. What is the length of the longer side?
	2. What is the length of the rectangle’s diagonal?
3. If the diagonal of the $4:3$ rectangle measures 10 inches, how long are its sides?
4. If the diagonal of the $4:3$ rectangle measures 6 inches, how long are its sides?

### 13.3: The Screen Is the Same Size . . . Or Is It?

Before 2017, a smart phone manufacturer’s phones had a diagonal length of 5.8 inches and an aspect ratio of $16:9$. In 2017, they released a new phone that also had a 5.8-inch diagonal length, but an aspect ratio of $18.5:9$. Some customers complained that the new phones had a smaller screen. Were they correct? If so, how much smaller was the new screen compared to the old screen?



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