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# Warm-Up: Tuesday

Prepared by Mark on January 27, 2025

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## Instructor's Handout

This handout contains solutions and notes.

Recompile without solutions before distributing.

### Problem 1:

Charlie has two children.

One of them is a boy born on a Tuesday.

What is the probability that Charlie has two boys?

### Solution:

$\frac{13}{27}$ , which notably isn't  $\frac{1}{2}$ .

Draw a  $14 \times 14$  square, highlight the possible cases, and you'll see it.

Order is very important in this problem.

If we knew that the *first* child was a boy born on Tuesday, the probability of two boys would be  $\frac{1}{2}$ .

Also consider a smaller case where a week has two days.