

# Homefun 9

## Somewhere in the Middle

MATH 249  
15 points

**Directions:** Work in groups of 2 to 4 in class and then finish outside of class as necessary. Each group should submit **ONE** solution page for the group. (Be sure everyone's name is on it!)

This homefun set is more conceptual than computational. Think about each situation and answer the questions.

1. A race car starts from 0mph, travels once around a quarter-mile track, and comes to a stop at its starting point. Argue that at some point between starting and stopping its acceleration was exactly 0mph.
2. When my older daughter was born, she was 44cm long (“tall”). When she turned 14, she was 170 cm tall. Argue that at some point between birth and turning 14, she was growing at exactly 0.75cm/month.
3. The Empire State Building took 410 days to build from the ground (height 0) to 1250 feet<sup>1</sup>. Explain why it is not certain that there was a time at which it was growing at a rate of 3.05 ft/day (rounded).

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<sup>1</sup><https://www.esbnyc.com/about/history>