

Do not use any unapproved aids while taking this assessment. Read each question carefully and be sure to show all work in the space provided.

1. A video game speedrunner by the handle Chibby wants to minimize the time it takes to maneuver their plumber down and across a hallway in order to finish a level as quickly as possible. The length of the hallway necessary to travel is 82 pixels long, and the hallway is 20 pixels wide; the plumber moves 13 pixels per frame along the hallway's wall and 12 pixels per frame across the hallway. How much of Chibby's movement should be along the wall of the hallway?

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2. Suppose you wished to build a gift box from a rectangular sheet of construction paper that measures 336 inches long by 210 inches wide. By cutting identical square pieces from each corner, the sides can be folded up and taped together, creating a lidless box. How large should you cut these squares so that the resulting box has maximum volume?