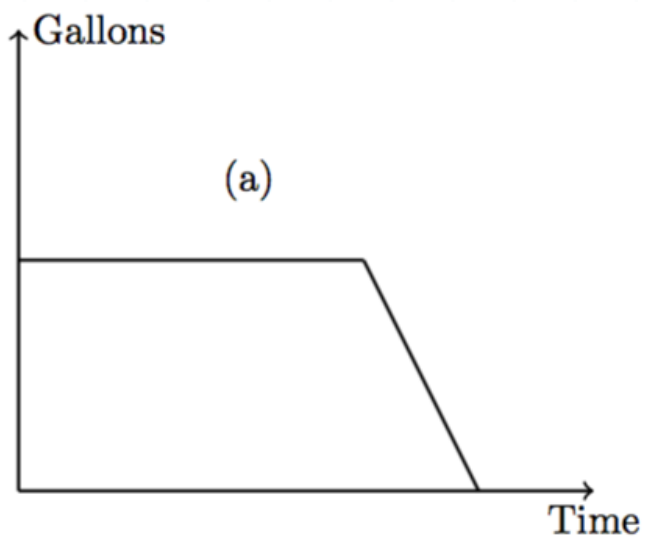
Topic: Sketching graphs from story problems

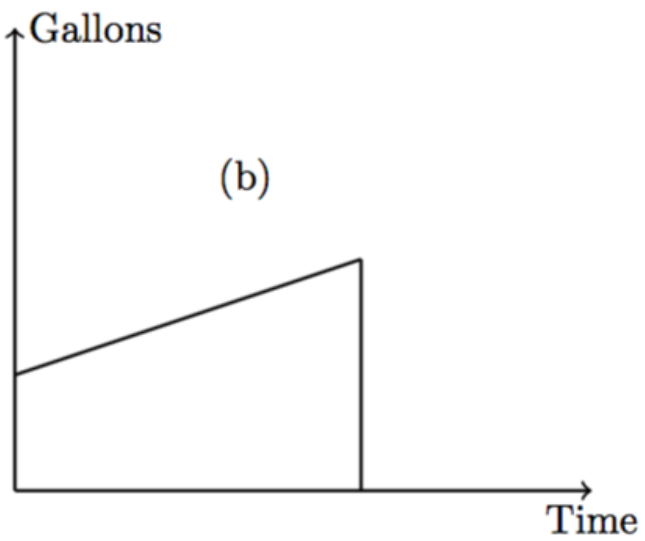
Question: A car with a full tank of gas starts on a long trip. The gas is being used up at a normal rate when a flying stone knocks a small hole in the tank. The tank is now losing gas faster than before and eventually runs dry. Which sketch would best fit a Gallons in Tank vs. Time graph for this trip?

Answer choices:

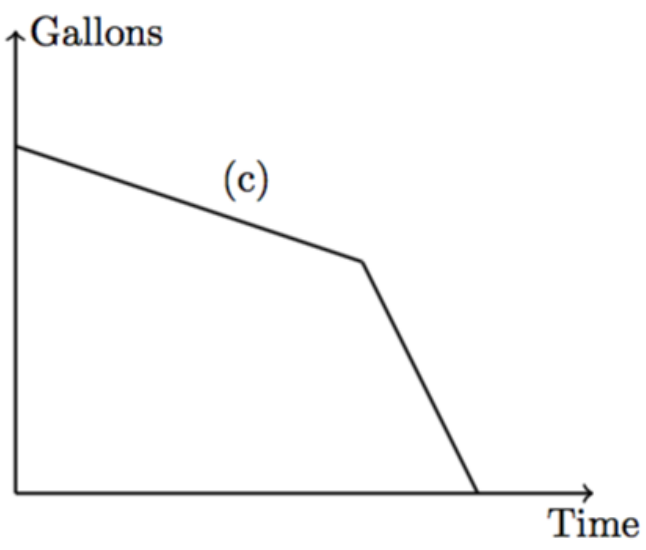
A



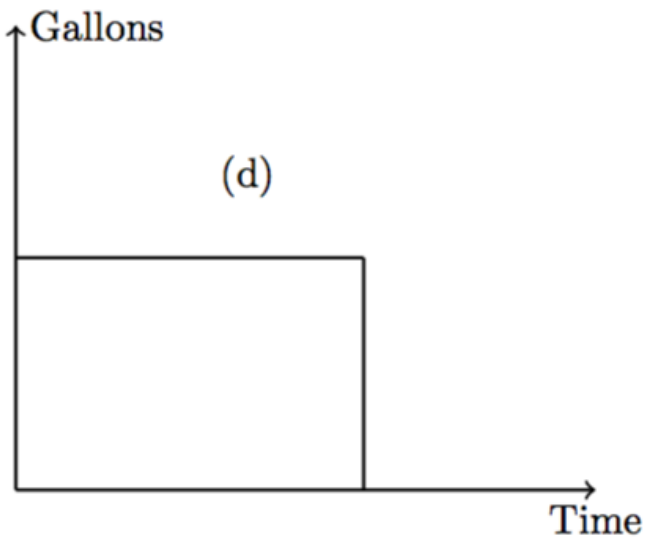
B



C



D



Solution: C

At first, the amount of gas in the tank is going down slowly so the graph should have a mild negative slope.

When the tank gets a hole in it, the amount of gas in the tank goes down faster, and the graph will show a steeper negative slope, eventually reaching zero gallons.

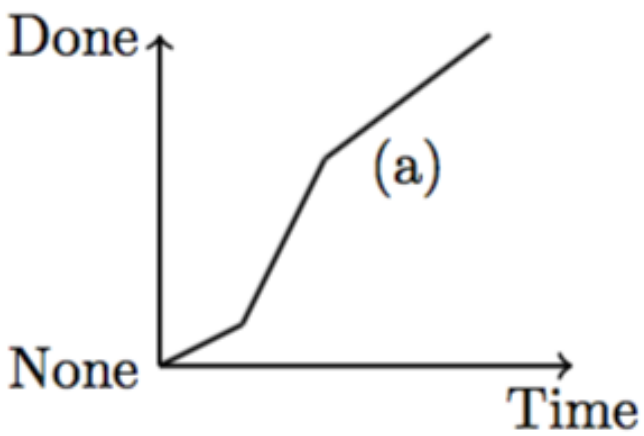
The graph in answer choice C best fits this description.

Topic: Sketching graphs from story problems

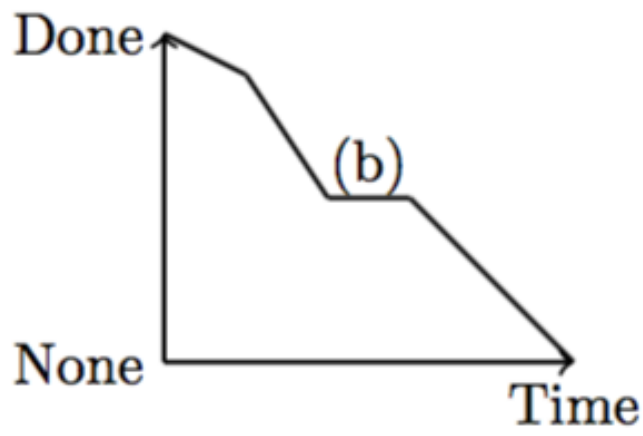
Question: A man starts to paint a large room. After an hour or so, he is joined by two other painters. An hour or so later, they all take a break for their lunch hour. After lunch, they work for another couple of hours and finish the room. Which graph of painting progress vs. time best fits this event?

Answer choices:

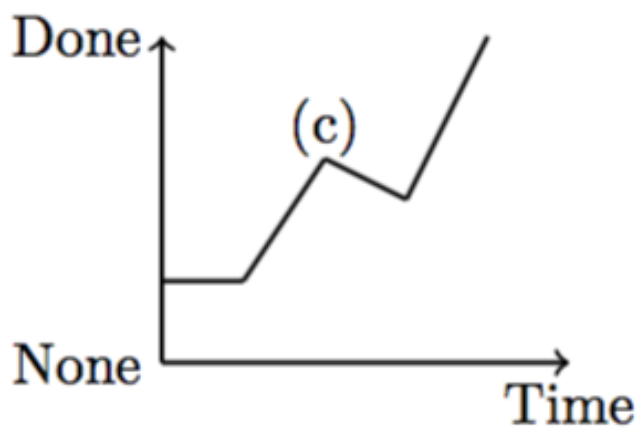
A



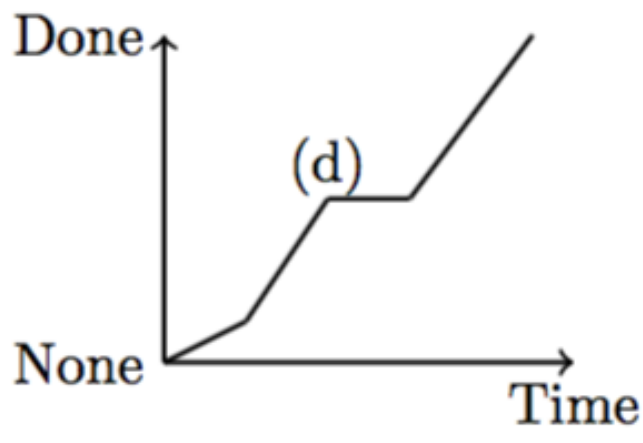
B



C



D



Solution: D

The graph should start at the None level. This immediately rules out answer choices B and C. Consider these sections.

1) One man working: The room is slowly getting painted so the graph should have a positive slope. This would also rule out graphs B and C.

2) Three men working: The room is getting painted faster now so the graph should have a positive slope much steeper than the first section. This would also rule out graph B.

3) Lunch time: The clock is ticking, but nothing is getting painted, so the graph should be horizontal here. This rules out graph A and would also rule out graph C.

4) Three men working again: The slope here should be the same as the second section and should end at the Done level.

Graph D fits all four criteria.