Graphs

The graph below shows how the volume of carbon dioxide produced changes over time when an excess of calcium carbonate is added to hydrochloric acid. The line of the graph is for experiment 1. Sketch new curves for each of the reactions 2-7 in the table below. Which reaction has the fastest initial rate?

	$CaCO_3$	[HCl] (mol dm^{-3})	Volume HCl (cm^3)	Temperature (°C)
1	small	2	100	20
2	large	2	100	20
3	large	2	50	20
4	small	4	50	20
5	large	1	100	20
6	small	2	200	40
7	powder	2	200	40

There are two parts of each line which are important;

    a) the steepness of the line at the start of the graph which tells us rate. Faster rate = steeper line
    b) The end point of the line which tells us how much CO_2 in total is formed

Steepness of initial line (from steepest to shallowest) : 7,6,4,1,2/3,5 (2 and 3 are the same as each other)

Final Vol CO_2 compared to reaction 1:

2   Same (so should level off at same height as reaction 1)

3   Half (so should level off at half the height)

4   Same

5   Half

6   Double

7   Double