## 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 I. Sketch new curves for each of the reactions 2-7 in the table below. Which reaction has the fastest initial rate?

|  | $\mathrm{CaCO}_{3}$ | $[\mathrm{HCl}]\left(\mathrm{mol} \mathrm{dm}^{-3}\right)$ | Volume $\mathrm{HCl}\left(\mathrm{cm}^{3}\right)$ | Temperature $\left({ }^{\circ} \mathrm{C}\right)$ |
| :---: | :---: | :---: | :---: | :---: |
| 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 |

volume of $\mathrm{CO}_{2}$

