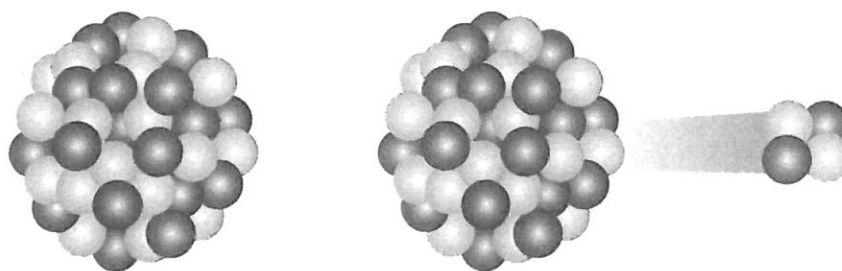## Science inquiry

Logical/mathematical   Visual/spatial

Jonathon has exactly 1000 polonium-218 atoms. He knows that polonium-218 decays rapidly into lead-214 through alpha decay.

To measure the half-life of polonium-218, Jonathon counts the number of polonium-218 atoms he has left after every 2 minutes. His results are written in the table below.

Time (min)	0	2	4	6	8	10	12	14	16	18	20
Number of polonium-218 atoms	1000	635	430	280	155	85	65	35	25	15	10

1 **Plot** the data in the table on the axes provided. Plot only the data points, with no connecting lines.
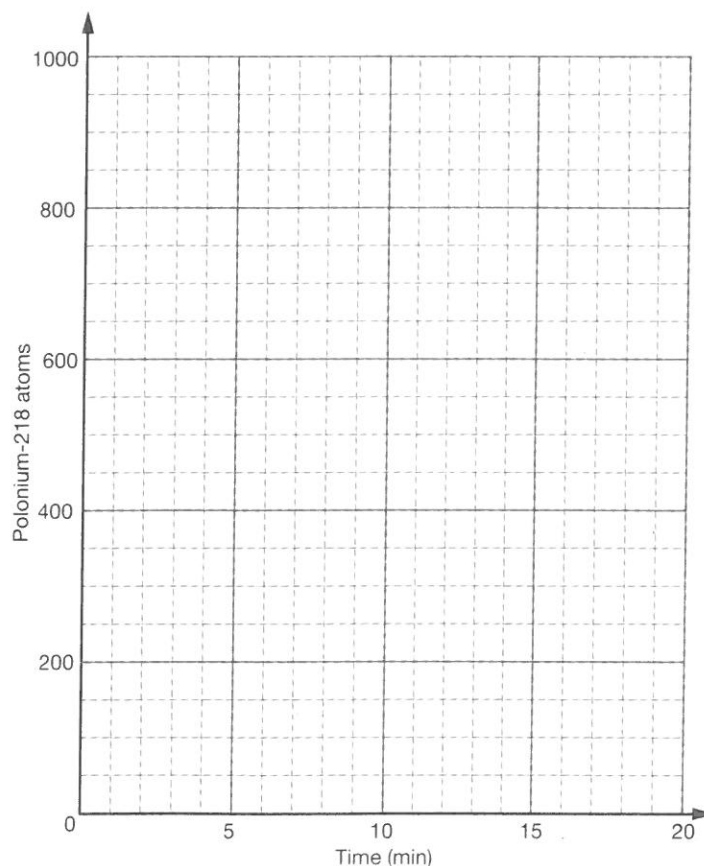
2 Draw a line of best fit though the data points, to show the general trend.

3 State how many poloniuim-218 atoms Jonathon has after:

(a) 4 min _____

(b) 14 min _____

(c) 9 min _____

(d) 19 min _____

4 Determine the time (min) when Jonathon has:

(a) one-half of the original number of polonium-218 atoms

_____

(b) one-quarter of the original number of polonium-218 atoms

_____

(c) one-eighth of the original number of polonium-218 atoms

_____

(d) one-sixteenth of the original number of polonium-218 atoms

_____

5 Use your graph to **calculate** the half-life of polonium-218.

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