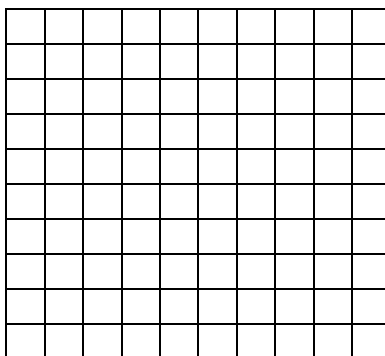


Acute Toxicity Study of an Experimental Chemical

Scientists performed an experiment to test the toxicity of a new chemical and used rats as a test organism. Different doses of the chemical are prepared and administered to nine groups of rats. The rats were observed for 2 weeks and the number of mortalities was recorded in each test group. The findings are indicated in the chart shown below.

Test Group	Number of Rats	Weight of Each Rat	Dose Given (mg/kg)	Number of Mortalities
1	50	0.5kg	0.0	0
2	50	0.5kg	2.5	0
3	50	0.5kg	5.0	0
4	50	0.5kg	7.5	5
5	50	0.5kg	10.0	15
6	50	0.5kg	12.5	25
7	50	0.5kg	15.0	40
8	50	0.5kg	17.5	50
9	50	0.5kg	20.0	50

1. Graph the dose given versus the number of mortalities in each 50-member test group. Make sure to label the graph axes.



2. What is the independent variable in this study? _____
3. What is the dependent variable in this study? _____
4. Which group served as the control group? _____
5. What are some other controlled variables that must be considered when conducting this experiment?
6. What is the NOEL range? _____
7. What is the LD₅₀? _____
8. Indicate the TLV on the graph.
What is the approximate value of the TLV? _____
9. Assuming that a human being will respond to the chemical in the same way that a rat does, what is the dose in mg that would be lethal to a 70kg person? Show your work.