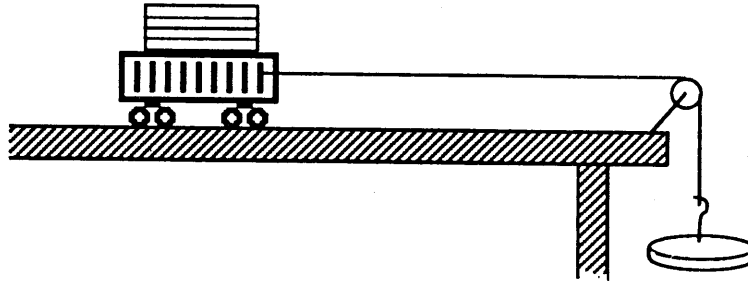


SAMPLE PRACTICAL TEST QUESTION

A trolley loaded with four 50 g masses and attached to a 50 g mass carrier by means of a string, as shown, is set up in an experiment to investigate the relationship between force, mass and acceleration.



The trolley is released and after several runs, the mean acceleration is calculated.

The experiment is repeated 4 times, with one mass from the trolley being transferred to the mass carrier each time. This varies the force acting on the system while keeping the total mass of the system constant. Note that the term “system” refers to the trolley + masses on trolley + hanging masses.

The results are shown in the table below.

Hanging Mass (g)	Force on system (N)	Mean Acceleration of system (ms^{-2})
50.0	0.49	0.25
100.0	0.98	0.55
150.0	1.47	0.90
200.0	1.96	1.19
250.0	2.45	1.51

(a) On the graph paper provided, plot the force on the system versus the mean acceleration. Draw a straight line of best fit.

(b) Calculate the slope of your graph.

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(c) What does the slope of your graph represent?

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(d) Use your graph to determine the mass of the unloaded trolley.

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(e) Explain why your graph does not pass through the origin.

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(f) Does the “Force on System” shown in the table represent the applied force or the net force acting on the system? Explain.

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(g) Determine the size (if any) of the frictional resistance between the trolley and the bench.

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