

**EXPERIMENT 2: FREE FALL MOTION****Course Learning Outcome:**

Solve problems related to Physics of motion, force and energy, waves, matter and thermodynamics  
(C4, PLO 4, CTPS 3, MQF LOD 6)

**Learning Outcomes:**

At the end of this lesson, students will be able to describe experiment to determine acceleration due to gravity using free fall motion.

**Student Learning Time:**

Face-to-face	Non face-to-face
1 hour	1 hour

**Instruction:** Read over the lab manual and then answer the following questions.

**Introduction**

1. What is meant by free fall motion?

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2. Under free fall motion the acceleration of an object is also known as gravitational acceleration or acceleration due to gravity. What is the symbol and SI unit of this type of acceleration?

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3. What is the value of acceleration due to gravity at the surface of Earth?

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4. State the characteristics of free fall motion.

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5. State the law applied in these experiment

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**Experiment**

6. How do we release the object to form free fall motion?

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7. State the measurement apparatus involved. (e.g. type / name of equipment) for the experiment.

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8. State the related variables that need to be recorded in this experiment?

Types of variable	Free fall motion
Manipulated variable (change on purpose)	
Responding variable (what is measured)	

9. Construct the table to record the related values for free fall motion experiment.

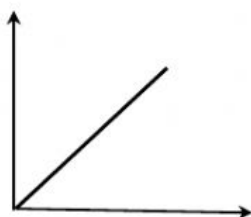
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10. What sensor of the phone the application utilizes to detect the sound upon impact?

### Data Analysis

11. a) Write the equation related to the experiment in order to determine the acceleration due to gravity, g.

- b) Sketch a suitable graph for free fall motion.



- c) How the acceleration due to gravity, g can be determined from the graph free fall motion?

Refer equation 2.2 :  
Compare with straight line equation :  $y = mx + c$

Gradient of the graph  $h$  against  $t^2$ ,  $m =$   
So, acceleration due to gravity,  $g =$

d) How to compare the acceleration due to gravity,  $g$  obtained in experiment with standard value?

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12. State **THREE** precautions of this experiment.

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