Topic: Y3 kinematics

Target: All Y3 classes Duration: 2 lessons (50 mins)

Learning Outcomes:

* State what is meant by uniform acceleration and calculate the value of an acceleration, using change in velocity/time taken
* Deduce from the shape of a speed-time and velocity-time graph when a body is moving with uniform acceleration

Materials needed:

* Laptop with Tracker software (provided in lab or you can get student to use their own laptop)
* Measuring Tape
* Stop Watch
* Masking tape
* Camera with video function
* Sample video (attached in email)

|  |  |  |  |
| --- | --- | --- | --- |
| No | Description | Duration | Remarks |
| 1 | **FIRST LESSON**Show sample video.**A1 Ask question**:What can be an appropriate way to study the motion of a person walking? | 5 min | Use Tracker and do video analysis |
| 2 | **A2 Use model:**Demonstrate how the Tracker can be used to analysis the motion of the person in the video. | 5 min | For teachers, if you are not sure how to use it, look for Him Nok |
| 3 | **A3 Plan** Give out the worksheet to the students. In group of 4, get students to devise a plan to capture a video of a person walking in a straight line with a constant acceleration of **0.50 m/s2** as accurate as possible for 5.0 seconds.[Can use white board or mahjong paper to record the planning process]You are allowed to use the following materials to complete the task.a) Measuring Tapeb) Stop watchc) Masking taped) Software Tracker | 20 min | Teachers can move around to listen to their plan. Let them make mistakes. |
| 4 | **A3 Carrying out investigation**Ask students to capture the video according to their plan.**A4 Analyze data**Allow the students to do motion analysis using tracker at home and present their findings and answers in the next lesson.Presentation will include:* Explanation of their plan
* Graphs obtained from the video using Tracker (velocity-time and displacement-time graph)
* Explanation of the results obtained using any mathematical equations used in analysis if any
* Average acceleration of the person walking
* Suggestion for improvement
 | 20 min | First lesson will end here. If students are fast. They can immediately do an analysis using Tracker.**A5 Mathematical thinking & A6 Explanation**In presentation |
| 5 | **SECOND LESSON****A8 Communication**Present their findings and suggestion for improvement (approximately 5 min in each group) | 50 min | **A7 Argumentation**Allow students to ask questions after each presentation. Let them comment on each other’s group methods |