

Physics Workshop

Energy & Projectiles

PE & KE Conversion

1. Read the 'Comment on using the Energy Track' on page 1 of the Technical Notes.
2. For this investigation you will use the TSA set to the Fast Timer mode.
3. Place your light gate source and receiver at the end of the track as shown on page 2.
4. Set TSA to read 2 Fast Times.
5. Knowing the diameter of the ball to be 1" (2.54cm) the relationship between E_p and E_k can be explored. For pupils further down the school the difference in these values could be explained as energy lost due to friction. If you wish to take it further with an A level class then you can include rotational E_k – see Appendix 1

Projectiles

1. Position the IR beam of the light Bridge at the very end of the track.
2. Connect the Timing Plate to TSA
3. Set TSA to measure three Fast Times. Times 1 & 2 are used to calculate the launch speed and times 2 & 3 are used to find the time of flight. You are now in a position to explore launch height, launch speed, time of flight and range.

Loop the Loop

1. Find the minimum release height for the ball to loop the loop and compare your answer with that obtained using Appendix 2 – explain the difference.

Apparatus Supplied

Energy Track + ball bearing + small ruler

Light Gate Source and Receiver

Timing Plate

Metre Stick (S)