

# WJEC Wales Physics A Level

SP Unit 1 03 : Dynamics

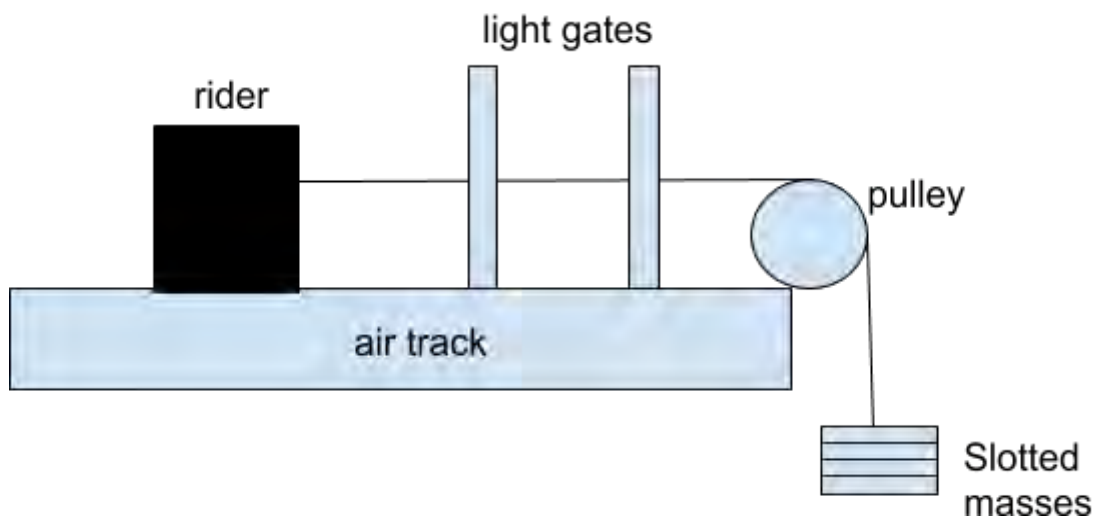
Practical notes



## 1. Investigation of Newton's Second Law

### Equipment:

- Light gates
- Linear air track and rider
- Slotted masses



### Experimental Method:

1. Set the light gates to measure acceleration.
2. Attach the thread to the rider and pass over the pulley.
3. Attach 5 slotted masses to the string and allow them to fall, pulling the rider through the light gates.
4. Record the force ( $mg$ , where  $m$  is the mass of the slotted masses combined) and the acceleration, recorded by the light gates.
5. Remove 1 mass and place it on the rider.
6. Repeat.
7. Repeat until all masses have transferred to the rider.
8. Plot a graph of acceleration against force.
  - a. This should form a straight line through the origin, showing a directly proportional relationship.
  - b. This shows that  $F = ka$  (where the constant  $k = m$ ).

### Safety:

- Falling masses may cause injury. Wear appropriate footwear and take care not to stand under any suspended masses.
- Ensure that the masses added to the rider are secured so that they don't fly off during acceleration

