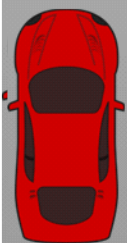




Be A Crash Test Investigator



Before you is a scene from a traffic incident. You must carefully use science techniques to collect the evidence to find out the cause of the accident, who was responsible, and were any traffic offences committed. Don't contaminate the scene by what you do!

1. Describe what you see in as much detail as possible.
2. What are your immediate ideas about what has happened?
3. Look at the witness statements.
4. Hypothesize from the information what you think has happened.
5. Make measurements of the distances travelled during each stage of the incident. The scale is 1m: _____ m
6. Observe the car and pedestrian for evidence.
7. Calculate, from your measurements, whether a crime has been committed.
8. The 'Skidman' provides a deceleration figure; police complete a skid to a halt test and repeat this twice. If the figures are within 10% of each other the police use the lowest deceleration in their calculations to find the initial speed of the car, to favour the driver. The results for this scenario are as follows:

$$(1) \quad -6.80 \text{ ms}^{-2} \qquad (2) \quad -7.01 \text{ ms}^{-2}$$

we use the formula $v^2 = u^2 + 2as$.

Where v = final velocity = 0 ms^{-1} , u = Initial velocity = (what you are trying to calculate), a = acceleration as above, s = displacement = (measure this)

Question 1 - Use the equation above to find out *what speed was the car traveling at when it started to skid?*

Question 2 - Use the equation above to determine *what speed was the car doing when it collided with the pedestrian?*

Question 3 - *If the car had been travelling at the speed limit of 30mph would the car have still collided with the pedestrian?*

To convert your speeds from metres per second to miles per hour multiply by the conversion factor **2.2**

9. Record your conclusions. Who was at fault? Was one or more traffic offence committed?
10. Look at the video and see what it shows about humans as witnesses. From the evidence in this clip do you think humans make good witnesses?
11. Read about the four stages of braking and the run under run over material.

You may take this sheet and your workings but **DO NOT TAKE AWAY ANY LAMINATED SHEETS**, they are needed for other groups.