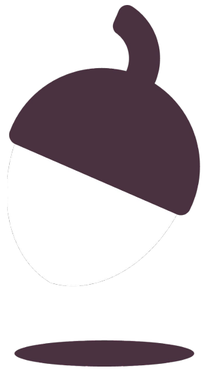
Combined Science - Physics - Key Stage 4 - Forces

Stopping Distance

Mr Saville



OAK
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Warm up

1. What is the equation linking acceleration, force and mass?

2. What is the equation linking acceleration, final velocity, initial velocity and time?

3. A car is travelling at 20 m/s when the lights turn to red. It takes 3.2 seconds to stop the car. Calculate the deceleration. Give the unit

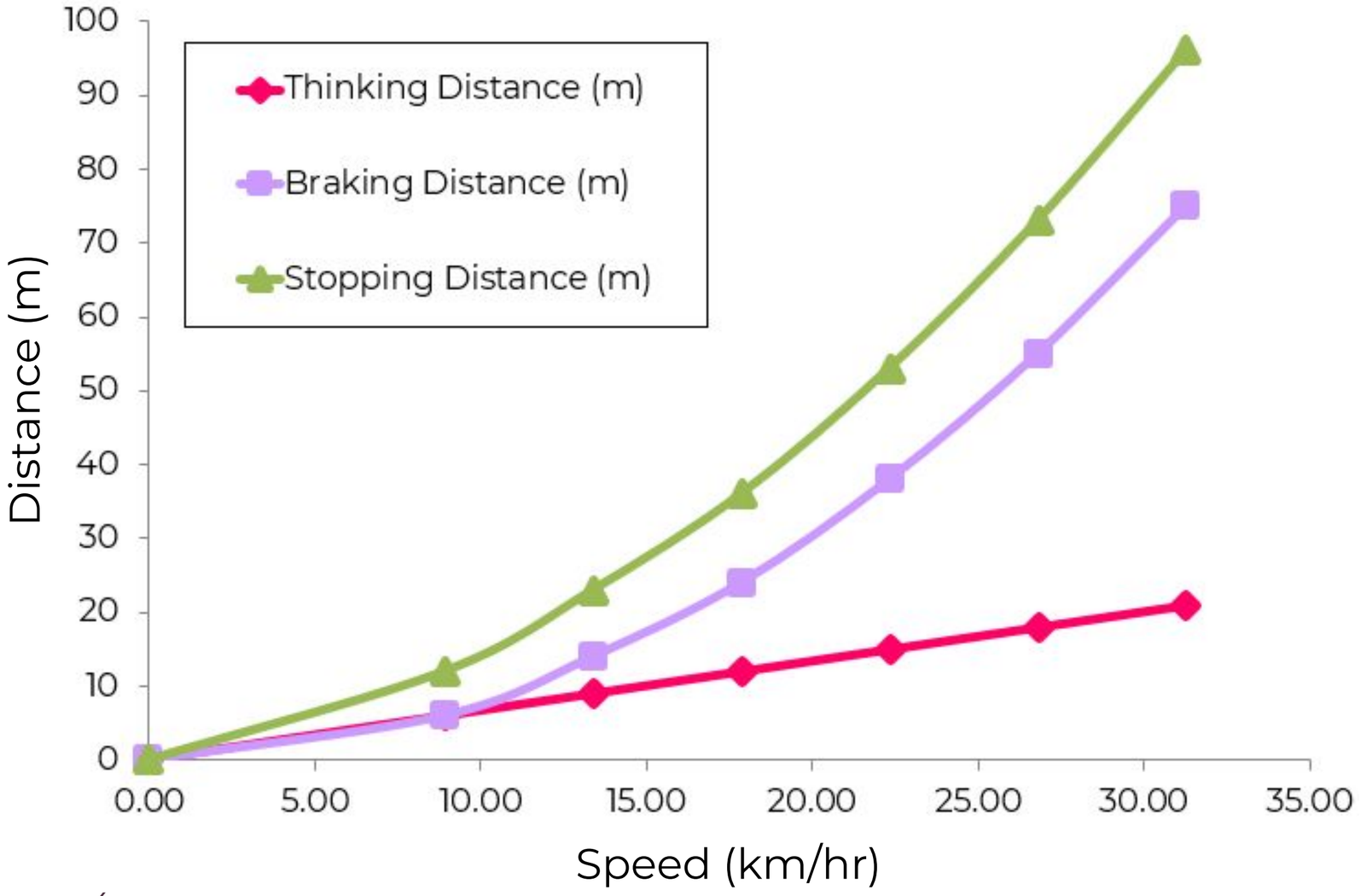
4. The car has a mass of 22,000Kg. Calculate the force needed to stop the car. Give the unit.

Independent Practice

Thinking distance	Braking distance

Distractions, drugs, condition of brakes, wet/icy roads, condition of tyres, alcohol, eye sight, tiredness, age, road condition

Independent Practice



1. Use the graph to describe the pattern shown in the data. (hint: talk about both thinking and braking distance, then stopping distance)

2. What is the additional stopping distance when increasing speed from 10 to 20 km/hr.

3. Why does it take a larger force to stop a vehicle moving faster?

4. Why are large decelerations dangerous?

Independent Practice

Describe the factors that affect the stopping distance of a vehicle. In your answer explain the difference between thinking distance, braking distance and stopping distance, how they are related and factors which affect their lengths. (6)