## **P3 – Revision Quiz - Space for reflection.**

# Q1. Speeding.

## Speed cameras record the speeds of motorist by recording 2 photos in a time of 0.2 s.

## How is this used to find the speed of a car?

## What is the scientific units for speed?

## If a car covers a distance of 5 m in the 0.2 s how fast is it going?

## How fast is that in km/h? (H)

## How far would a person go in the 0.2 s travelling at 50 km/h (30 mph)? (H)

# Q2. Accelerating.

## Which car has the best acceleration? Why?

## Which car has the highest speed?

## Calculate the acceleration of each car.

## What does the area under the lines tell you?

## Calculate the distance travelled in 10 seconds by each car. (H)

# Q3. Describing motion.

## The Graph shows the journey of a cyclist.

## Describe the motion of the cyclist, use time points to break up the description.

## What is the maximum speed reached by the cyclist?

# Q4. Stopping

## Being able to stop quickly in a short distance is an important part of car safety.

## Describe what these 3 terms mean in relation to stopping; Thinking distance, braking distance and stopping distance.

## Describe the factors that can affect thinking distance and breaking distance.

## Why is it important to shorten these distances?

## Describe some situations in which stopping distance would increase. (H)

# Q5. Braking force.

## A force is required to change the speed of an object. The force can cause it to accelerate or decelerate.

## What is the formula that links force to acceleration?

## Calculate the force needed to accelerate a 100 kg mass at 5 m/s2 .

# Q6. Powerful work.

## What is Work done?

## How can work done be calculated in mechanical situations?

## What is power and what is it measured in?

##  How are power and work done related?

## If an object has a 200 N force acting on it over a distance of 2 m, how much work is done?

## If the work above is done in 4 seconds, what is the power?

# Q7. Cost of transport.

## What are the advantages and disadvantages of electric cars?

## What are some factors that will reduce the range of an electric car?

## What are some factors that affect the fuel consumption of a car?

## How do these factors change the fuel consumption?

# Q8. Kinetic Energy.

## What is kinetic energy? What is it measured in?

## What is the kinetic energy of a 10 kg mass travelling at 5 m/s?

## What happens to the energy if the mass is doubled?

## What happens to the energy if the velocity doubles?

# Q9. Car safety.

## How do crumple zones, air bags, seat belts and crash barriers work to reduce injury in an accident.

## Define the terms active and passive safety features.

## List as many active and passive safety features as you can.

# Q10. Free fall and parachutes.

## What is Drag?

## What are the two main factors that increase drag?

## What is terminal velocity?

## What can you say about the forces on a falling object at terminal velocity?

## Sketch a speed/time graph of a sky dive before and after the parachute is opened (H).

# Q11. Roller coaster.

## A 500 kg roller coaster carriage is pulled up to a height of 20 m

## Calculate the weight on the 500 kg mass on earth.

## How much gravitational potential energy does the carriage gain?

## Describe the main energy change that happen as a roller coaster rolls down a sloped track.

## How fast will the roller coaster be going at the bottom of the slope?