Year 10 Physics Checklist
P3 Forces and Motion

Speed

State and use the equation:

speed = distance / time

State that speed is measured in metres per second (m/s).

Describe why speed cameras generally take two photographs:
- a certain time apart;
- near marked lines on the road.

Interpret simple distance-time graphs:
- straight line gradient - steady speed;
- horizontal line - stationary (zero speed);
- qualitatively for non-uniform speed;
- calculate speed from the gradient of a distance-time graph;
- higher speed steeper gradient.

Changing Speed

Describe acceleration as change in speed per unit time. State that acceleration can involve a change:
- in speed;
- in direction.

State and use the equation:

acceleration = change in speed/ time taken.

State that acceleration is measured in metres per second squared, m/s^2.

Interpret simple speed-time graphs.
- horizontal line - constant speed;
- straight line positive gradient - increasing speed;
- straight line negative gradient - decreasing speed;
- more acceleration, steeper gradient;
- calculate acceleration from the gradient of a speed-time graph;
- calculate distance travelled from the area under a speed-time graph.

Forces and Motion

State and use the equation:

force = mass x acceleration.

Explain the significance to road safety of:
- thinking distance;
- braking distance;
- stopping distance.

Describe thinking distance as:
- the distance travelled between the need for braking occurring and the brakes starting to act.

Describe the factors which might increase thinking distance:
- driver tiredness;
- influence of alcohol or other drugs ;
- more speed;
- distractions or lack of concentration.

Describe braking distance as:
- the distance taken to stop once the brakes have been applied.

Describe the factors which might increase braking distance:
- road conditions - slippy, icy, wet;
- car conditions - bald tyres, poor brakes;
- more speed.

Describe stopping distance as:
- thinking distance + stopping distance.

Recognise that when body A exerts a force on body B, body B exerts an equal but opposite force on body A:
- these constitute two different views of the same interaction and are not balanced forces.

Work and Power

State that the joule is the unit for both work and energy.

Describe power as a measurement of how quickly work is being done.

State and use the equation:

Power = work done / time

State that power is measured in watts (W).

Do not keep saying to yourself, if you can possibly avoid it, 'But how can it be like that?' because you will get 'down the drain' into a blind alley from which nobody has yet escaped. Nobody knows how it can be like that.

Richard Feynman