P2 REVISION – CHAPTER 1 – MOTION

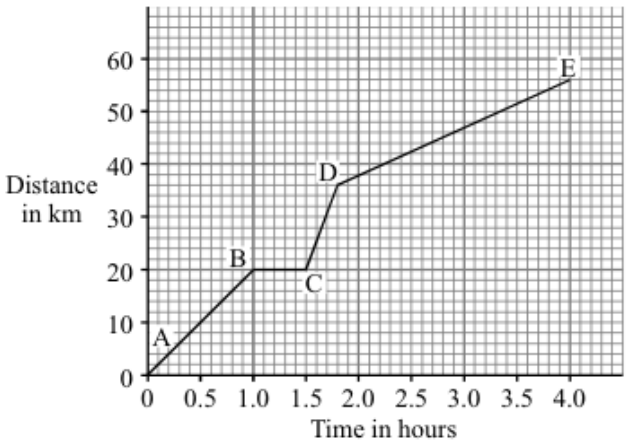
Describe what is happening in the graph between points:

A-B:

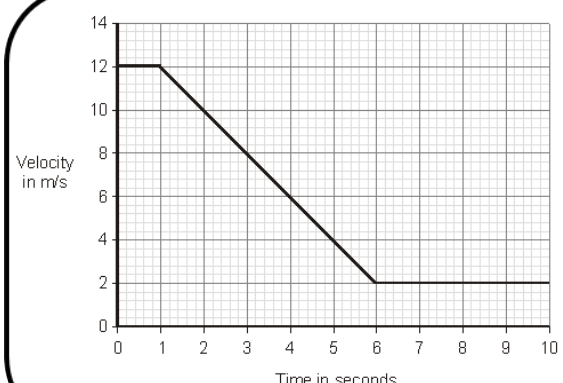
B-C:

C-D:

D-E:



Using the formula speed = $\frac{\text{distance}}{\text{time}}$ work out the speed of the cyclist between points A and B:

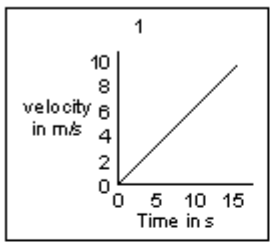
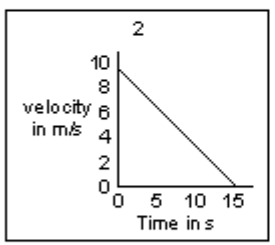
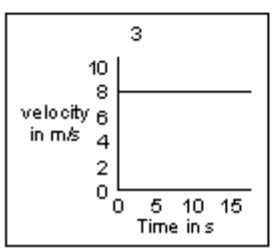


Work out the deceleration of the car and the distance it has travelled:

$\text{Acceleration} = \frac{\text{change in velocity}}{\text{time taken}}$

Distance = area under the line

Match the graph to the description of motion:

List A Velocity–time graphs	List B Descriptions of motion
	Constant velocity
	Constant acceleration
	Not moving
	Constant deceleration

KEY WORDS:

Distance-time graphs
Gradient
Speed
Velocity
Acceleration
Velocity-time graphs

ASSESSMENT:

P2 REVISION – CHAPTER 2 – FORCES

What is the definition of a force?

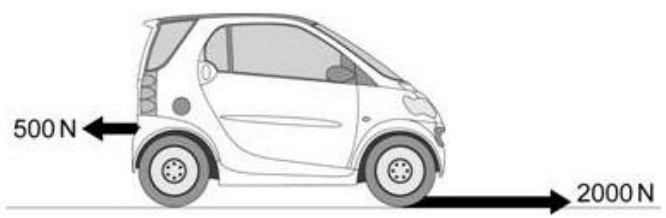
What are balanced forces and when do they occur?

What are unbalanced forces and when do they occur?

Using the formula F=ma, fill in the table

	a	b	c	d	e
Force (Newtons, N)		200	840		5000
Mass (kilograms, kg)	20		7.0	0.40	
Acceleration (meters/second squared, m/s^2)	0.80	5.0		6.0	0.20

Calculate the resultant force:



What is stopping distance, and what are the two parts that make up a car's stopping distance?

What factors affect stopping distance?

What do we do to prevent speeding in this country?

What is terminal velocity?

What is Hooke's law?

KEY WORDS:

Force
Resultant force
Stopping distance
Thinking distance
Braking distance
Weight
Mass
Gravitation field strength
Drag force
Terminal velocity
Proportionality
Hooke's law

ASSESSMENT:

P2 REVISION – CHAPTER 3 – WORK, ENERGY & MOMENTUM

What is work done?

What is the equation for work done?

How does friction affect work done?

What is gravitational potential energy?

Complete the question below using this equation $E_p = m \times g \times h$
If a 2kg mass is lifted 0.4 meters how much GPE does it gain?

What is kinetic energy?

Complete the question below using this equation $E_K = \frac{1}{2} \times m \times v^2$
If a 500kg mass is moving at 12m/s how much kinetic energy does it have?

What features do we add to cars to make them safe?

What is momentum?

Complete the question below using this equation
momentum (kg m/s) = mass (kg) X velocity (m/s)
If a sprinter with a mass of 50kg runs at a velocity of 10m/s what is their momentum?

A 0.5 kg trolley is pushed at a velocity of 1.2 m/s into a stationary trolley with a mass of 1.5 kg. The two trolleys stick to each other after the impact.
Calculate:
The momentum of the 0.5 kg trolley before the collision
The velocity of the two trolleys straight after the impact

What is conservation of momentum and how do you calculate it?

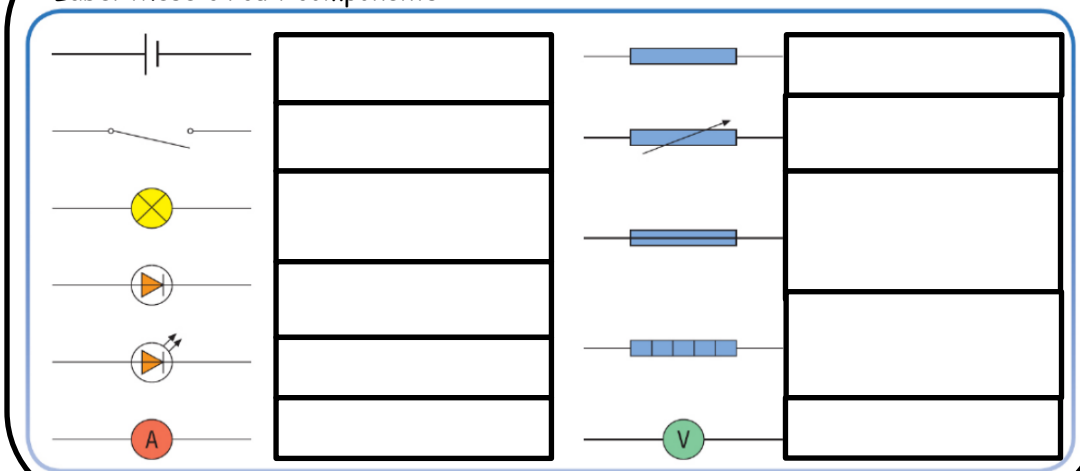
KEY WORDS:

Transfer
Work done
Gravitational potential energy
Elastic potential energy
Momentum
Conservation of momentum

ASSESSMENT:

P2 REVISION – CHAPTER 4 – CURRENT ELECTRICITY

Label these circuit components:



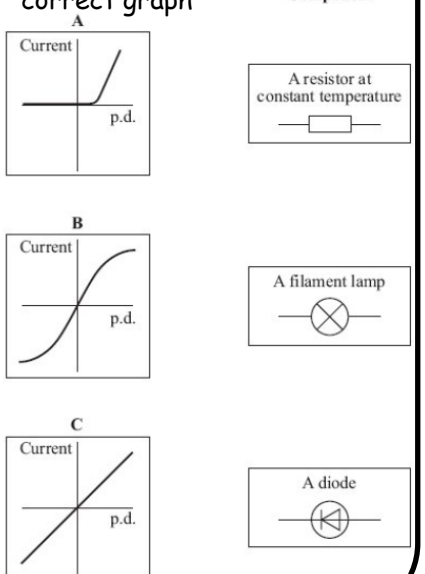
What is static electricity?

What happens when you rub a polythene rod with a dry cloth?

What happens when you rub a perspex rod with a dry cloth?

You can use diagrams to help.

Link the component to the correct graph



Component

A resistor at constant temperature

A filament lamp

A diode

What is resistance?

What is the equation for resistance?

What is the rule for resistance in a series circuit?

What is the rule for resistance in a parallel circuit?

What is electrical current?

Calculate the current in a bulb if there is a charge of 0.8C passes through the bulb in 0.4 seconds:

Equation: $I = \frac{Q}{t}$

KEY WORDS:

Static electricity
Protons
Neutrons
Ion
Electric current
Electrons
Coulombs (C)
Series
Potential difference
Volts (V)
Parallel
Resistance
Ohmic conductor

ASSESSMENT:

P2 REVISION – CHAPTER 5 – MAINS ELECTRICITY

What is the difference between direct current and alternating current?

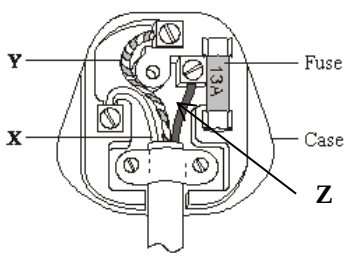
Why do we use alternating current for mains electricity?

How do we measure alternating current?

In a standard 3-pin plug what is:
X:

Y:

Z:



How do the materials and design of the following plug parts improve their safety?
Case

Fuse

Pins

How are electrical cables designed to be safe?

What is a fuse and how does it work?

What is a circuit breaker and how does it work?

Electrical power and potential difference
Work through these questions:
A light bulb transfers 30000J of electrical energy when it is on for 300s. Calculate its power:

$P=\frac{E}{t}$

Calculate the normal current through a 500W, 230V heater

$I=\frac{P}{V}$

Electrical energy and charge
Work through these questions:
Calculate the charge flow when the current is 8A for 80s.

$Q = I \times t$

Calculate the energy transferred in a component when the charge passing through it is 30C and the potential difference is 20V

Energy transferred = volts X coulombs

KEY WORDS:

Direct current	Oscilloscope	Cable
Alternating current	Y-gate control	Three-pin plug
Frequency	Time base control	Circuit breaker
Live/neutral/ earth wire	Socket	Residual current circuit breaker (RCCB)
	Plugs	

ASSESSMENT:

P2 REVISION – CHAPTER 6 – RADIOACTIVITY

What is radiation?

What causes background radiation?

Give 3 uses of radioactivity, and a brief description of how they work:

How did each of these scientists contribute to our understanding of radiation?
Henri Becquerel:

Marie Curie:

Ernest Rutherford:

Describe radioactive decay:
α emissions:

β emissions:

γ emissions:

Properties of radiation:

	Penetrating power	Deflection by magnetic field	Deflection by electric field
Alpha radiation (α)			
Beta radiation (β)			
Gamma radiation (γ)			

Explain what half-life is:

Fill in this table assuming there is a 10% decay every hour:

Time from start (hours)	0	1	2	3	4	5	6
No. of unstable atoms	1000	900					477
No, of unstable atoms that decay in the next hour	100	90					48

KEY WORDS:

Alpha radiation (α)
Beta radiation (β)
Gamma radiation (γ)
Atomic number
Isotope
Mass number
Half-life

ASSESSMENT:

P2 REVISION – CHAPTER 7 – ENERGY FROM THE NUCLEUS

Explain nuclear fission (use diagrams):

Explain nuclear fusion (use diagrams):

What are some of the issues linked with nuclear energy?

What was the early universe like?

Explain the life cycle of a star:

How are chemical elements formed?

KEY WORDS:

Nuclear fission
Chain reaction
Reactor
Control rods
Coolant
Nuclear fusion
Protostar
Neutron star
Main sequence stars
Red giant
White dwarf
Black dwarf
Supergiant
Supernova
Black hole

ASSESSMENT: