P3 (Foundation) Key Questions that will help you get the level you deserve
Learn these! Try each one. Ones you don't know try again and again
Fold over 'The Answers' column and reveal having attempted the questions

Speed			
1.	How do you change km into m?		Multiply the number by 1,000 (the answer in a question often needs you to change km into m)
2.	What is the formula for average speed?		Distance / time
3.	Explain how a speed camera works		Two photographs taken: • A certain time apart • When the vehicle moved over marked lines a known distance apart on the road.
4.	Explain how average speed cameras work		Speed is measured at set times along the journey. The distance is known and these are compared.
5.	What does a straight horizontal line show on a distance – time graph (dt graph)?		That the object is not moving
6.	What does a Show on a dt graph?		That the object is moving at a constant speed
7.	What does a Show on a dt graph?		That the object is accelerating
8.	What does a Show on a dt graph?		That the object is decelerating
9.	What does a steeper line on a dt graph mean?		That the object is travelling faster
10.	What is the formula for time if you are given the speed and distance?		Distance / speed
11.	What is the formula for distance if you are given the speed and time?		Speed x time
12.	Describe what a horizontal line means on a speed-time graph		The object is travelling at a constant speed
13.	Describe what is meant by a straight line with a positive gradient on a speed-time graph		The object is increasing speed
14.	Describe what is meant by a straight line with a negative gradient on a speed-time graph		The object is decreasing speed
15.	What is acceleration?		A change in speed / time taken
16.	If an object shown a greater change in speed over a given time, what does this suggest about acceleration?		That there is a higher acceleration
17.	What is velocity?		The speed combined with its direction
18.	What affects acceleration?		Either: a change in speed A change in direction A change in both speed and direction
Changing Speed			
19.	How do you work out the distance travelled by an object from a speed-time graph?		Work out the area under the line
20.	How do you calculate force if you are given its mass and acceleration?		Mass x acceleration
21.	What is thinking distance?		The distance travelled between the need for braking and the brakes starting to act

22.	What is braking distance?		The distance taken to stop once the brakes have been applied.
23.	What is stopping distance?		Thinking distance + braking distance
24.	How do you work out the distance travelled by a car from 2 points on a graph?		Average speed x time $\frac{(u + v)\ t}{2}$
Forces and Motion			
25.	Explain what can increase thinking distances		Driver tiredness Influence of alcohol or other drugs Greater speed Distractions or lack of concentration
26.	Explain how certain factors may increase braking distances		Road conditions Car conditions Greater speed
27.	Explain what difference stopping distances have in road safety		Driving too close to the car in front Speed limits Road conditions
28.	If the forward force is the same and you increase the mass, what happens to acceleration?		Acceleration decreases
29.	If the forward force is the same and you decrease the mass, what happens to acceleration?		Acceleration increases
Work and Power			
30.	Give examples in which work is done		Lifting weights Climbing stairs Pulling a sledge
31.	What happens to energy when work is done?		It is normally transferred into kinetic energy If you are picking something up it may also become gravitational potential energy (GPE)
32.	What affects the amount of work done?		The size of the force (N) The distance travelled in metres (m)
33.	What is the unit of energy?		Joule
34.	What is the equation for work done?		Force x Distance
35.	What is power in relation to work done?		Power is how quickly work is done
36.	What is the unit for power?		Watts
37.	What affects fuel consumption in a car?		The power rating Engine size Speed the car travels Weight of the car (objects in the car)
38.	What is weight?		Mass x gravitational field strength
39.	How do you work out power? (formula)		Work done / time
40.	What affects the amount of kinetic energy (KE)?		Mass and speed of an object
41.	What are the main fuels in road transport?		Petrol and diesel
42.	What are alternatives to fossil fuels in road transport?		Biofuels and solar energy
43.	What are the advantages of using solar power or battery driven cars?		Less pollution Fossil fuels are decreasing Quieter and release less fumes – less smog.
44.	What are the disadvantages of using solar power or battery driven cars?		• Need to have battery recharged using electricity powered by a power station which causes pollution. • Needs charging a lot –not always available. • Battery takes up a lot of room • Expensive to buy

45.	If the question asks…'use the information' what must you do…		Use the information Include numbers from the table or graph eg. 10 metres per second compared to 25 metres per second.
Cars in more detail			
46.	What impact does the wedge shape have on a sports car on fuel consumption and top speed?		Increase top speed Reduce fuel consumption
47.	What impact do deflectors on lorries and caravans on fuel consumption and top speed?		Increase top speed Reduce fuel consumption
48.	What impact do roof boxes on cars have on fuel consumption and top speed?		Reduce top speed Increase fuel consumption
49.	Why is fuel consumption important?		Fuel is expensive – the car is expensive to run Fuel pollutes the environment. Car exhausts are harmful. CO_2 is a green house gas.
50.	What impact does driving with car windows open on fuel consumption and top speed?		Reduce top speed Increase fuel consumption
51.	How would you use the formula ½ mv^2		Multiply mass with velocity^2. Then divide this number by 2.
52.	Explain why we may have to rely on bio-fuelled and solar powered vehicles in the future		Fossil fuels (petrol/diesel) are running out.
53.	How do you calculate momentum?		Mass x velocity
54.	What does a sudden change in momentum (eg. In a collision/crash) cause?		A large force. Can cause injury
55.	What are the active safety features of modern cars? (protect people in an accident)		Crumple zones Seat belts Air bags
56.	What are the passive safety features of modern cars? (prevent accidents)		Electric windows Gear paddles CD changes
57.	Explain why seatbelts have to be replaced after a crash		The fabric gets stretched
58.	What are the benefits of seat belts?		Reduces the momentum in a crash Increases the time before contact Secures a person in their seat Reduces injury
59.	Why do some people not like seat belts?		There is a risk of chest injury They may get trapped in a fire Drivers may drive less carefully as feel secure
60.	How do you calculate a force given a change in momentum of an object?		Change in momentum / time
61.	How does spreading the change in momentum (eg. Air bag) help reduce injury?		Change in momentum spread over a longer time Reduces the relative force Reduces injury
62.	How are seatbelts, crumple zones and air bags useful in crash?		They Change shape Absorb energy Reduce injuries

Falling Objects			
63.	Recognise the impact of frictional forces (eg. Drag, friction, air resistance)		Act against the movement Lead to energy loss and inefficiency Can be reduced (shape/lubricant)
64.	Explain how objects falling reach a terminal speed		Speed increases because gravity is greater than drag Speed reaches a terminal velocity because gravity = drag.
65.	Why do falling objects not experience drag in no atmosphere?		There is no atmosphere There is no air resistance There is no drag.
66.	What can you say about the acceleration due to gravity for any object on Earth?		It's the same.
67.	What gives an object gravitational potential energy?		Their mass and position in Earth's gravitational field.
68.	Recognise everyday examples in which objects u gravitational potential energy (GPE)		Roller coasters
69.	What is the formula for working out gravitational potential energy?		Mass x height
70.	Explain what happens in terms of kinetic energy and gravitational potential energy in a roller coaster		At the top the GPE is high As the train moves down the track kinetic energy is increased as GPE is transferred to kinetic energy Energy is transferred (lost) throughout the ride by sound and heat energy
71.	Describe the effects of changing mass on kinetic energy		Doubling mass doubles Kinetic energy
72.	Describe the effects of doubling speeds on kinetic energy		Doubling speed quadruples Kinetic energy