Types of forces		
1	Force	a push or pull that acts on an object due to the interaction with another object
2	Scalar quantity	a quantity that has magnitude only
3	Scalar examples	distance, mass, time, energy, speed
4	Vector quantity	a quantity that has magnitude and direction
5	Vector examples	weight, force, acceleration, displacement
6	Contact force	force between objects that physically touch
7	Contact force examples	air resistance, thrust, tension, compression
8	Non-contact force	force between objects that are physically separated
9	Non-contact force examples	electrostatic, gravitational, magnetic
10	Resultant force	a number of forces acting on an object may be replaced by a single force that has the same effect as all the original forces acting together
11	Free Body diagram	a diagram that models the forces acting on an object

Gravity & Weight		
12	Weight	force acting on an object due to gravity
13	Gravity	a force that attracts another body towards the centre or the earth, or another body i.e. sun
14	Gravitational field strength	9.8 N/kg (on earth)
15	Weight equation	Weight = mass x gravitational field strength
16	Newton meter	calibrated spring balance used to measure force

Work Done & Energy Transfer		
17	Work done	energy transferred
18	Joule	one joule of work is done when one newton of force causes a displacement of one metre
19	Work done equation	work done = force x distance

Units				
20	Energy	e	Joules	J
21	mass	m	kilograms	kg
22	Gravitational field strength	g	Newtons/kilogram	N/kg
23	Weight	W	Newtons	N
24	height	h	metres	m
25	Spring constant	k	Newtons/metre	N/m
26	extension	e	metres	m
27	Speed	v	metres per second	m/s
28	velocity	v	metres per second	m/s
29	displacement	s	metres	m
30	Work done	W	Joules	J
31	Force	F	Newton	N
32	distance	s	metres	m
33	power	P	watts	W
34	time	t	seconds	s
35	acceleration	a	metres/second squared	m/s^2
36	momentum	*p*	kilograms metre per second	kg m/s

Extension of a spring		
37	Spring constant	the extension of a given spring dependent on the mass (force) applied to the spring
38	Spring equation	force = spring constant x extension (F = k x e)
39	Compression	a force applied to make an object decrease in length
40	Elastic deformation	temporary change in shape of an object as a reaction to an applied force
41	Inelastic deformation	permanent change of shape when object is stretched beyond its elastic limit

42	**Required Practical: Force & Extension of a spring**	
A	Independent Variable:	force applied to the spring
B	Dependent Variable:	extension of the spring
C	Control Variable:	material of spring, angle of ruler
D	Method: • suspend mass from a spring and measure extension • add additional known mass and re-measure • use k = f/ e to find the spring constant of that spring	

Describing Motion			
43	Distance	how far an object moves	
44	Displacement	distance travelled in a specified direction	
45	Speed	distance travelled in a given time	
46	Speed equation	speed = distance / time	
47	Speed of sound	330 m/s	
48	Speed of walking	1.5 m/s	
49	Speed of running	3 m/s	
50	Speed of cycling	6 m/s	
51	Velocity	speed in a specific direction	
52	Acceleration	increasing in velocity	
53	Deceleration	decreasing in velocity	
54	Acceleration equation	acceleration = $\frac{\text{change in velocity}}{\text{Time taken}}$	$\alpha = \frac{v - u}{t}$
55	Terminal Velocity	the constant speed that a freely falling object eventually reaches where resultant force is zero	

Newtons laws		
56	Newton's 1st Law	if the resultant force on an object is zero, there will be no change in direction or speed of the object
57	Newton's 2nd Law	acceleration is proportional to increased resultant force and inversely proportional to increase in mass
58	$\propto$	proportional
59	2nd Law equation	force = mass x acceleration $F = ma$
60	inertia	tendency of object to continue in state of rest or motion
61	Newton's 3rd Law	the forces exerted by two objects interacting are equal and opposite.

Stopping Distances		
62	Stopping Distance	thinking distance + braking distance
63	Thinking distance	distance travelled during the drivers reaction time
64	Braking distance	distance travelled once a force is applied to the brakes
65	Factors affecting reaction time	tiredness, drugs, alcohol, distractions
66	Factors affecting braking distance	condition of tyres, condition of brakes, condition of road (eg icy or wet), speed, mass of vehicle.

Momentum		
67	Momentum equation	momentum = mass x velocity
68	Conservation of momentum	momentum before a collision = momentum after a collision