Name: _____

Period: _____

PHYSICAL SCIENCE 2ND SEMESTER

Final Review 1

mv = m *times* v	MA = 8	8 kgm/s
F/a = F divide a	F or F_w = 8N	8 Ω
$T_2 + T_1 = T_2$ add T_1	d or λ = 8m	8 w
mv = m times v	W or E= 8J	8
ΔD/ΔT = ΔD divide ΔT	R = 8Ω	8 sec
	I = 8A	8 N
	p = 8kgm/s	8 m
	V = 8V	8 A
	P = 8W	8 m/s^2
	f = 8Hz	8 V
	T = 8sec	8 Hz
	a = 8m/s²	8 J

N
S

S
N

If the two magnets are ***repelling*** each other, label N and S on the second magnet.

A car travels 88 meters in 11 seconds. Find the car's speed.

$S = d/t \quad \frac{88m}{11s} = 8m/s$

You travel from Maine (100 miles away) to Vermont (300 miles away), in 4 hours. Calculate your speed.

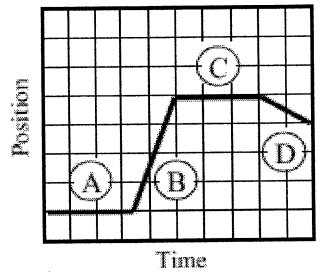
$S = d/t \quad \frac{400m}{4hr} = 100m/hr$ or $\frac{200m}{4hr} = 50m/hr$

A bike goes 12 m/s for 6 seconds. Calculate how far the bike traveled.

$d = S \cdot t \quad 12m/s \cdot 6s = 72m$

A plane stops from 300 mph in 15 seconds. Calculate the planes acceleration.

$\frac{0m/hr - 300m/hr}{15s} = \frac{-20m/hr}{s}$



Which segment is:

At rest: A + C

Fast speed: B

Slow speed: D

Going backwards: D

Going forward: B

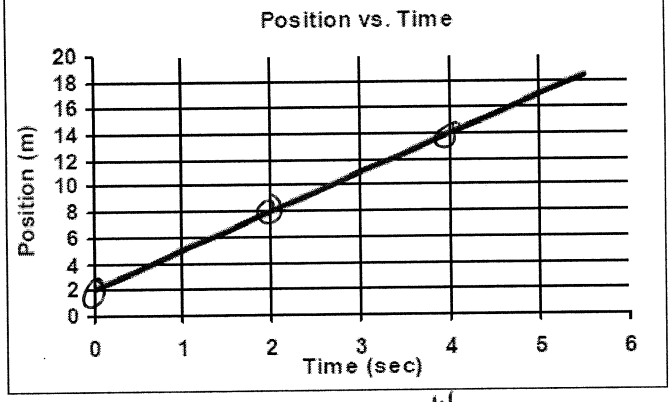
Formulas: Fill in the correct formulas

Velocity	Acceleration	Force
$V = d/t$	$a = \frac{\Delta V}{t}$	$F = ma$

Force (weight)	Slope
$F = m \cdot g$	$S = \frac{y_2 - y_1}{x_2 - x_1}$

If you go to another planet what would change? Weight or mass?

If you were in space what would stay the same? Weight or mass?



Where was the object at 4 seconds? 14m

When did the object reach 8 meters? 2s

Find the slope of the graph (must show work)

$\frac{8m - 2m}{2s - 0s} = \frac{6m}{2s} = 3m/s$

What does the slope you just found stand for? Speed

If you drop a full bottle of water and an empty bottle of water, which one hits the ground first and why?

Both $g = 10m/s^2$

Which of Newton's Three Laws Applies?

3 A paddle-wheel boat pushes on the water and the water pushes back to move the boat.

2 Fighter pilots feel massive amounts of force when their planes turn quickly.

1 A rolling ball hits your leg hard to stop.

Using g = 10 m/s^2, find the weight of a 3 kg mass.

$3kg \cdot 10m/s^2 = 30N$

A 35 kg bike accelerates at 5 m/s^2. With what force was the person pedaling?

$35kg \cdot 5m/s^2 = 175N$

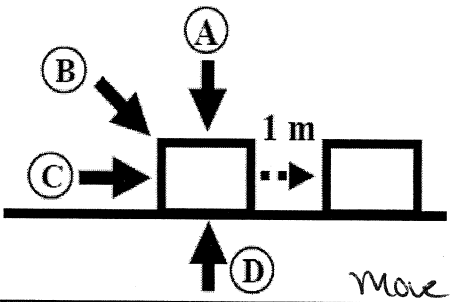
If 40 N is pushing to the right and friction is 10 N, find the net force and acceleration of a 6 kg object.

$\frac{30N}{6kg} = 5N$

What is the Law of Conservation of Energy?

$E_{Before} \pm W = E_{After}$

A ball on the top of a hill has Potential energy; when it falls down the energy has been transformed into Kinetic energy. The Law of Conservation of Energy says that the amounts of these two energies are equal.



Which of the four forces are doing work on the object?

~~C~~ B

Why? they can move the box

1. Conduction; 2. Convection; 3. Radiation

R From electromagnet radiation (light rays).	Cv In a pot of water.
Cn Putting your hand on a hot car.	Cv Liquids and gases become less dense when hot and rise, causing currents.

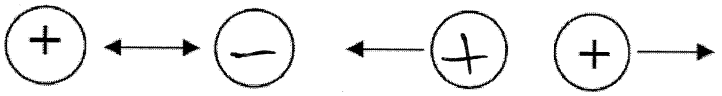
Does heat rise? No What does rise? Hot Air

What is thermal equilibrium? Temps are equal

Heat always moves from hot to cold OR cold to hot?

What are the charges of the second objects?

attracting repelling



What is electricity? moving electrons

What is the difference between parallel and series circuits?

P = independent paths S = dependent paths

Where does light come from?

Falling Electrons

Formulas: Fill in the correct formulas

$KE = \frac{1}{2}mv^2$	Work $W = F \cdot d$	$PE = mgh$
Power $P = W/t$	Ohm's Law $I = V/R$	Power (electric) $P = V \cdot I$

Thermal; Nuclear; Radiant; Mechanical; Chemical; Electrical

M An acorn in a tree.	N Fusion in the sun.
E Energy from a wall power plug.	R The light of the sun.
T Something hot.	C In a piece of wood.

A 8 kg cart is rolling 5 m/s. Calculate kinetic energy.

$KE = \frac{1}{2} 8kg (5m/s)^2 = 100J$

A 30 N rock is moved 4 meters. How much work is done?

$PE = 30N \cdot 4m = 120J$

How much energy was used to move the rock? 120J

If done in 3 seconds, how much power was used?

$P = \frac{120J}{3s} = 40W$

A 2 kg rock on a 6 meter ledge has how much potential energy?

$PE = 2kg \cdot 10m/s^2 \cdot 6m = 120J$

How much kinetic energy can it have if it falls? 120J

What's the total charge of an object with 14 electrons and 6 protons? $-8C$

An atom that loses electrons becomes positive/negative.

An atom that gains electrons becomes positive/negative

Increases (I) Or Decreases (D)

Increasing resistance	D current
Decreasing resistance	I current
Increasing voltage	I current
Decreasing voltage	D current

How big a battery is needed to produce 2 amps through a 4 ohm light bulb?

$V = 2A \cdot 4\Omega = 8V$

A 12 volt battery produces what current through a 6 Ω resistor?

$I = \frac{12V}{6\Omega} = 2A$

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IPC Physics Final Review Vocab

Velocity and Acceleration

1. *Variable* D	A. One time an experiment is run.
2. *Experiment* B	B. A setup used to gather data and knowledge.
3. Data Table C	C. A list of information from an experiment.
4. *Trial* A	D. A part of an experiment that can be changed or manipulated.
5. *Procedure* E	E. How an experiment is actually conducted.

1. Linear D	A. The variable on the vertical axis (y-axis).
2. Independent variable C	B. The slope of a speed vs. time graph.
3. Dependent variable A	C. The variable on the horizontal axis (x-axis).
4. *Slope* E	D. A type of graph that looks like a straight line.
5. *Speed* F	E. The measure of the steepness of a line.
6. *Acceleration* B	F. The slope of a position vs. time graph.

Newton's Laws

1. Inertia E	A. An action that can causes motion.
2. Friction C	B. Force pulling all object toward each other.
3. Gravity B	C. Any force that resists motion. Causes heat.
4. Net force D	D. Total of all of the forces on an object.
5. Force A	E. Ability of an object to resist change of motion.

1. Weight B	A. When all forces on an object are balanced.
2. Equilibrium A	B. The force of gravity on an object.
3. Mass E	C. The acceleration of gravity.
4. Heat D	D. The a product of friction.
5. g	E. The measure of the matter in an object.

1. Newton's First Law D	A. For every action there is an equal an opposite reaction.
2. *Momentum* C	B. Momentum does not change in a closed system OR $m_L v_L = m_R v_R$
3. Newton's Second Law E	C. Measure of the product of an object's mass and velocity; has to be moving.
4. Newton's Third Law A	D. Objects at rest stay at rest and objects in motion stay at motion unless acted on by a net force.
5. *Law of Conservation of Momentum* B	E. Force equals mass times acceleration.

Work and Energy

1. Energy E	A. Uses energy and can create energy.
2. Power D	B. Energy of motion; dependent on mass and velocity.
3. Work A	C. Energy of position; dependent on height, mass, and gravity.
4. Kinetic Energy B	D. The rate of doing work; how fast you do work.
5. Potential Energy C	E. Has the ability to create forces; stored work.

1. Thermal D	A. Energy of the atom being split or fused.
2. Nuclear A	B. Energy cannot be destroyed or created, just transformed.
3. Radiant E	C. Energy of moving electrons.
4. Mechanical F	D. Heat energy. Also caused by friction.
5. Law of Conservation of Energy B	E. Light energy—electromagnetic radiation.
6. Chemical G	F. Energy (kinetic or potential) stored in object and can do work.
7. Electrical C	G. Energy of molecular bonds.

Magnetism and Heat

1. Magnet A	A. Anything that attracts or repels another magnet or magnetic material.	1. Conduction C	A. Heat transfer through electromagnetic waves.
2. Electro magnet C	B. The area in which magnets will feel magnetic force. More arrows show a stronger one.	2. Thermal Equilibrium E	B. Will allow heat or electricity to move.
3. Magnetic field B	C. A magnet made from electricity going through wrapped wires.	3. Radiation A	C. Thermal (heat) transfer by the contact (touching) of two objects.
4. Generator F	D. Forcing energy into wires by moving magnets.	4. Convection D	D. Transfers heat by moving currents in gases and liquids.
5. Motor E	E. Uses energy to cause electromagnets to turn and do work.	5. Thermo dynamics G	E. When two objects are at the same temperature.
6. Magnetic Induction D	F. Uses work to spin magnets and make energy.	6. Insulator F	F. Will resist heat and electricity.
		7. Conductor B	G. The study of how heat moves.

Electricity

1. Electricity F	A. Slows down the flow of electricity.	1. Fuse D	A. A circuit with a break in it; no electricity will flow.
2. Current E	B. Pushes electricity through a circuit.	2. Circuit breaker E	B. Has independent paths for the electricity.
3. Electrically neutral G	C. Electricity can flow through this.	3. Parallel Circuit B	C. Has only one path for the electricity.
4. Resistance A	D. A circuit that has a wire across a device which causes it to go off.	4. Series Circuit C	D. A device that breaks to protect against excessive current. Must be replaced.
5. Voltage B	E. The flow of electricity through a circuit.	5. Open Circuit A	E. Protects against high current, but can be reset.
6. Short Circuit D	F. Electrons flowing in circuits.	6. Closed Circuit F	F. A circuit that has no breaks in it; electricity can flow in it.
	G. An object that has equal amounts of positive and negative charges.		