Name: _____

Period: _____

IPC Physics Final Review 1

mv = m *times* v

F/a = F *div* a

$T_2 + T_1 = T_2$ *plus* T_1

mv = m *times* v

ΔD/ΔT = ΔD *div* ΔT

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

MA = *8 (no units)*

F or F_w = *8 N (newtons)*

d or λ = *8 m (meters)*

W or E = *8 J (joules)*

R = *8 Ω (ohms)*

I = *8 A (amps)*

p = *8 kgm/s*

V = *8 v (volts)*

P = *8 w (watts)*

f = *8 Hz*

T = *8 sec*

a = *8 m/s²*

8 kgm/s

8 Ω

8 w

8

8 sec

8 N

8 m

8 A

8 m/s²

8 V

8 Hz

8 J

A car travels 88 meters in 11 seconds. Find the car's speed.
S = D/T = 88m/11sec S = 8 m/s

You travel from Maine (100 miles away) to Vermont (300 miles away), in 4 hours. Calculate your speed.
S = ΔD/ ΔT S = 200 mi/4 hr = 50 mi/hr
ΔD = 300 mi—100 mi = 200 mi

A bike goes 12 m/s for 6 seconds.
Calculate how far the bike traveled.
S = D/T
D = ST = (12 m/s)(6 sec) = 72 m

A plane stops from 300 mph in 15 seconds.
Calculate the planes acceleration.
a = ΔS/ ΔT a = -300/15 = -20 mph/sec
ΔS = - 300 mph (slowing down)

Experimental or Control Variables:

Variables that you keep the same in an experiment: *Control*

A variable that you are studying in an experiment: *Experimental*

You have only one of these: *E*

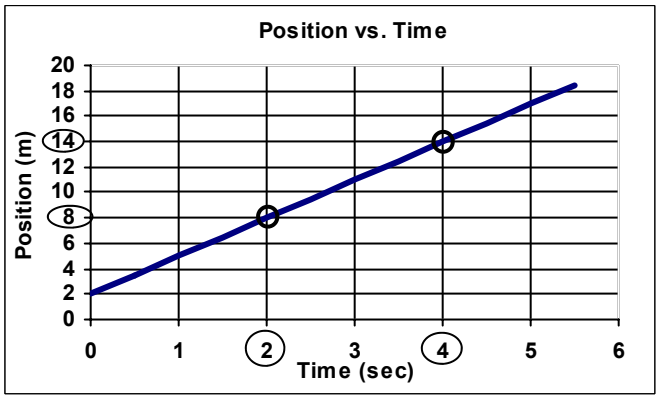
You can have many of these: *C*

You are studying how the amount of salt affects the boiling point of water.

The amount of salt would be: *E*

The type of pot used would be: *C*

The thermometer would be: *C*



Where was the object at 4 seconds? 14 meters

When did the object reach 8 meters? 2 sec

Find the slope of the graph (must show work)
slope = rise/run Δy = 14 - 8 = 6 m slope = 6m/2sec
slope = Δy/Δx Δx = 4 - 2 = 2 sec slope = 3 m/s

What does the slope you just found stand for? *m/s means speed*

If you drop a full bottle of water and an empty bottle of water, which one hits the ground first and why? *They hit at the same time; acceleration of gravity is same for all object, heavy or light.*

Name the six steps of the Scientific Method:
Research/ Question/ Hypothesis/ Experiment/ Data/ Conclusion
(Really Quiet Hypos Eat Dark Chocolate)

Name the six Simple Machines: ***SAW LIP***

Screw	*Lever*
wheel and Axle	*Incline Plane (ramp)*
Wedge	*Pulley*

If you go to another planet what would change? Weight or mass?
Because weight depends on gravity.
If you were in space what would stay the same? Weight or mass?
Your mass is your matter (your atoms) and they don't change.

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. *(equal and opp. forces)*

2 Fighter pilots feel massive amounts of force when their planes turn quickly. *(F = ma)*

1 A rolling ball hits your leg hard to stop. (*inertia*)

Using g = 10 m/s², find the weight of a 3 kg mass.
F_w = mg = (3 kg)(10 m/s²) = 30 N

A 35 kg bike accelerates at 5 m/s². With what force was the person pedaling?
F = ma = (35 kg)(5 m/s²) = 175 N

If 40 N is pushing to the right and friction is 10 N, find the net force and acceleration of a 6 kg object.
Fnet = 40 N — 10 N F = ma
Fnet = 30 N right 30 N = (6 kg) a
a = 30 N/6kg = 5 m/s²

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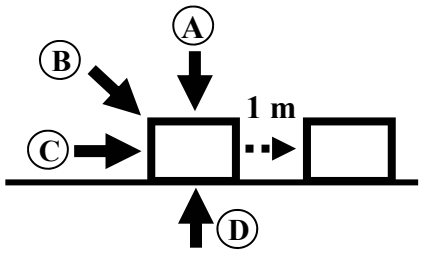
A 5 kg ball is thrown 11 m/s. Find momentum.

p = mv
p = (5kg)(11m/s) = 55 kgm/s

What is the Law of Conservation of Momentum?
Momentum is conserved in a closed system. *OR* $p_{before} = p_{after}$
(a girl on ice skates slides into a girl standing still. Afterward, the moving girl's momentum is shared by the two.)
What is the Law of Conservation of Energy? ***Never created, never destroyed, energy can only be transformed*** *(into different kinds of energy). OR* $E_{before} = E_{after}$ *If you start with 100 J, you'll end with 100 J.*
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?
B + C
Why? *A and D are not in the direction of the motion.*

1. Conduction; 2. Convection; 3. Radiation

3 __ From electromagnet radiation (light rays).

1 __ Putting your hand on a hot car.

2 __ In a pot of water.

2 __ Liquids and gases become less dense when hot and rise, causing currents.

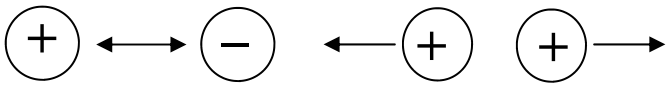
Does heat rise? *NO* What does rise? *Hot air rises*

What is thermal equilibrium? *Two objects at equal temperature.*

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

What are the charges of the second objects?

attracting repellling



What is electricity? *Moving electrons*

What is the difference between parallel and series circuits?
Parallel — multiple electricity paths/ if 1 thing off, others on
Series—only 1 path/ if 1 thing off, all things off

Where does light come from?
Electrons falling from high energy orbits to low energy orbits.

Harmonic (H), Linear (L), or Wave (W) motion?

Person running: L_	Ocean waves: W	X-rays: W
The moon: H	A swing: H	Music: W
Pendulum: H	A car moving: L	Bird flying: L

Thermal; Nuclear; Radiant; Mechanical; Chemical; Electrical

M__ An acorn in a tree.

E __ Energy from a wall power plug.

T __ Something hot.

N___ Fusion in the sun.

R___ The light of the sun.

C___ In a piece of wood.

A 8 kg cart is rolling 5 m/s. Calculate kinetic energy.
$E_k = (1/2)mv^2$ *(TAKS Chart says:* $Ek = mv^2/2$ *they are same)*
$E_k = (1/2)(8kg)(5m/s)^2$
$E_k = 4 \times 25 = 100\ J$

A 30 N rock is moved 4 meters. How much work is done?
W = Fd = 30N x 4 m = 120 J

How much energy was used to move the rock? *120 J (W = E)*
It would take 120 J of energy to do 120 J of work.
If done in 3 seconds, how much power was used?
P = W/t
P = 120J/3 sec
P = 40 watts

A 2 kg rock on a 6 meter ledge has how much potential energy?
Ep = mgh (says GPE on formula chart)
Ep = (2kg)(10m/s2)(6m)
Ep = 20 x 6 = 120 Joules

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

What's the total charge of an object with 14 electrons and 6 protons? *8 more electrons than protons, so negative 8.*

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 = IR = (2 A)(4 Ω) = 8 v

A 12 volt battery produces what current through a 6 Ω resistor?
I = V/R (from formula chart)
I = 12v/6 Ω = 2 amps