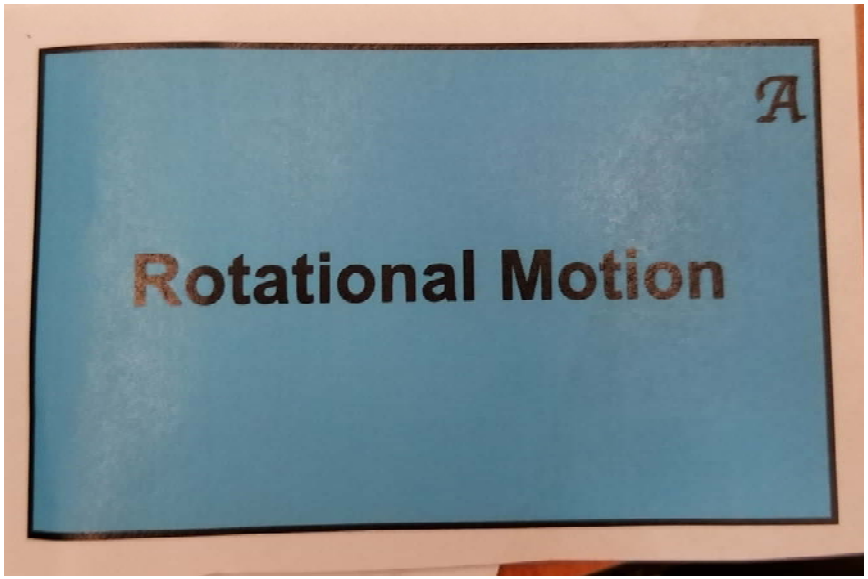
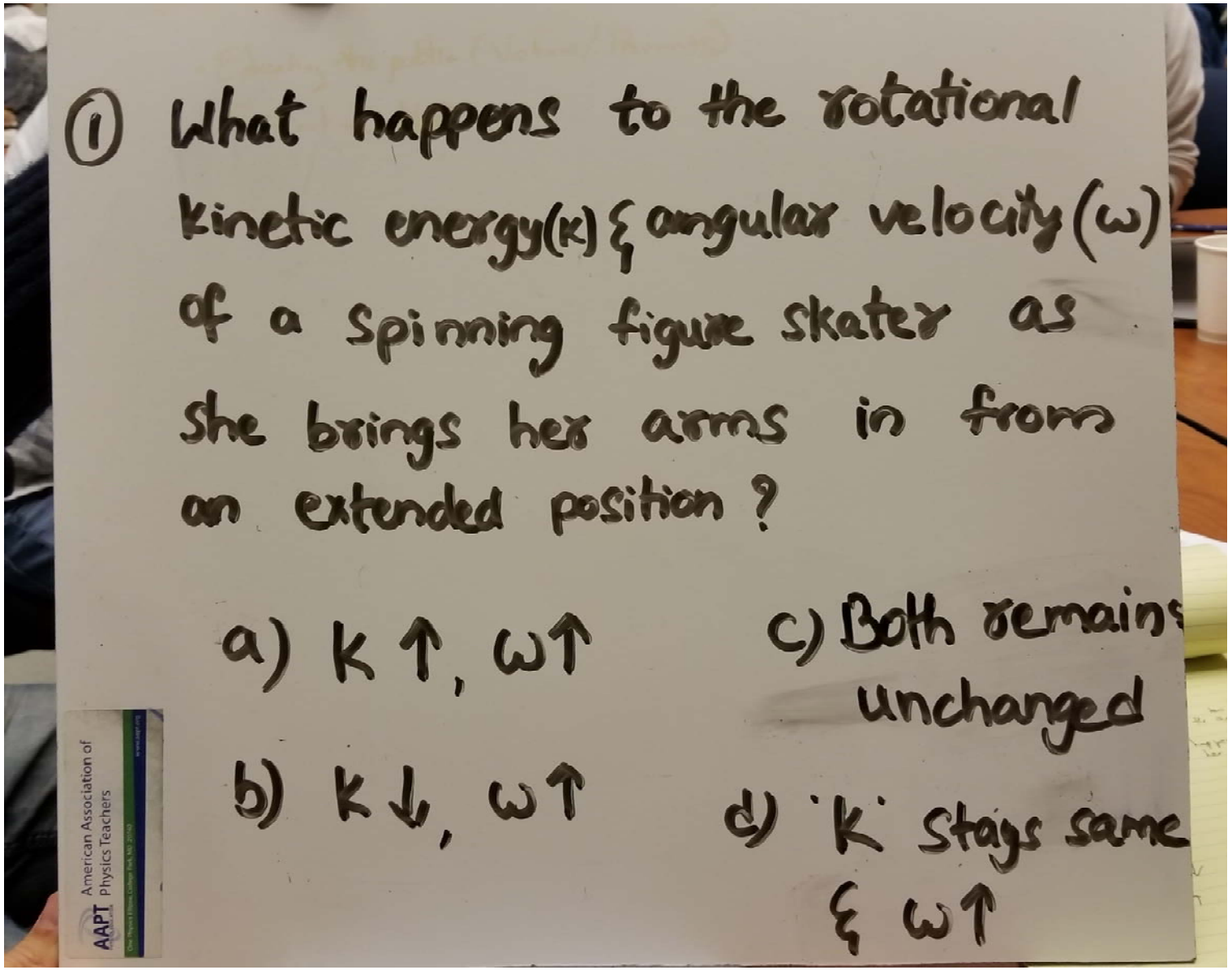
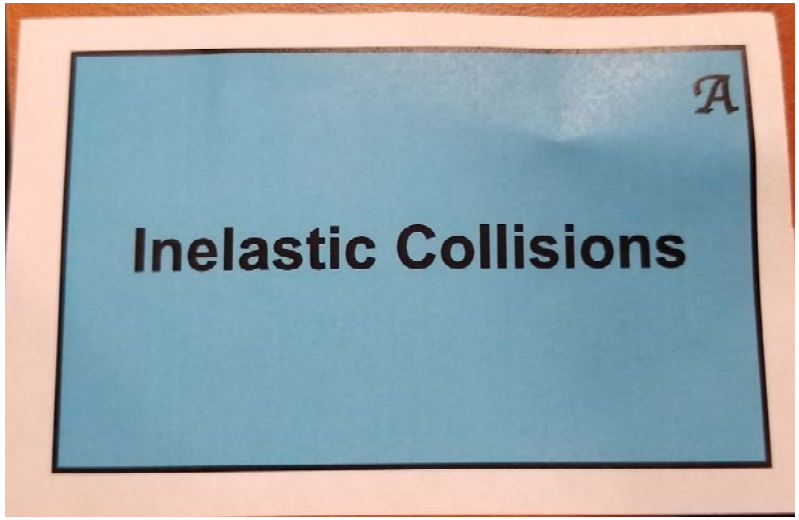
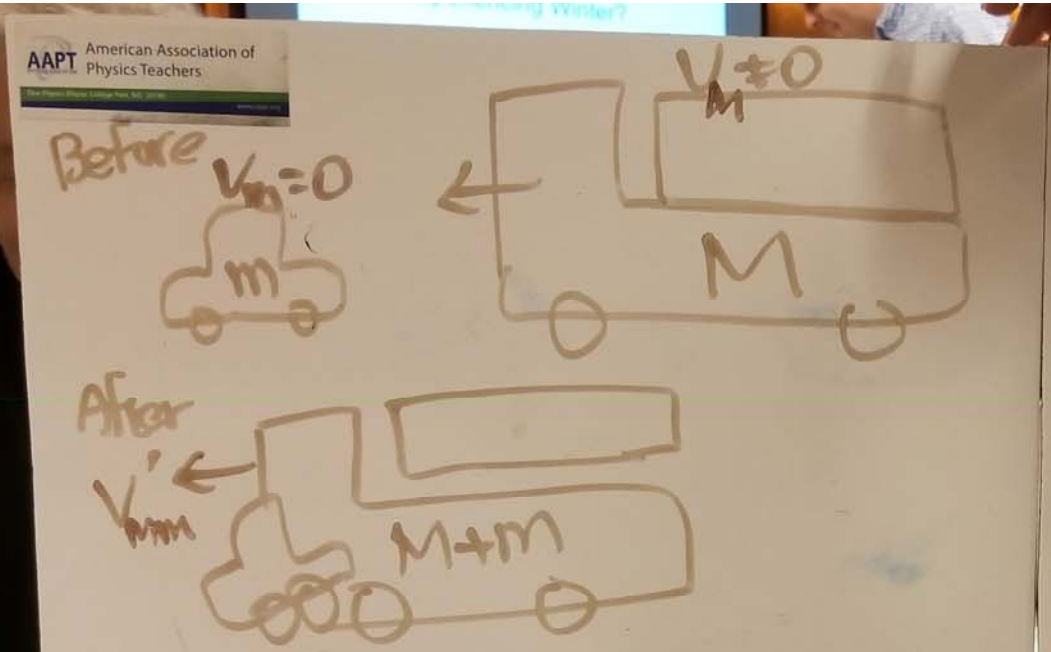

A
Rotational Motion


(1) What happens to the rotational kinetic energy(K) & angular velocity(ω) of a spinning figure skater as she brings her arms in from an extended position?
a) K ↑, ω ↑
b) K ↓, ω ↑
c) Both remains unchanged
d) 'K' stays same & ω ↑
American Association of Physics Teachers
AAPT


A
Inelastic Collisions



A truck (Mass = M) collides to a stationary sedan (mass = m) from behind with a speed V_m. After collision, they stick together. Which one is correct?

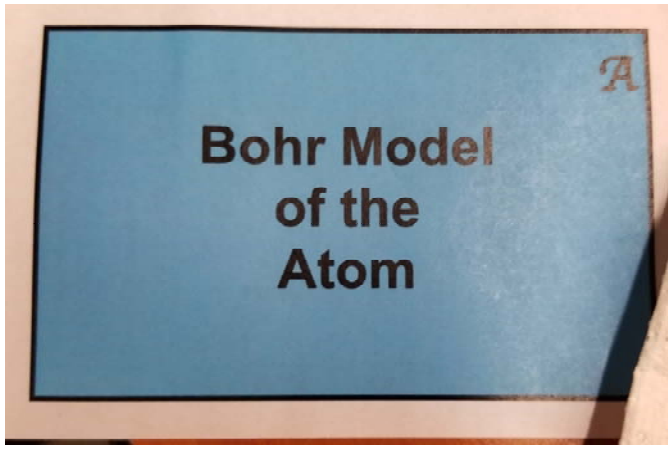
(A) $|\Delta P_M| < |\Delta P_m|$

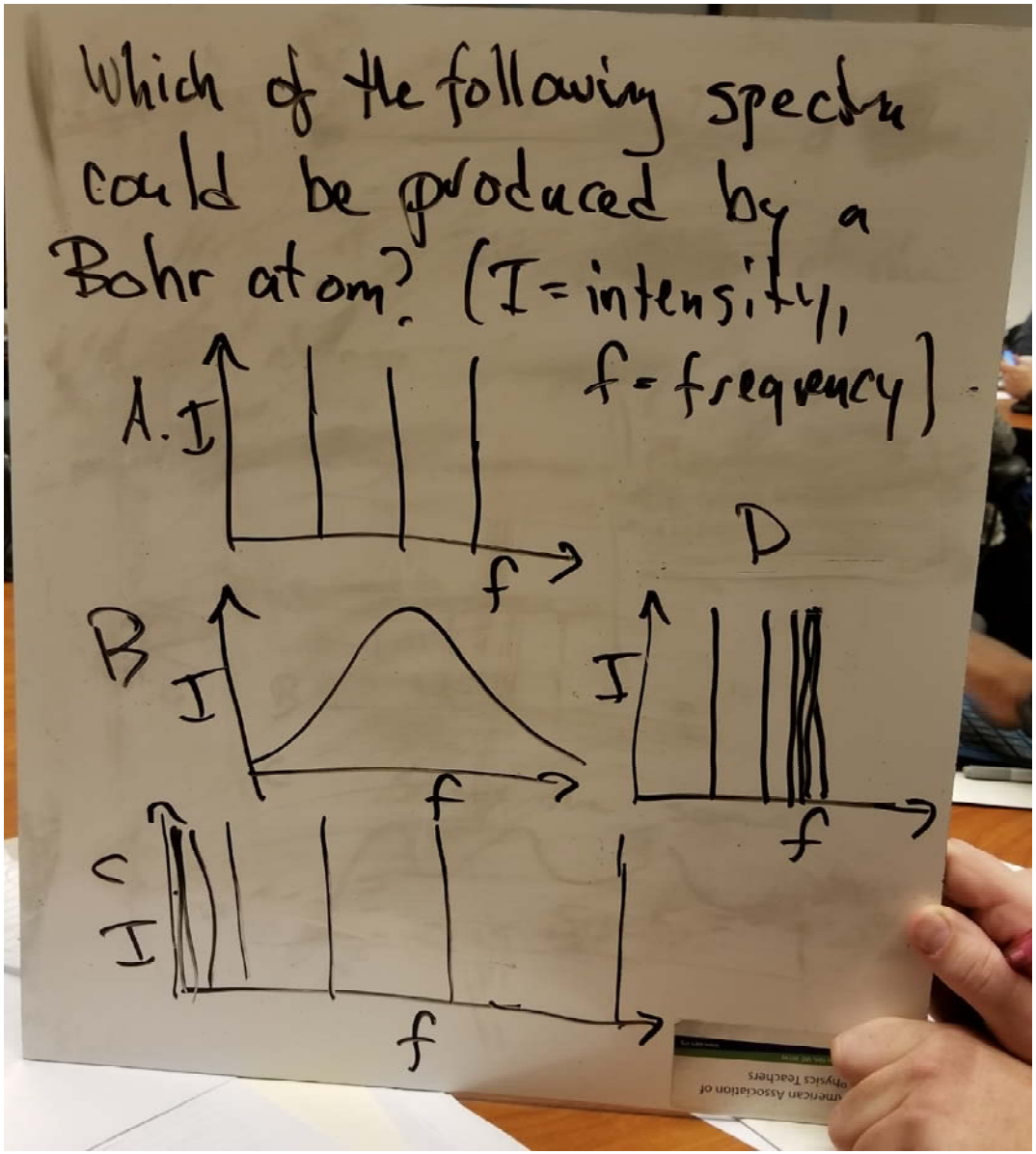
(B) $|\Delta P_M| = |\Delta P_m|$

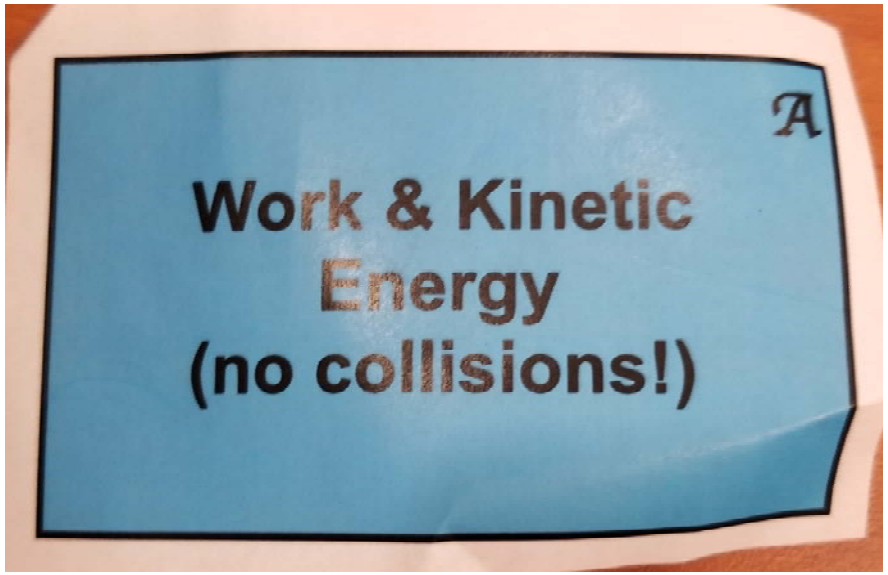
(C) $|\Delta P_M| > |\Delta P_m|$

(D) None of the above

(E) Not enough info.


A
Bohr Model
of the
Atom


Which of the following spectra could be produced by a Bohr atom? (I = intensity, f = frequency)
A.
I
f
B
I
f
C
I
f
D
I
f


A
Work & Kinetic
Energy
(no collisions!)

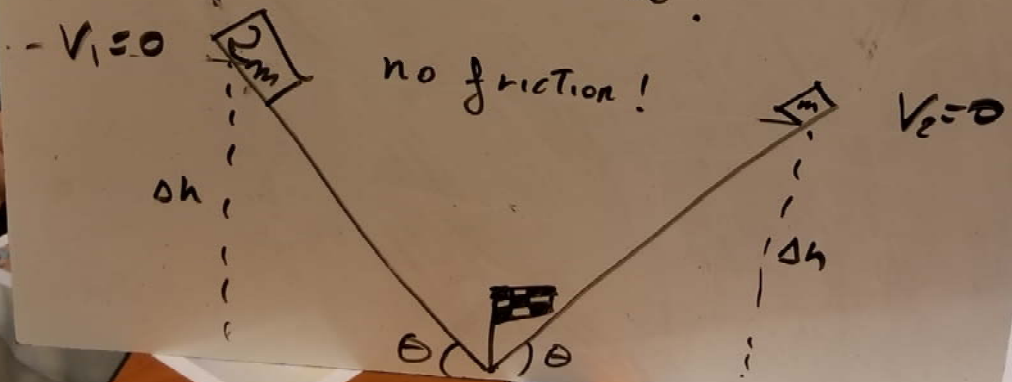
Which is correct?

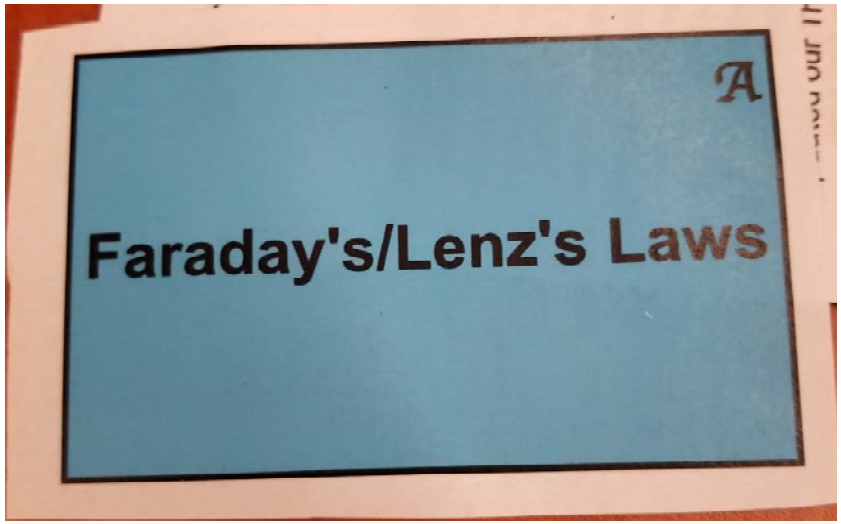
A) object with the greater K_{fin} reaches flag first

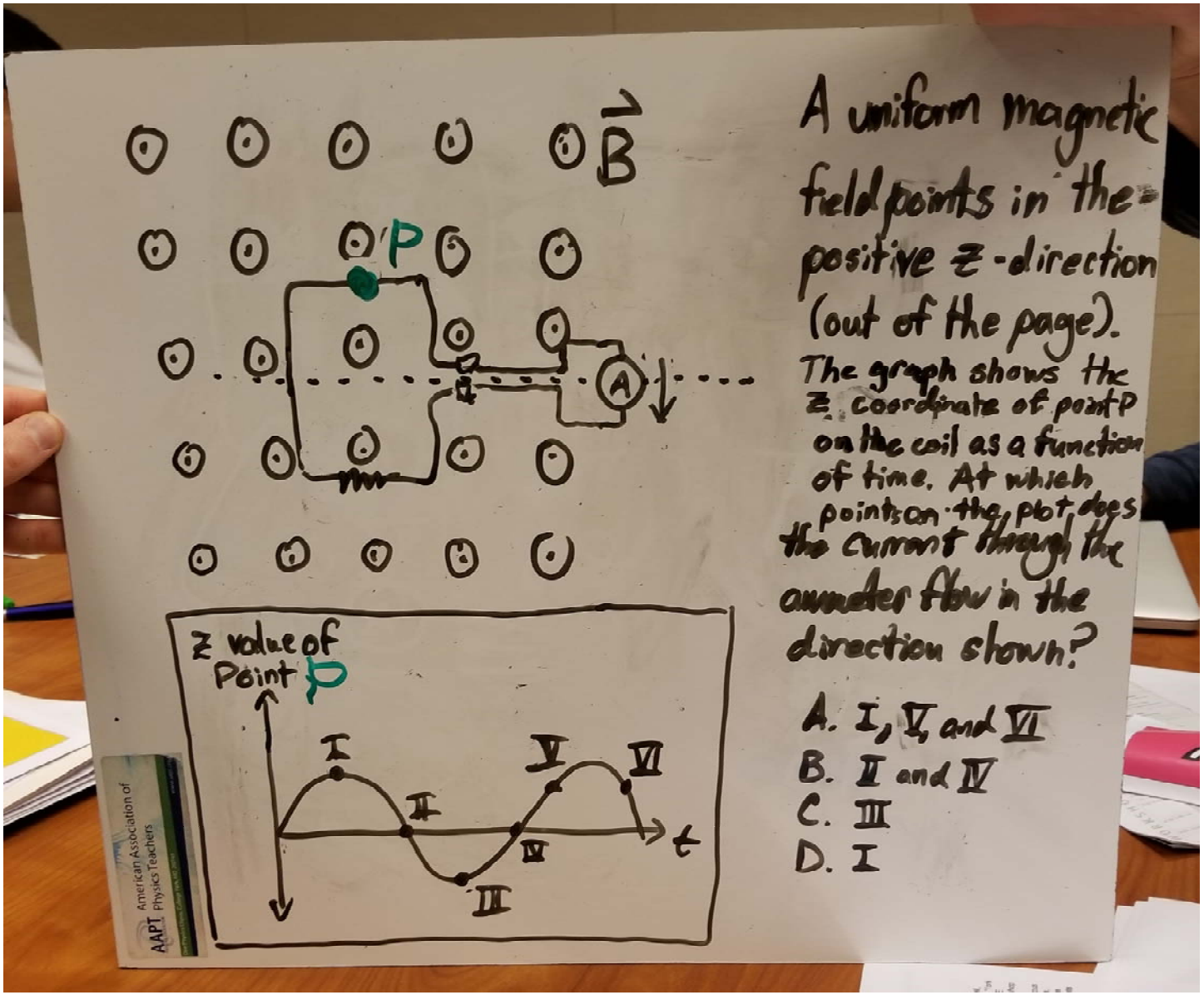
B) Gravity does the same work on both

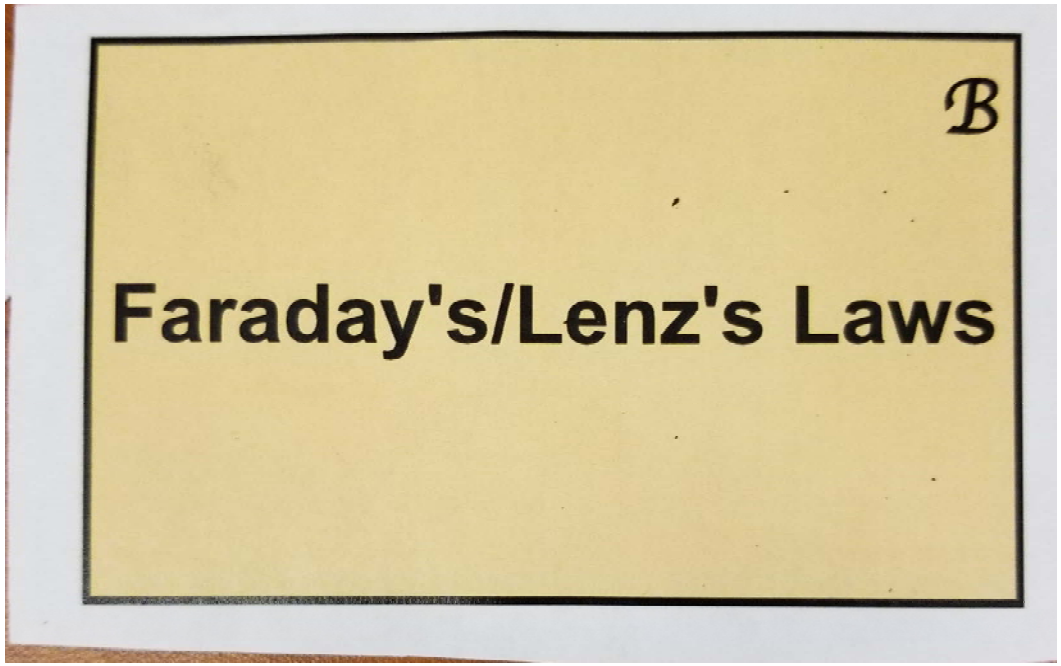
C) Gravity does less work on m

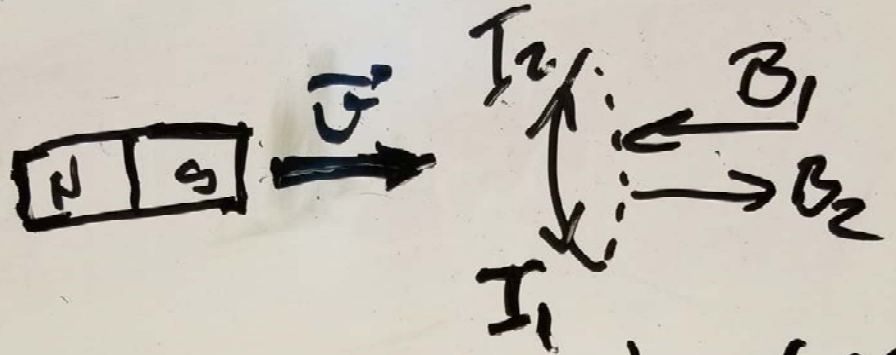
D) NONE OF THE ABOVE!




A
Faraday's/Lenz's Laws


$\vec{B}$
P
A
z value of Point P
I
II
III
IV
V
VI
t
A uniform magnetic field points in the positive z-direction (out of the page).
The graph shows the z coordinate of point P on the coil as a function of time. At which point on the plot does the current through the ammeter flow in the direction shown?
A. I, V, and VI
B. II and IV
C. III
D. I
American Association of Physics Teachers
AAPT


$\mathcal{B}$
Faraday's/Lenz's Laws



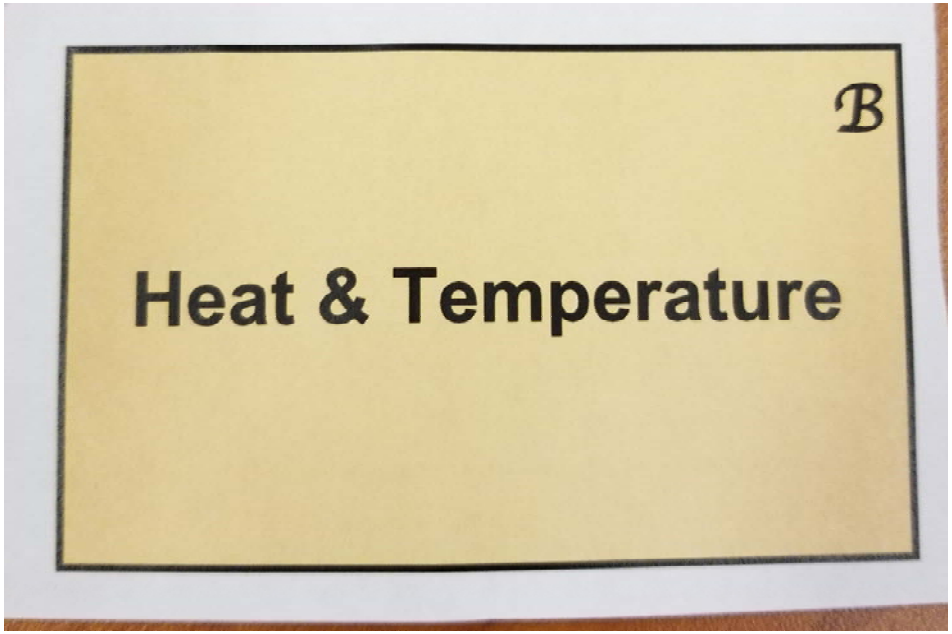
A magnet bar moves towards a closed loop as shown. Select the answer below that best describes the direction of the induced current and magnetic field.

a. I_1 & B_1

b. I_1 & B_2

c. I_2 & B_1

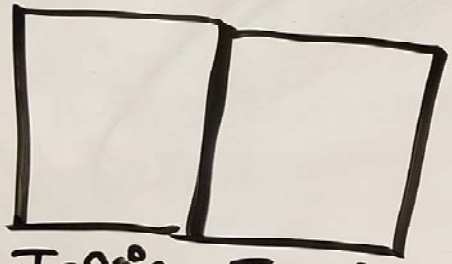
d. I_2 & B_2


B
Heat & Temperature

In how many situations below does energy flow left-to-right?

A) 1 B) 2 C) 3 D) 4 E) 0

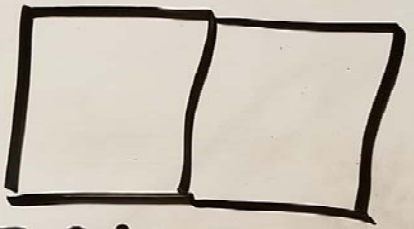
1)



$T = 80°C$ $T = 40°C$

$c = 500 \frac{J}{kg \cdot °C}$ $c = 500 \frac{J}{kg \cdot °C}$

2)



$T = 80°C$ $T = 40°C$

$c = 500 \frac{J}{kg \cdot °C}$ $c = 1200 \frac{J}{kg \cdot °C}$

3)

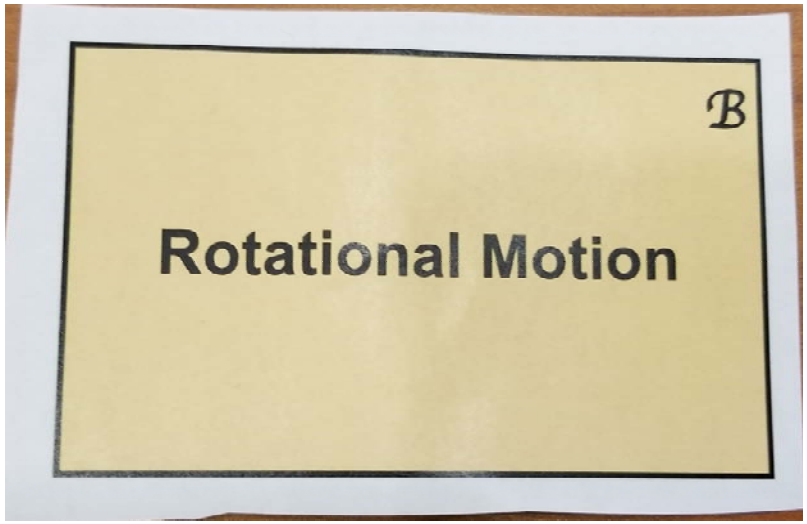
$T = 60°C$ $T = 60°C$

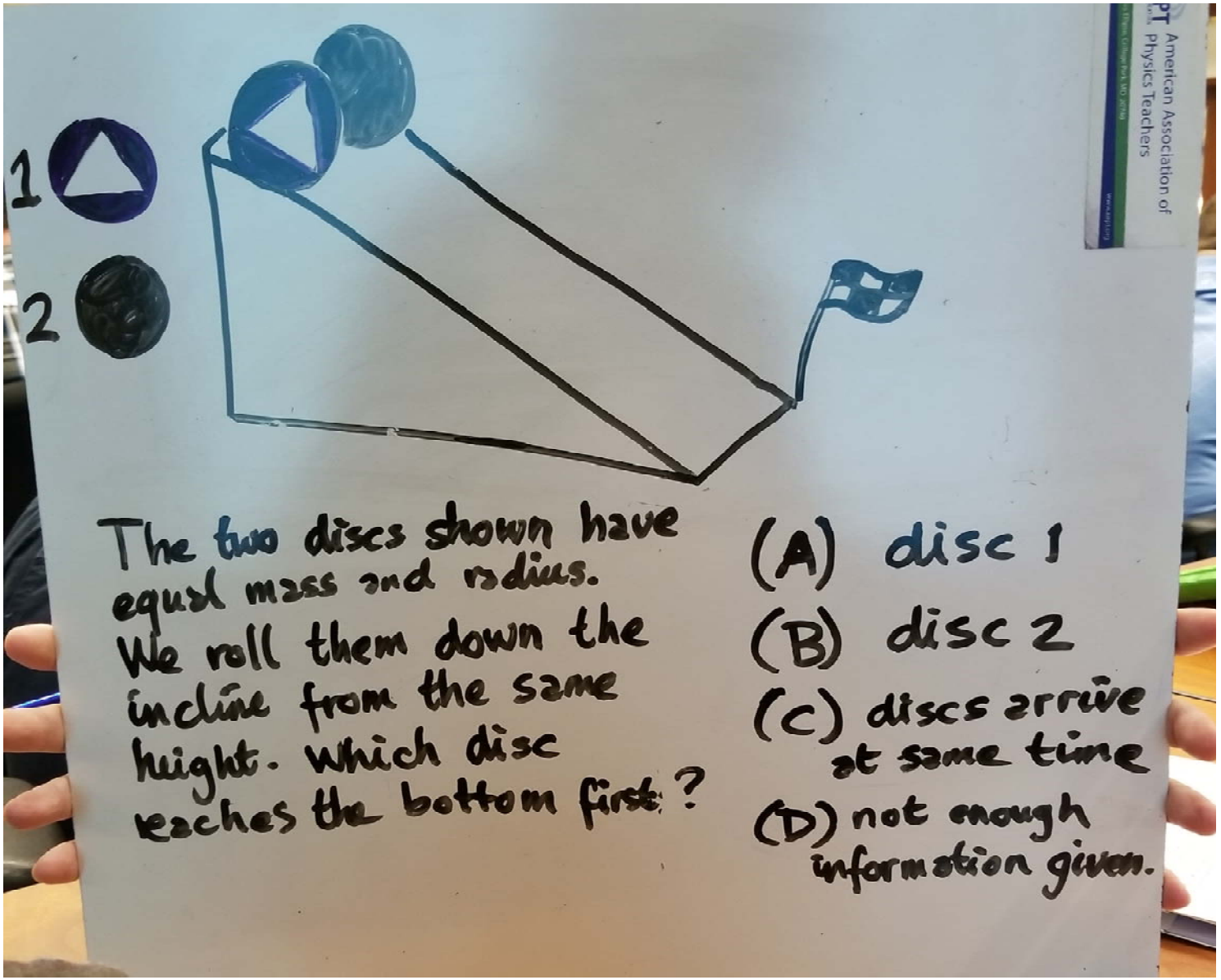
$c = 500 \frac{J}{kg \cdot °C}$ $c = 500 \frac{J}{kg \cdot °C}$

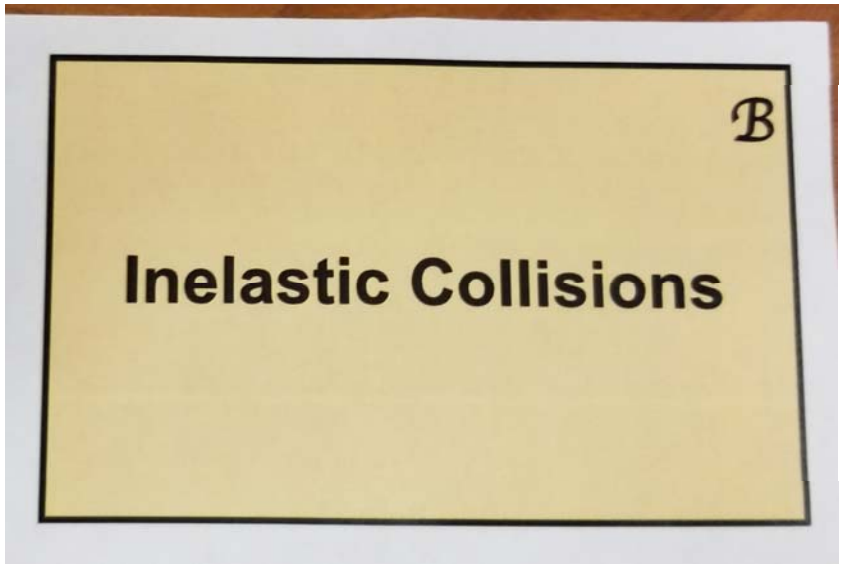
4)

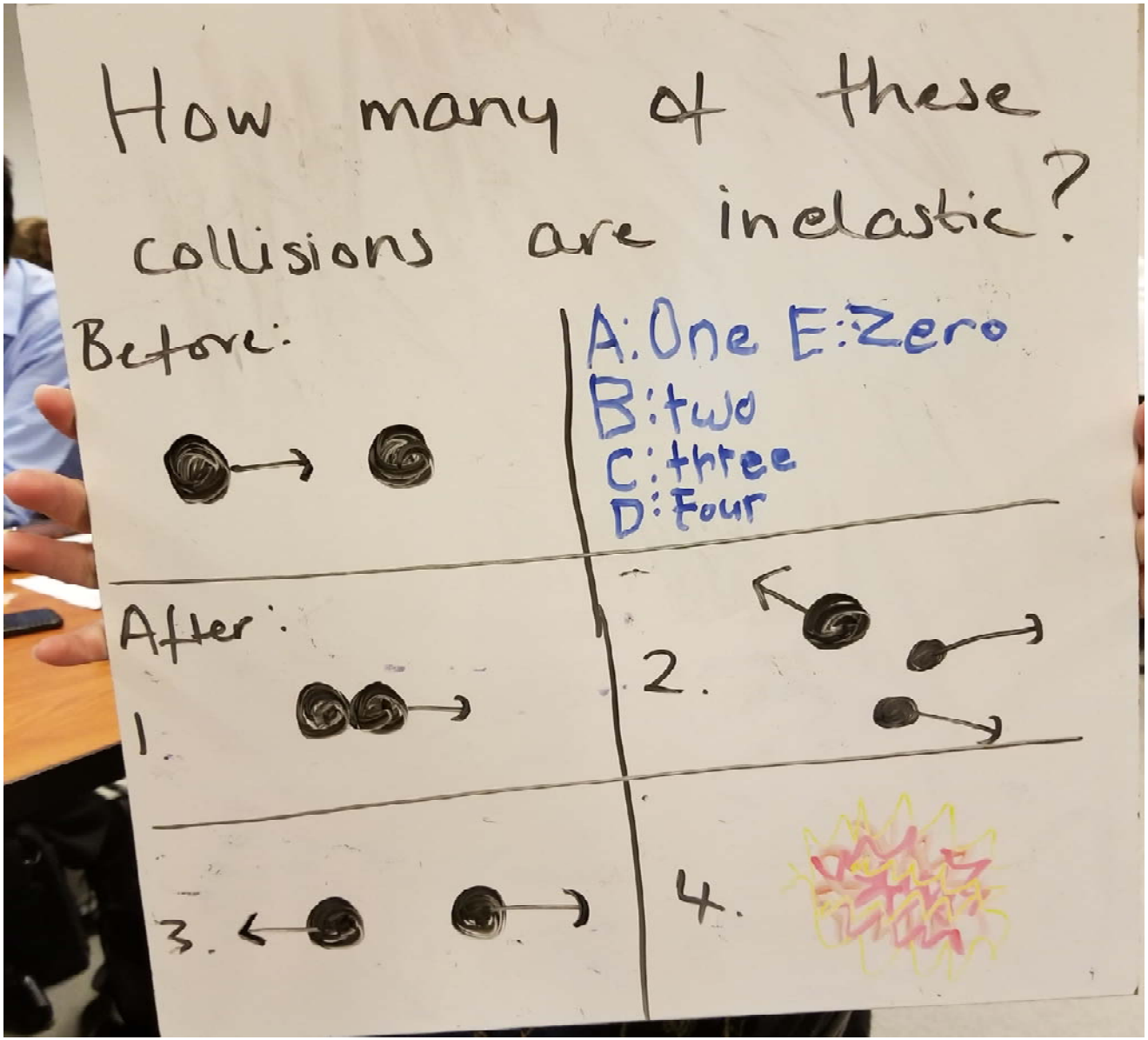
$T = 60°C$ $T = 60°C$

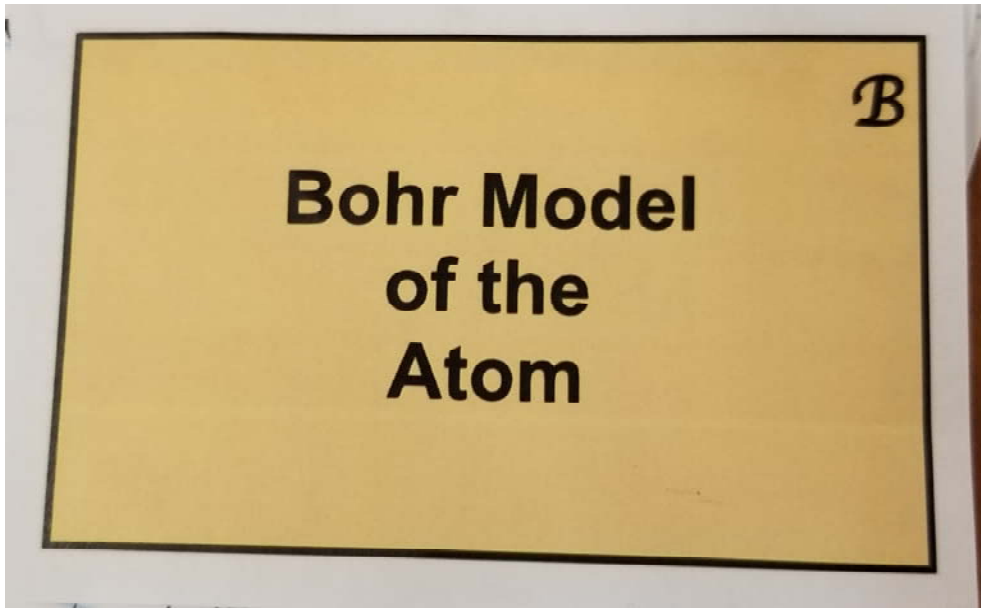
$c = 1200 \frac{J}{kg \cdot °C}$ $c = 500 \frac{J}{kg \cdot °C}$

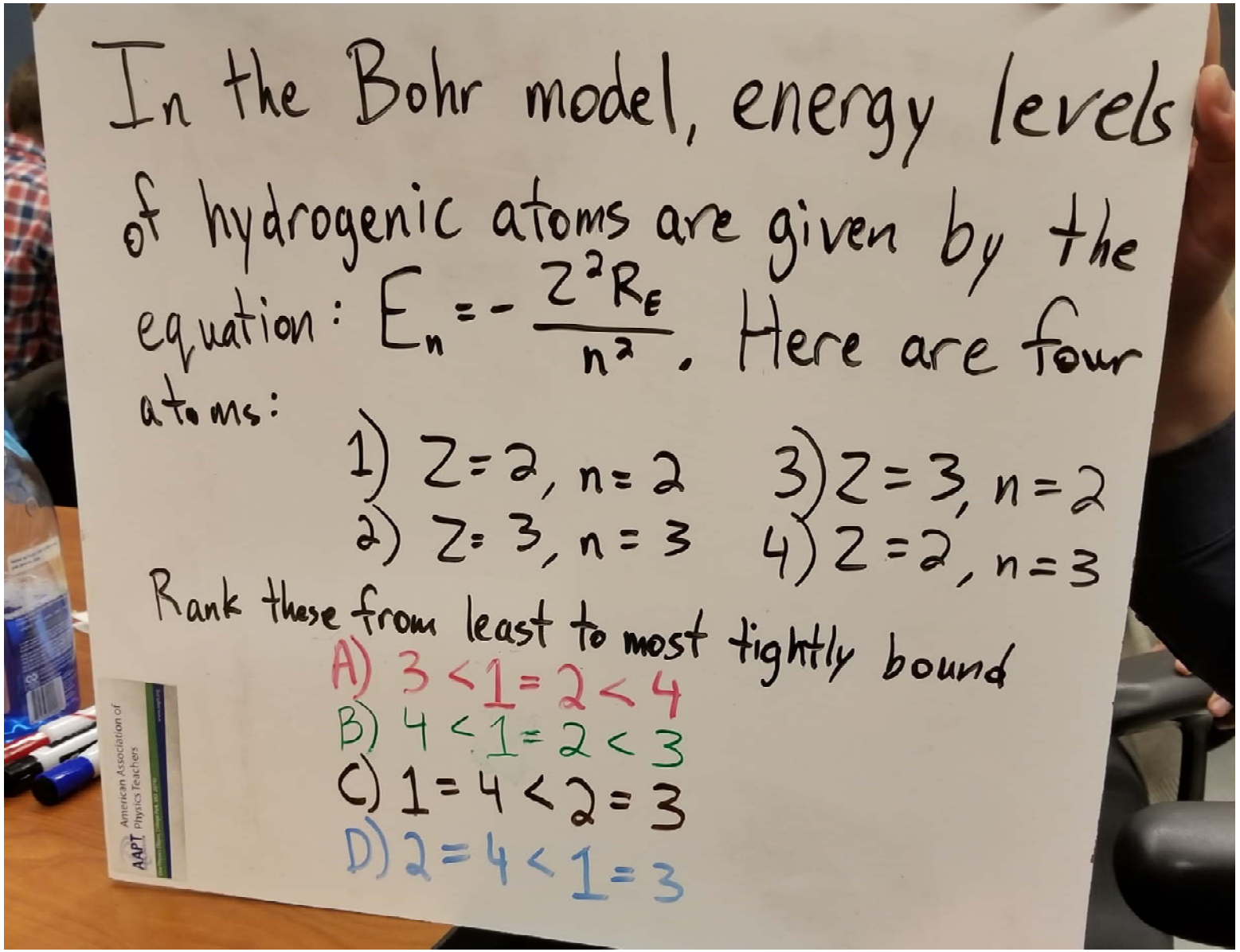

B
Rotational Motion


1
2
The two discs shown have equal mass and radius. We roll them down the incline from the same height. Which disc reaches the bottom first?
(A) disc 1
(B) disc 2
(C) discs arrive at same time
(D) not enough information given.
PT American Association of Physics Teachers


B
Inelastic Collisions

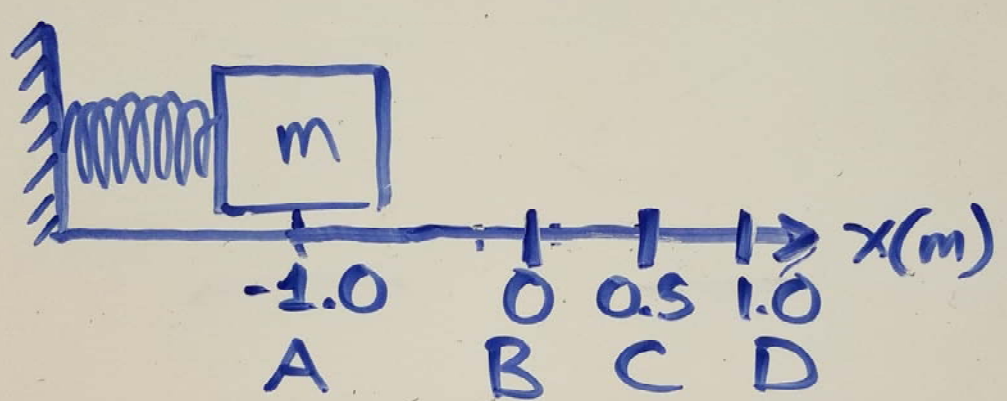

How many of these collisions are inelastic?
Before:
A: One E: Zero
B: two
C: three
D: Four
After:
1.
2.
3.
4.


B
Bohr Model
of the
Atom


In the Bohr model, energy levels of hydrogenic atoms are given by the equation: $E_n = -\frac{Z^2 R_E}{n^2}$. Here are four atoms:
1) Z=2, n=2
2) Z=3, n=3
3) Z=3, n=2
4) Z=2, n=3
Rank these from least to most tightly bound
A) 3 < 1 = 2 < 4
B) 4 < 1 = 2 < 3
C) 1 = 4 < 2 = 3
D) 2 = 4 < 1 = 3
American Association of Physics Teachers
AAPT


C
Simple
Harmonic Motion

X=0 is equilibrium point



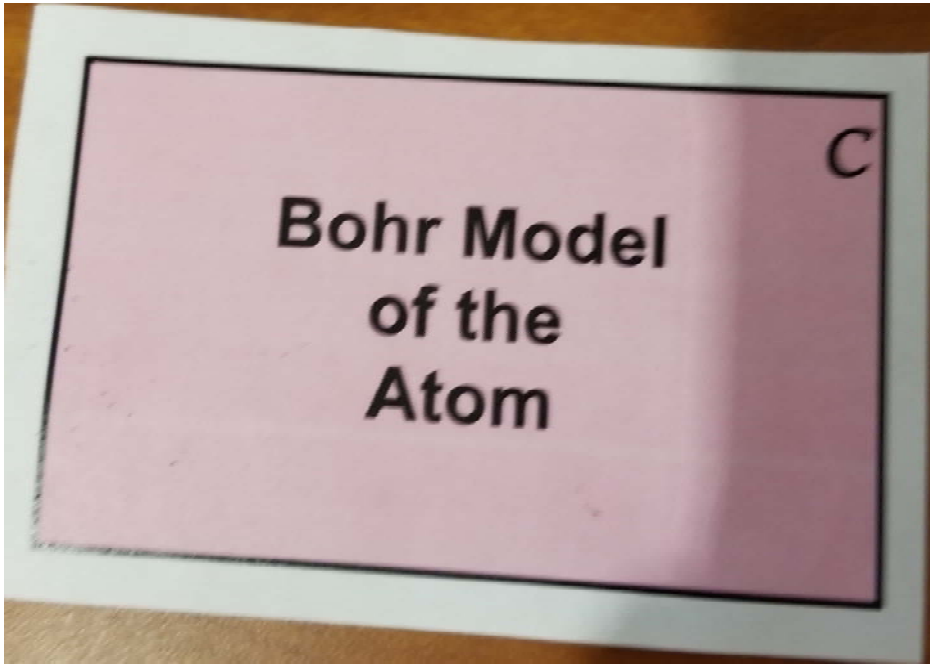
Rank the positions at which the block would spend the most time, from shortest to longest

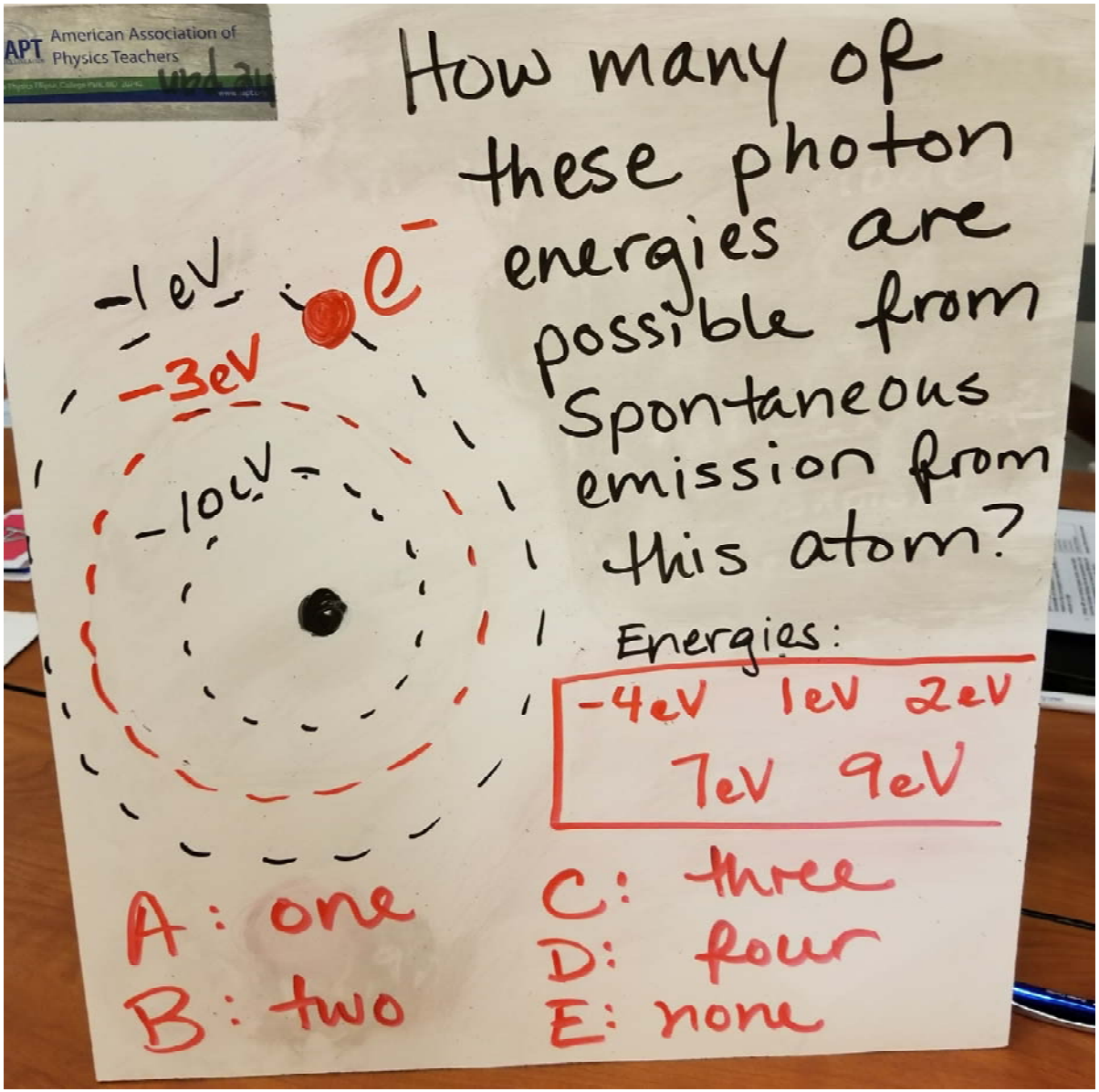
A) A=D<C<B

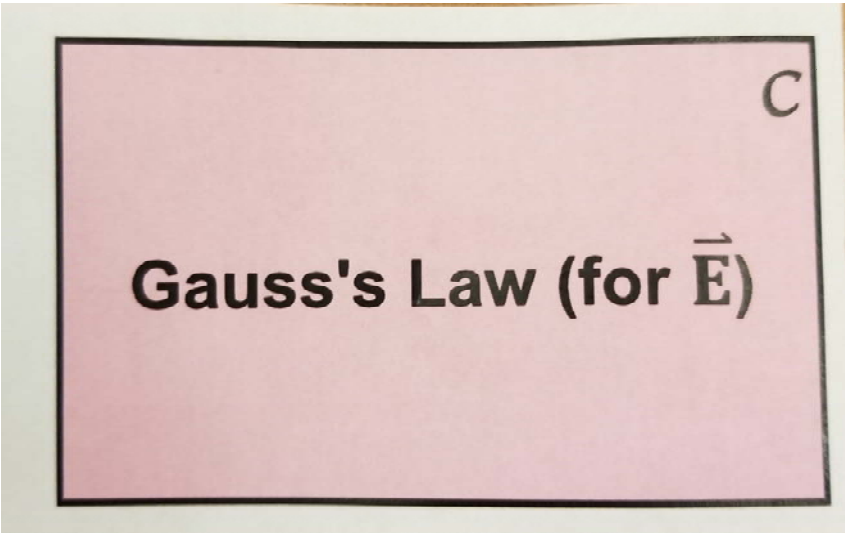
B) B<C<A=D

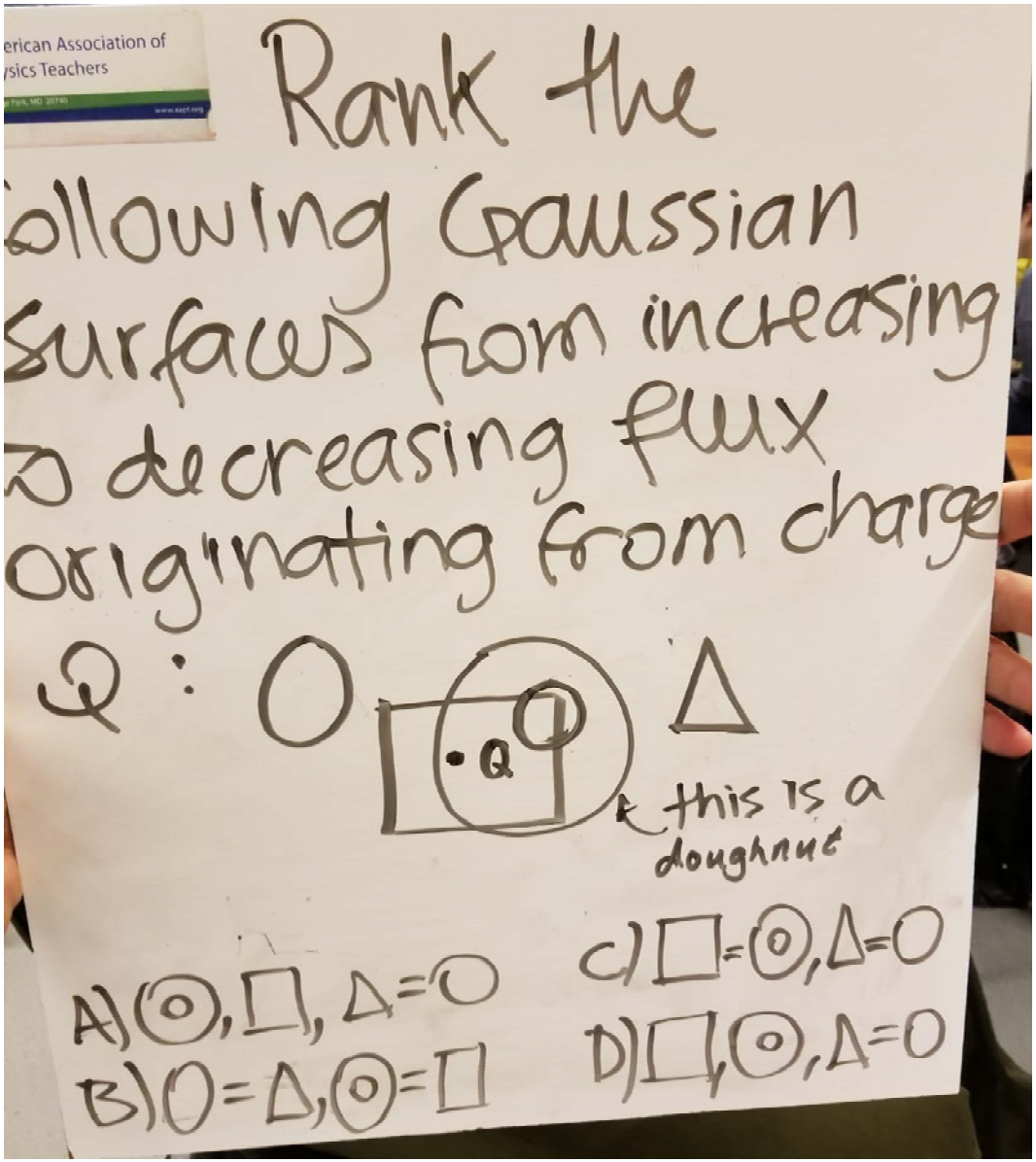
C) A>B>C>D

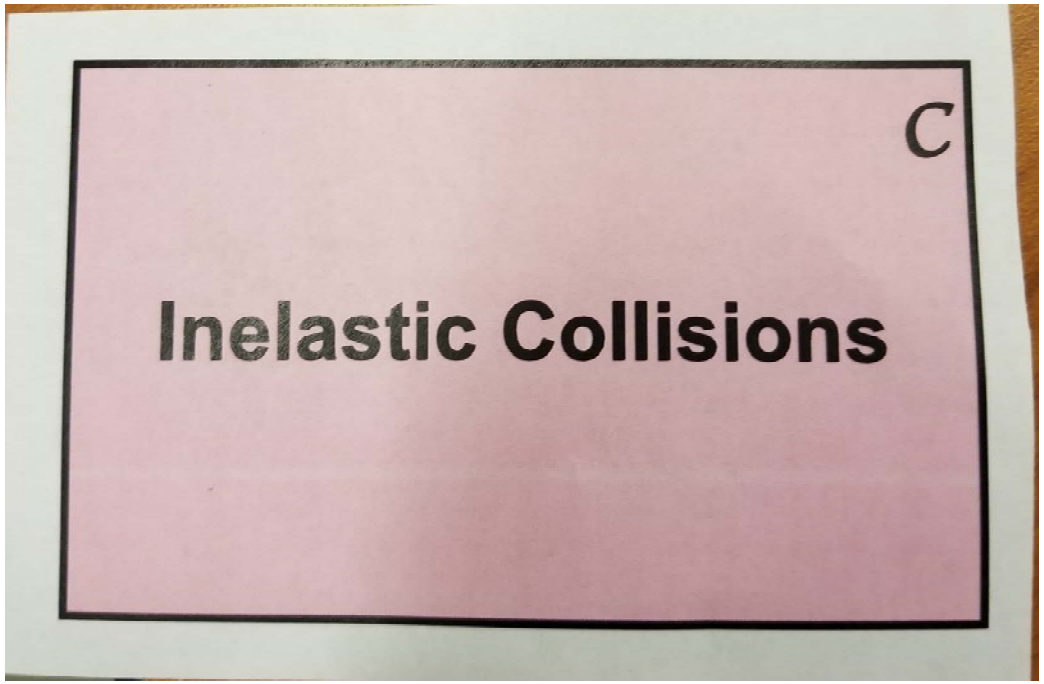
D) D>C>B>A

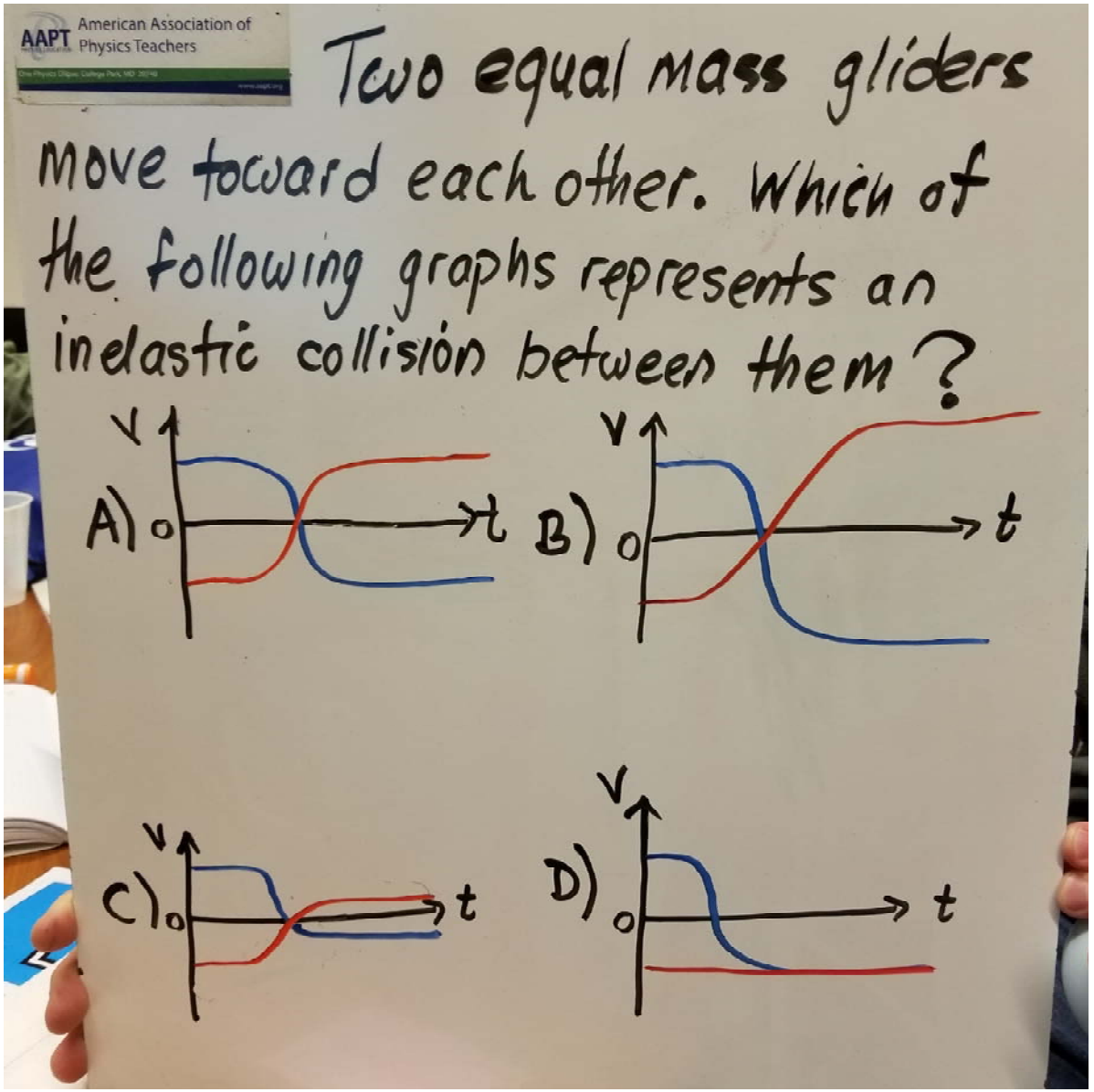

C
Bohr Model
of the
Atom

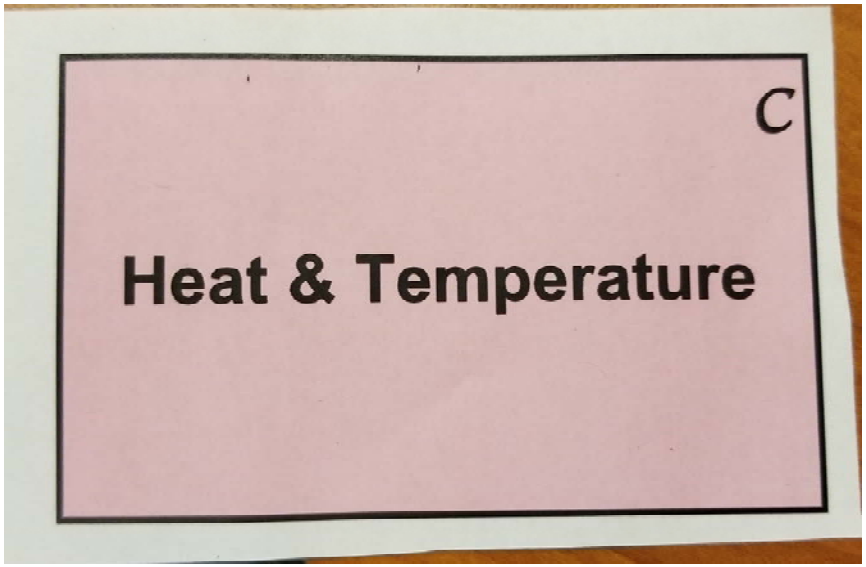

APT American Association of Physics Teachers
How many of these photon energies are possible from spontaneous emission from this atom?
-1 eV
-3eV
-10eV
e⁻
Energies:
-4eV 1eV 2eV
7eV 9eV
A: one
B: two
C: three
D: four
E: none

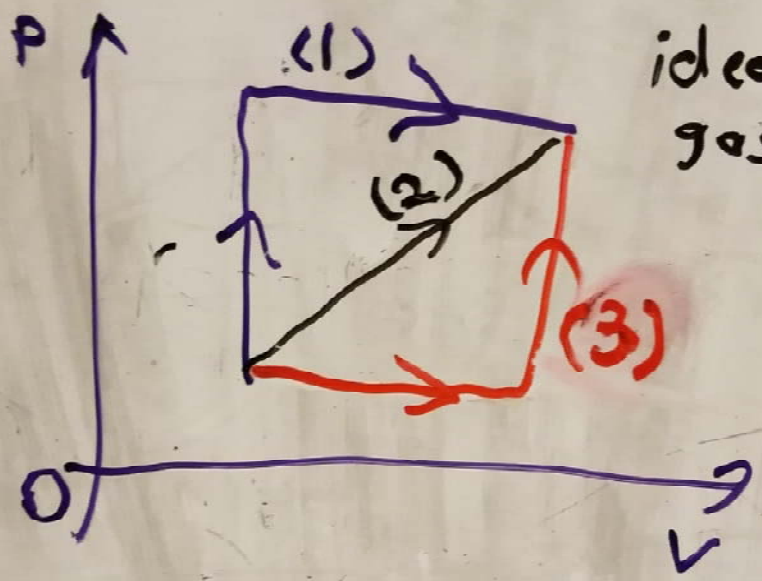

C
Gauss's Law (for $\vec{E}$)


erican Association of
ysics Teachers
Rank the
following Gaussian
surfaces from increasing
to decreasing flux
originating from charge
Q :
-Q
this is a
doughnut
A) ⊙, □, Δ = ○
B) ○ = Δ, ⊙ = □
C) □ = ⊙, Δ = ○
D) □, ⊙, Δ = ○


C
Inelastic Collisions


AAPT
American Association of Physics Teachers
Two equal mass gliders move toward each other. Which of the following graphs represents an inelastic collision between them?
A)
B)
C)
D)
v
t
0


C
Heat & Temperature



ideal gas

Path(s) ___ absorb(s) the most heat, path(s) ___ has/have the greatest temperature increase.

a) (1); (1)

b) (1)(2)(3); (1)

c) (1)(2)(3); (1)(2)(3)

d) (1); (1)(2)(3)

e) (3); (2)