

Class 4, Scaling, Forces

BIG EXAM! #1

“I think this class is going really well. Sometimes the videos go a bit fast, but I can always rewatch them. I’m getting more used to the method of identifying a lens first, but it will still take some practice before I do it instinctively.”

You were discussing:

1. Videos / Reading class prep
2. PS#1
3. Roller Coasters, Inelastic Collisions
4. Social / weekend
5. Other

Is this your first class?

Get contact information from at least two people!

Major,

Passion,

Connection to physics or concern/happiness

Need a Textbook?

Videos, Reading

Scaling, Elon Musk

Forces $\Rightarrow a, \Delta p, \Delta E$

Applying lenses!

What conservation is(n't)

Reflection: Introduced Relationships

$$F = \Delta p / \Delta t, \text{ so } \Delta p = F \Delta t$$

$$F = \Delta E / \Delta x, \text{ so } W = \Delta E = F \Delta x$$

$$E_{\text{initial}} = E_{\text{final}} \text{ doesn't mean } E_{\text{me}} = E_{\text{you}}$$

How do we use lenses?:

Identify

Support

Apply

.... Repeat?

Exercise: Two carts moving the same speed. Cart A has twice the mass of cart B, what is the ratio of their kinetic energies?:

$$E_{KA} = \underline{\quad ? \quad} E_{KB}$$

- a) $\frac{1}{2}$
- b) 1
- c) 2
- d) 4
- e) 8
- f) 16

Exercise: Two carts with the same mass.
Cart A has twice the speed of cart B , what
is the ratio of their kinetic energies?:

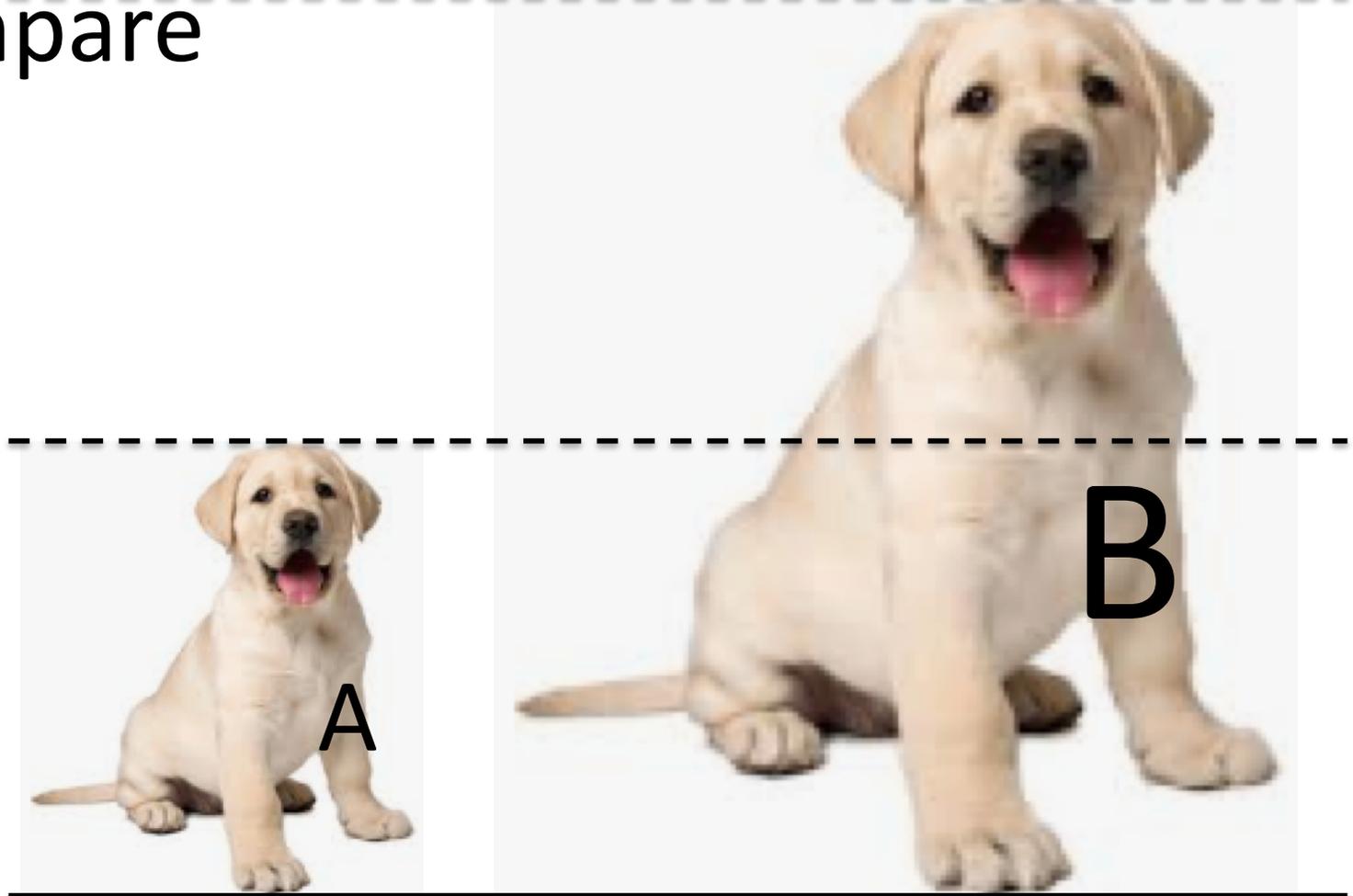
$$E_{KA} = \underline{\quad ? \quad} E_{KB}$$

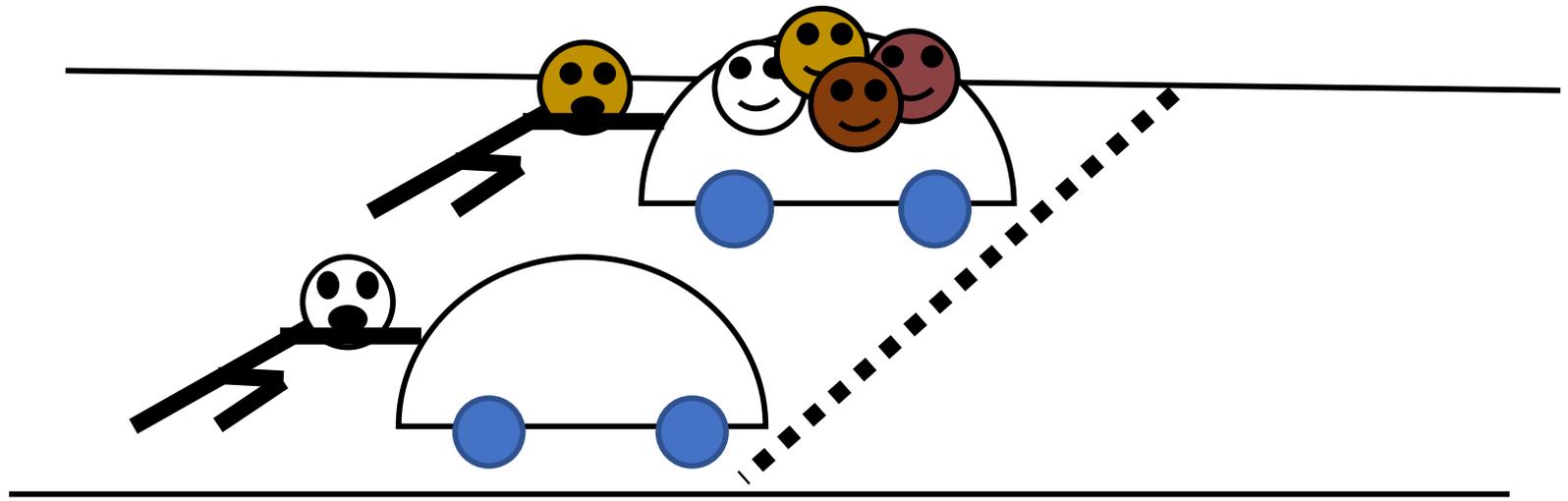
- a) $\frac{1}{2}$
- b) 1
- c) 2
- d) 4
- e) 8
- f) 16

Exercise: Two dogs are shaped exactly the same, but dog B has twice the height dog A, that is $h_B = 2h_A$. How do the dogs' masses compare

$$m_B = \underline{\quad ? \quad} m_A$$

- a) 3
- b) 1
- c) 2
- d) 4
- e) 8
- f) 16





After we push for 10 s, compare
Energy; Momentum.

Big Exam!

Success in this class:

- How do you watch a video?
- Work with your friends
- Textbook is short and simple: Read it
- Hand in completed HW