

Question 1

Consider the PhET Energy Skate Park animation with the ramp followed by a straight section. Suppose that we use for the total energy,

$$E = KE + PE$$

in cases involving friction as well as no friction.

Which of the following is true regarding the case where the skater descends a track with friction?

1. The total energy as defined remains constant.
2. The total energy as defined decreases.
3. The total energy as defined increases.
4. Whether the total energy decreases or increases depends on the amount of friction present.

Question 2

Skaters with different masses slide down the same track, starting from the same high point. The energies at the low point of the ramp are listed below.

Skater	PE at top	KE at bottom
Dog	100 J	80 J
Cat	50 J	35 J

Which produces the most waste energy?

1. Dog
2. Cat
3. Same

Question 3

Skaters with different masses slide down the same track, starting from the same high point. The energies at the low point of the ramp are listed below.

Skater	PE at top	KE at bottom
Dog	100 J	80 J
Cat	50 J	35 J

Which converts the largest fraction of its input energy into useful output energy?

1. Dog
2. Cat
3. Same