Question 1

Consider the skater sliding on the track in the PhET animation.

As the skater ascends, which of the following is true?

1. KE is converted into PE.
2. PE is converted into KE.
3. The amount of each type of energy is unaltered.

Question 2

Kenneth and Penelope are stuck on a deserted island. Initially Kenneth has $\$100$ in cash and Penelope has $\$200$. To pass the time they exchange money and at a later stage they check their amounts.

Date	KEnneth	PEnelope
Initially	$\$100$	$\$200$
Later	??	$\$150$

What can Penelope conclude at the later stage ?

1. She is certain Kenneth has $\$100$.
2. She is certain Kenneth has $\$150$.
3. She is certain Kenneth has $\$200$.
4. She does not know how much Kenneth has.

Question 3

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 4

Skaters (dog or cat) 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	$100\,\mathrm{J}$	$80\,\mathrm{J}$
Cat	$50\,\mathrm{J}$	$35\,\mathrm{J}$

Which produces the most waste energy?

1. Dog
2. Cat
3. Same

Question 5

Skaters (dog or cat) 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	$100\,\mathrm{J}$	$80\,\mathrm{J}$
Cat	$50\,\mathrm{J}$	$35\,\mathrm{J}$

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

1. Dog
2. Cat
3. Same