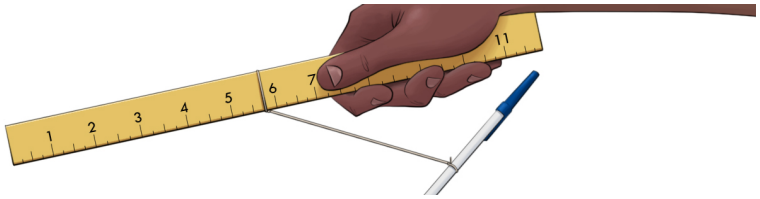
Self Check 3.4

Due No due date **Points** 6 **Questions** 6 **Time limit** None
Allowed attempts Unlimited

Instructions



This exercise will help you check your knowledge. Please take it as many times as you need to master the concepts. Select the best answer for each question.

Print out the energy bar graphs by clicking on the link below. Fill in the graphs for each question, then use them to calculate the answers.

To open and print the energy bar graphs, click **here** (http://ce.byu.edu/courses/hs/PHYS-041-101/secure/energy_bar_graphs.htm) .

To check if your graphs are correct, click **here** (http://ce.byu.edu/courses/hs/PHYS-041-101/secure/energy_bar_graphs2.htm) .

Take the quiz again

Attempt history

	Attempt	Time	Score
KEPT	Attempt 2	10 minutes	6 out of 6
LATEST	Attempt 2	10 minutes	6 out of 6
	Attempt 1	1,433 minutes	0 out of 6

ⓘ Correct answers are hidden.

Score for this attempt: **6** out of 6

Submitted 28 Mar 2019 at 10:11
This attempt took 10 minutes.

Question 1

1 / 1 pts

A 10 kg box is up against a spring (if spring constant 400 N/m) which is compressed 1.5 m. When a trigger is pulled, the spring launches the box straight upward. How high will it go?

- 9 m
- 4.5 m
- 3 m
- 47 m

Feedback: ½ $kx^2 = mgh$
½ $(400)(1.5^2) = (10)(10)(h)$
$450 = 100\ h$
$4.5 = h$

Question 2

1 / 1 pts

A 65 kg skydiver jumps from a height of 250 m and lands with a speed of 10 m/s. How much energy was dissipated?

- 13,000 J
- 155,750 J
- 250,000 J

159,250 J

Feedback: mgh = ½ mv² E-diss
(65)(10)(250) = ½ (65)(10²) E-diss
162,250 = 3250 E-diss
159,250 = E-diss

Question 3

1 / 1 pts

A 100 kg cart moving at 12 m/s slams into an emergency safety spring, and compresses the spring 4 m. What is the spring constant of the spring?

75 N/m

800 N/m

3600 N/m

900 N/m

Feedback: ½ mv² = ½ kx²
½ (100)(12²) = ½ (k)(4²)
7200 = 8k
900 = k

Question 4

1 / 1 pts

A 1 kg hockey puck is moving at 10 m/s across the ice. At the other end of the ice rink, its speed is measured at 9.2 m/s. If the puck traveled 60 m, how much friction force acted on the puck? (assume the friction force was constant the whole time).

- 0.53 N
- 0.54 N
- 0.64 N
- 0.128 N

Feedback: ½ mv^2initial = ½ mv^2final Ff d
½ (1)(10^2) = ½ (1)(9.2^2) (Ff)(60)
50 = 43.32 (Ff)(60)
7.68 = (Ff)(60)
0.128 = Ff

Question 5

1 / 1 pts

A 0.2 kg block is moving at 15 m/s on a flat surface. If the block comes upon a hill and moves 10 m up the hill before it stops, how much energy was dissipated by friction?

- 2.5 J
- 20.5 J
- 25 J
- 0.76 J

Feedback: ½ mv²initial = mgh E-diss
½ (0.20)(15²) = (0.20)(10)(10) E-diss
22.5 = 20 E-diss
2.5 = E-diss

Question 6

1 / 1 pts

A rock is dropped from the top of a 15 m tall building. How fast is it moving just before it strikes the ground? (Notice that you don't need to know the mass to solve this problem because it cancels out of the equation.)

- 300 m/s
- 17.3 m/s
- 20 m/s
- 20 m/s

Feedback: mgh = ½ mv² (Start with an energy bar graph, then write out the equation.)
(10)(15) = ½ v² (Divide both sides by m, canceling out the mass.)
150 = ½ v²
v = 17.3 m/s

Quiz score: **6** out of 6