Quiz 6

Chapter 07, Concept Question 02

Figure (*a*) shows two horizontal forces that act on a block that is sliding to the right across a frictionless floor. Figure (*b*) shows three plots of the block's kinetic energy *K* versus time *t*. Which of the plots best corresponds to the following three situations:

(a) $F_1 = F_2$, **(b)** $F_1 > F_2$, **(c)** $F_1 < F_2$?

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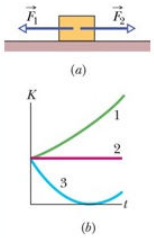


(a) $F_1 = F_2$ 2

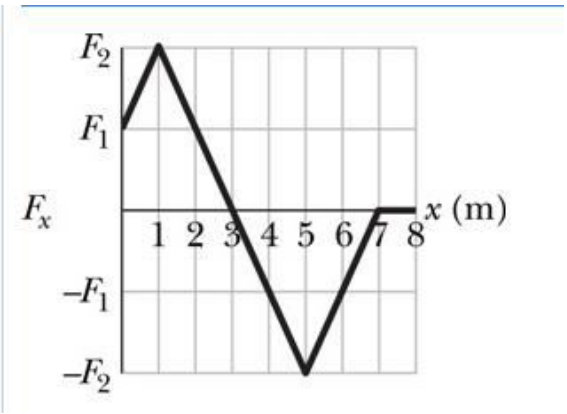
(b) $F_1 > F_2$ 3

(c) $F_1 < F_2$ 1

1. plot 1
2. plot 2
3. plot 3

Chapter 07, Concept Question 06

The figure gives the *x* component F_x of a force that can act on a particle. The particle begins at rest at $x = 0$.



(a) What is its coordinate when it has its greatest kinetic energy?
3m

(b) What is its coordinate when it has its greatest speed?
3m

(c) What is its coordinate when it has zero speed?
6m

(d) What is the particle's direction of travel after it reaches $x = 6$ m?
motionless

Chapter 07, Concept Question 09

Spring *A* is stiffer than spring *B* ($k_A > k_B$).

(a) **The spring force of which spring does more work if the springs are compressed the same distance?**

A

(b) **The spring force of which spring does more work if the springs are compressed by the same applied force?**

B

(a) The spring force of which spring does more work if the springs are compressed the same distance?

- A
- B
- A and B do equal work.

Your answer is correct.

(b) The spring force of which spring does more work if the springs are compressed by the same applied force?

- A
- B
- A and B do equal work.

Chapter 07, Concept Question 11

In three situations, a single force acts on a moving particle. Here are the velocities (at that instant) and the forces: (1) $\vec{v} = \left(-4\hat{i}\right)\text{m/s}, \ \vec{F} = \left(6\hat{i} - 20\hat{j}\right)\text{N}$; (2) $\vec{v} = \left(2\hat{i} - 3\hat{j}\right)\text{m/s}, \ \vec{F} = \left(-2\hat{j} + 7\hat{k}\right)\text{N}$; (3) $\vec{v} = \left(-3\hat{i} + \hat{j}\right)\text{m/s}, \ \vec{F} = \left(2\hat{i} + 6\hat{j}\right)\text{N}$. Rank the situations according to the rate at which energy is being transferred, greatest transfer to the particle ranked first, greatest transfer from the particle ranked last.

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- 1, 2, 3
- 1, 3, 2
- 3, 2, 1
- 2, 1, 3
- 3, 1, 2
- 2, 3, 1

Chapter 07, Concept Question 12

The figure shows three arrangements of a block attached to identical springs that are in their relaxed state when the block is centered as shown. Rank the arrangements according to the magnitude of the net force on the block, largest first, when the block is displaced by distance *d* **(a)** to the right and **(b)** to the left. Rank the arrangements according to the work done on the block by the spring forces, greatest first, when the block is displaced by *d* **(c)** to the right and **(d)** to the left.

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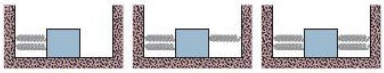

(a) 3 , 2 , 1

(b) 3 , 2 , 1

(c) 3 , 2 , 1

(d) 3 , 2 , 1