Mechanics

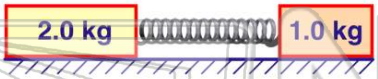
Phys Sci

Name _____ Class _____ Date _____

1 The following diagram represents two objects at rest on a frictionless horizontal surface with a spring compressed between them. When the compressed spring is released, the two objects are pushed apart.

What **kinetic energy** does the 2.0 kg object have after gaining a velocity of **5.0 meters per second**?

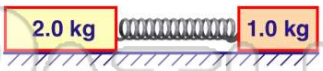
A 25 J
B 20 J
C 10 J
D 5.0 J



2 The following diagram represents two objects at rest on a frictionless horizontal surface with a spring compressed between them. When the compressed spring is released, the two objects are pushed apart.

What is the **total momentum** of the two-object system after the expansion of the spring?

A 20 kg-mg/s
B 10 kg-mg/s
C 5.0 kg-mg/s
D 0 kg-mg/s



3 The following diagram represents two objects at rest on a frictionless horizontal surface with a spring compressed between them. When the compressed spring is released, the two objects are pushed apart.

What is the **velocity** of the 2.0-kilogram object after being acted on by **10 newton-seconds of impulse**?

4 The following diagram represents two objects at rest on a frictionless horizontal surface with a spring compressed between them. When the compressed spring is released, the two objects are pushed apart.

If the 1.0 kg object receives an impulse of -20 N-s, what **impulse** does the **2.0 kg** object receive?

PREVIEW

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5

C force and displacement
D mass and velocity

7

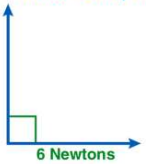
A 0.50 m/s
B 2.0 m/s
C 3.0 m/s
D 18 m/s

9 A freely falling object near the Earth's surface travels downward at a **constant**

A acceleration of 1.00 m/s^2
B acceleration of 9.81 m/s^2
C velocity of 1.00 m/s
D velocity of 9.81 m/s

10 A resultant force of **10 newtons** is made up of two component forces acting at right angles to each other. If the magnitude of one of the components is **6.0 newtons**, the **magnitude** of the other component must be

A 16 N
B 8.0 N
C 6.0 N
D 4 N



ANSWER KEY

The following diagram represents two objects at rest on a frictionless horizontal surface with a spring compressed between them. When the compressed spring is released, the two objects are pushed apart.

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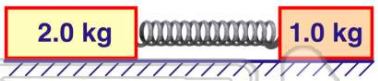

a

The following diagram represents two objects at rest on a frictionless horizontal surface with a spring compressed between them. When the compressed spring is released, the two objects are pushed apart.

What is the **total momentum** of the two-object system after the expansion of the spring?

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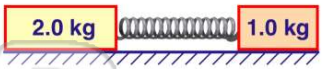
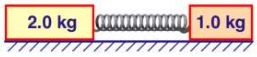
B 10 kg-mg/s
C 5.0 kg-mg/s
D 0 kg-mg/s



d

The following diagram represents two objects at rest on a frictionless horizontal surface with a spring compressed between them. When the compressed spring is released, the two objects are pushed apart.

What is the **velocity** of the 2.0-kilogram object after being acted on by **10 newton-seconds of impulse**?

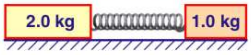


A 1.0 m/s **C** 5.0 m/s
B

c

The following diagram represents two objects at rest on a frictionless horizontal surface with a spring compressed between them. When the compressed spring is released, the two objects are pushed apart.

If the 1.0 kg object receives an impulse of -20 N-s, what **impulse** does the **2.0 kg** object receive?



A 0 N-s **C** +10 N-s

d

D mass and velocity

B 2.0 m/s
C 3.0 m/s
D 18 m/s

A freely falling object near the Earth's surface travels downward at a **constant**

A acceleration of 1.00 m/s^2
B acceleration of 9.81 m/s^2
C velocity of 1.00 m/s
D velocity of 9.81 m/s

b

A resultant force of **10 newtons** is made up of two component forces acting at right angles to each other. If the magnitude of one of the components is **6.0 newtons**, the **magnitude** of the other component must be

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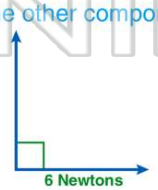

b