



Name _____ Class _____ Date _____

1 When a force moves an object over a **rough, horizontal surface** at a constant velocity, the **work done against friction** produces an **increase** in the object's

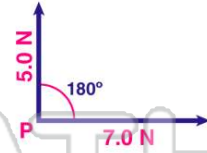
- A weight
- B momentum
- C potential energy
- D internal energy

3 A **5.0-newton force** could have **perpendicular components** of

- A 1.0 N and 4.0 N
- B 2.0 N and 3.0 N
- C 3.0 N and 4.0 N
- D 5.0 N and 5.0 N

2 A **5.0-newton force** and a **7.0-newton force** act concurrently on a point. As the angle between the forces is **increased** from **0° to 180°**, the **magnitude of the resultant** of the two forces changes from

- A 0.0 N to 12.0 N
- B 2.0 N to 12.0 N
- C 12.0 N to 2.0 N
- D 12.0 N to 0.0 N



4 The spring in a scale in the produce department of a supermarket **stretches 0.025 meter** when a watermelon weighing **1.0×10^2 newtons** is placed on the scale. The **spring constant** for this spring is

- A 3.2×10^5 N/m
- B 4.0×10^3 N/m



5



PREVIEW

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7

- A 3.75 J
- B 7.50 J
- C 15.0 J
- D 30.0 J

- A 2.0 m/s east
- B 2.0 m/s west
- C 10 m/s east
- D 10 m/s west



9

Compared to the **force** needed to **start sliding** a crate across a rough level floor, the **force** needed to **keep it sliding once it is moving** is

- A less
- B greater
- C the same

10

A **400-newton girl** standing on a dock exerts a **force of 100 newtons** on a **10,000-newton sailboat** as she pushes it away from the dock. **How much force does the sailboat exert on the girl?**

- A 25 N
- B 100 N
- C 400 N
- D 10,000 N





ANSWER KEY

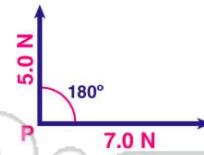
When a force moves an object over a **rough, horizontal surface** at a constant velocity, the **work done against friction** produces an **increase** in the object's

- A weight
- B momentum
- C potential energy
- D internal energy

(d)

A **5.0-newton force** and a **7.0-newton force** act concurrently on a point. As the angle between the forces is **increased from 0° to 180°**, the **magnitude of the resultant** of the two forces changes from

- A 0.0 N to 12.0 N
- B 2.0 N to 12.0 N
- C 12.0 N to 2.0 N
- D 12.0 N to 0.0 N



(c)

A **5.0-newton force** could have **perpendicular components** of

- A 1.0 N and 4.0 N
- B 2.0 N and 3.0 N
- C 3.0 N and 4.0 N
- D 5.0 N and 5.0 N

(c)

The spring in a scale in the produce department of a supermarket **stretches 0.025 meter** when a watermelon weighing 1.0×10^2 **newtons** is placed on the scale. The **spring constant** for this spring is

- A 3.2×10^5 N/m
- B 4.0×10^3 N/m
- C 2.5 N/m



(b)



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- A 5.75 J
- B 7.50 J
- C 15.0 J
- D 30.0 J

- B 2.0 m/s west
- C 10 m/s east
- D 10 m/s west



Compared to the **force** needed to **start sliding** a crate across a rough level floor, the **force** needed to **keep it sliding once it is moving** is

- A less
- B greater
- C the same

(a)

A **400-newton girl** standing on a dock exerts a **force of 100 newtons** on a **10,000-newton sailboat** as she pushes it away from the dock. **How much force does the sailboat exert on the girl?**

- A 25 N
- B 100 N
- C 400 N
- D 10,000 N



(b)