Measurements and Calculations

Phys Sci

Name _____ Class _____ Date _____

1 A 1,200-kilogram car traveling at 10 meters per second hits a tree and is brought to rest in 0.10 second. What is the magnitude of the **average force** acting on the **car** to bring it to rest?

A 1.2×10^2 N
B 1.2×10^3 N
C 1.2×10^4 N
D 1.2×10^5 N

2 A spring scale reads 20 newtons as it pulls a 5.0-kilogram mass across a table. What is the **magnitude of the force** exerted by the mass on the **spring scale**?

A 49 N
B 20 N
C 5.0 N
D 4.0 N

3 A vector makes an angle, θ, with the horizontal. The **horizontal** and **vertical** components of the vector will be **equal** in magnitude if **angle θ** is

A 30°
B 45°

4 Projectile *A* is launched horizontally at a speed of 20 meters per second from the top of a cliff and strikes a level surface below, 3.0 seconds later. Projectile *B* is launched horizontally from the same location at a speed of 30 meters per second.

The **time** it takes projectile *B* to reach the level surface is

5 P
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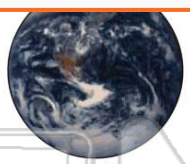
A
B

7

A 0.00 N
B 2.00×10^2 N
C 1.60×10^3 N
D 3.20×10^3 N



A 2.6 m
B 5.1 m
C 13 m
D 25 m

9 What is the **average power** developed by a motor as it lifts a 400-kilogram mass at constant speed through a vertical distance of 10.0 meters in 8.0 seconds?

A 320 W
B 500 W
C 4,900 W
D 32,000 W

10 If a **deuterium nucleus** has a mass of 1.53×10^{-3} universal mass units **less** than its components, this mass represents an **energy** of

A 1.38 MeV
B 1.42 MeV
C 1.53 MeV
D 3.16 MeV

ANSWER KEY

A 1,200-kilogram car traveling at 10 meters per second hits a tree and is brought to rest in 0.10 second. What is the magnitude of the **average force** acting on the **car** to bring it to rest?

A 1.2×10^2 N
B 1.2×10^3 N
C 1.2×10^4 N
D 1.2×10^5 N

d

A spring scale reads 20 newtons as it pulls a 5.0-kilogram mass across a table. What is the **magnitude of the force** exerted by the mass on the **spring scale**?

A 49 N
B 20 N
C 5.0 N
D 4.0 N

b

A vector makes an angle, θ, with the horizontal. The **horizontal** and **vertical** components of the vector will be **equal** in magnitude if **angle** θ is

A 30°
B 45°
C 60°
D [illegible]

b

Projectile *A* is launched horizontally at a speed of 20 meters per second from the top of a cliff and strikes a level surface below, 3.0 seconds later. Projectile *B* is launched horizontally from the same location at a speed of 30 meters per second.

The **time** it takes projectile *B* to reach the level surface is

A 4.5 s **C** 3.0 s

c

B 2.00×10^2 N
C 1.60×10^3 N
D 3.20×10^3 N

B 5.1 m
C 13 m
D 25 m

What is the **average power** developed by a motor as it lifts a 400-kilogram mass at constant speed through a vertical distance of 10.0 meters in 8.0 seconds?

A 320 W
B 500 W
C 4,900 W
D 32,000 W

c

If a **deuterium nucleus** has a mass of 1.53×10^{-3} universal mass units **less** than its components, this mass represents an **energy** of

A 1.38 MeV
B 1.42 MeV
C 1.53 MeV
D 3.16 MeV

b