



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 An object is dropped from rest and falls freely **20 meters** to Earth. When is the **speed of the object 9.8 meters per second**?

A during the entire first second of its fall  
 B at the end of its first second of fall  
 C during its entire time of fall  
 D after it has fallen 9.8 meters

2 A golf ball is hit at an angle of **45°** above the horizontal. What is the **acceleration** of the golf ball at the **highest point** in its trajectory? [Neglect friction.]

A 9.8 m/s<sup>2</sup> upward  
 B 9.8 m/s<sup>2</sup> downward  
 C 6.9 m/s<sup>2</sup> horizontal  
 D 0.0 m/s<sup>2</sup>



3 At the circus, a **100-kilogram** clown is fired at **15 meters per second** from a **500-kilogram** cannon. What is the **recoil speed** of the cannon?

A 75 m/s  
 B 15 m/s



4 A ball is thrown horizontally at a speed of **24 meters per second** from the top of a cliff. If the ball hits the ground **4.0 seconds** later, **approximately how high** is the cliff?

A 6.0 m  
 B 39 m



5

**PREVIEW**

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7 wagon during this 3.0-second interval?

A 0.83 m/s<sup>2</sup>    C 3.0 m/s<sup>2</sup>  
 B 2.2 m/s<sup>2</sup>    D 3.8 m/s



10 A projectile is fired with an initial **velocity of 120 meters per second** at an angle,  $\theta$ , above the horizontal. If the projectile's initial horizontal **speed is 55 meters per second**, then **angle  $\theta$**  measures approximately

A 13°  
 B 27°  
 C 63°  
 D 75°



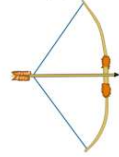
9 Which is a **scalar quantity**?

A acceleration  
 B momentum  
 C speed  
 D displacement



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A 13°  
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## ANSWER KEY

An object is dropped from rest and falls freely **20 meters** to Earth. When is the **speed of the object 9.8 meters per second?**

- A** during the entire first second of its fall
- B** at the end of its first second of fall
- C** during its entire time of fall
- D** after it has fallen 9.8 meters

(b)

A golf ball is hit at an angle of **45°** above the horizontal. What is the **acceleration** of the golf ball at the **highest point** in its trajectory? [Neglect friction.]

- A** 9.8 m/s<sup>2</sup> upward
- B** 9.8 m/s<sup>2</sup> downward
- C** 6.9 m/s<sup>2</sup> horizontal
- D** 0.0 m/s<sup>2</sup>

(b)



At the circus, a **100-kilogram** clown is fired at **15 meters per second** from a **500-kilogram** cannon. What is the **recoil speed** of the cannon?

- A** 75 m/s
- B** 15 m/s
- C** 3.0 m/s

(c)

A ball is thrown horizontally at a speed of **24 meters per second** from the top of a cliff. If the ball hits the ground **4.0 seconds** later, **approximately how high** is the cliff?

- A** 6.0 m
- B** 39 m
- C** 78 m

(c)



## PREVIEW

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- A** 0.83 m/s<sup>2</sup>
- B** 2.2 m/s<sup>2</sup>

- C** 3.0 m/s<sup>2</sup>
- D** 3.8 m/s



- B** 2.0 s
- C** 4.1 s
- D** 8.2 s



Which is a **scalar quantity**?

- A** acceleration
- B** momentum
- C** speed
- D** displacement



(c)

A projectile is fired with an initial **velocity of 120 meters per second** at an angle,  $\theta$ , above the horizontal. If the projectile's initial horizontal **speed is 55 meters per second**, then **angle  $\theta$**  measures approximately

- A** 13°
- B** 27°
- C** 63°
- D** 75°

(c)

