

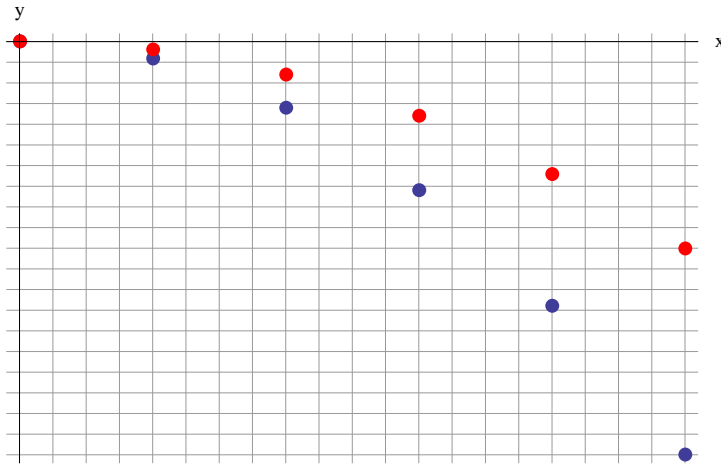
Quiz A1.2
Projectile motion

1. A projectile is launched horizontally from a vertical cliff with a speed 5.0 m s^{-1} . The cliff is 125 m high. How long does it take the projectile to reach the bottom of the cliff?
- A** 25 s **B** 12.5 s **C** 5.0 s **D** 3.0 s
2. A projectile is launched horizontally from a vertical cliff with a speed 10 m s^{-1} . It hits the ground with speed 20 m s^{-1} . How high is the cliff?
- A** 10 m **B** 15 m **C** 20 m **D** 25 m
3. Three statements are made for projectile motion in the presence of air resistance. The statements compare this motion to that without air resistance.
- I The horizontal distance travelled is less
II The maximum height reached is less
III The impact angle is steeper

Which is correct?

- A** I and II
B I and III
C II and III
D I, II and III

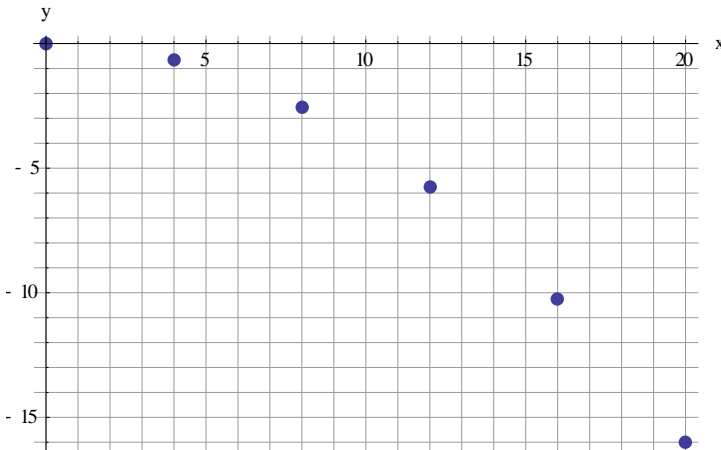
4. Two projectiles are launched horizontally on two different planets. The diagram shows the positions of the projectiles every 0.5 s.



What can be concluded about the launch speed and the acceleration of free fall on the two planets?

	Horizontal speed	Acceleration of free fall
A	same	same
B	same	different
C	different	same
D	different	different

5. The diagram shows the position, every 0.40 s, of a projectile launched horizontally on a planet.

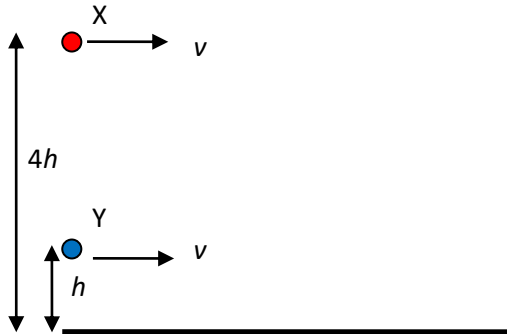


What is the launch speed and what is the acceleration of free fall on the planet?

	Horizontal speed/ m s^{-1}	Acceleration of free fall/ m s^{-2}
A	10	8.0
B	10	10
C	8.0	8.0

D	8.0	10
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6. Two projectiles, X and Y, are launched horizontally with the same speed. X is launched from a height $4h$ and Y from a height h .



What is $\frac{\text{horizontal distance travelled by X}}{\text{horizontal distance travelled by Y}}$ when both land on the ground?

- A $\frac{1}{4}$ B $\frac{1}{2}$ C 2 D 4
7. A projectile is projected at an angle θ to the horizontal with speed u . It lands at P.



What is the time of travel to P?

- A $\frac{u \cos \theta}{g}$ B $\frac{2u \cos \theta}{g}$ C $\frac{u \sin \theta}{g}$ D $\frac{2u \sin \theta}{g}$
8. The maximum height of a projectile on Earth is H . The same projectile is projected with the same velocity on a planet where the acceleration of free fall is $\frac{g}{4}$. What is the maximum height on this planet?
- A $H\sqrt{2}$ B $2H$ C $4H$ D $8H$

9. A projectile is launched at an angle to the horizontal at $t = 0$. At $t = 1$ s and $t = 5$ s the height of the projectile is the same. What is the maximum height reached by this projectile?
- A 90 m B 45 m C 22.5 m D 10 m
10. A projectile is launched with horizontal velocity component 15 m s^{-1} and vertical component 25 m s^{-1} . What angle does the velocity make with the horizontal after 1.0 s?
- A $\arctan 1$ B $\arctan \frac{5}{3}$ C $\arctan 3$ D $\arctan 5$

Quiz A1.2 Answers	
1	C
2	B
3	D
4	B
5	A
6	C
7	D
8	C
9	B
10	A