



PHYSICS

NCERT - NCERT Physics(Telugu)

GRAVITATION

Example

1. What is the time period of satellite near the earth's surface? (neglect height of the orbit of

satellite from the surface of the earth)?



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2. A body is projected vertically up. What is the distance covered in its last second of upward

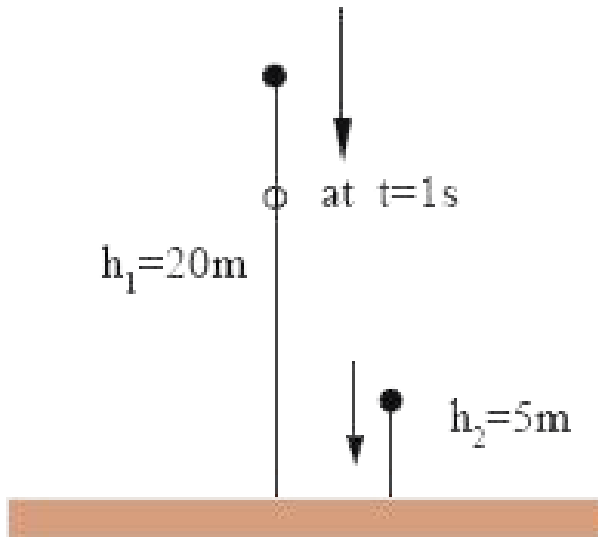
motion? ($g = 10\text{m} / \text{s}^2$)



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3. Two bodies fall freely from different heights and reach the ground simultaneously. The time of descent for the first body is $t_1 = 2\text{s}$ and for the second $t_2 = 1\text{s}$. At what height was the first body situated when the other

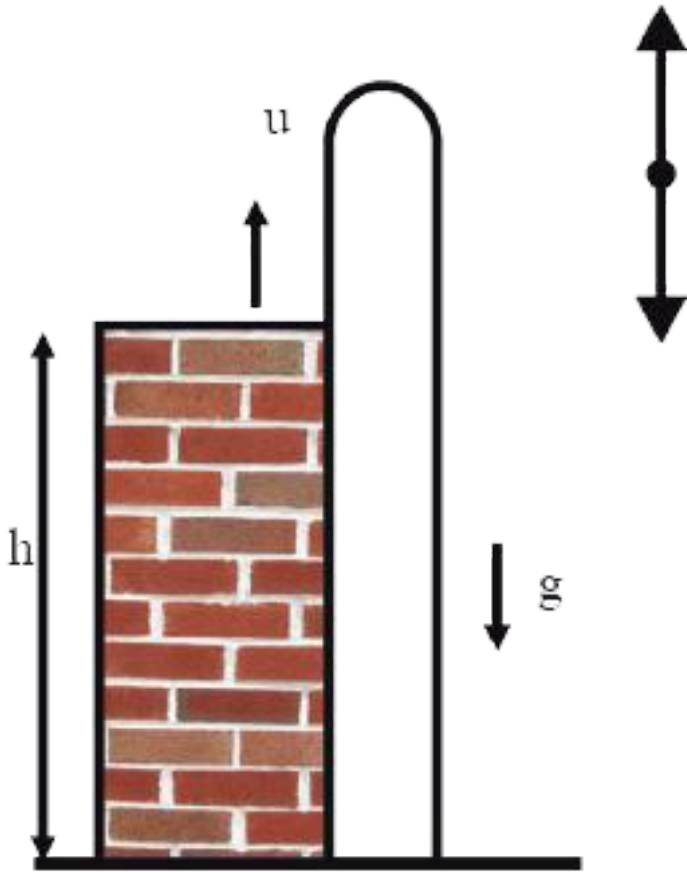
began to fall? ($g = 10\text{m} / \text{s}^2$)



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4. A stone is thrown vertically up from the tower of height 25m with a speed of 20 m/s
What time does it take to reach the ground ?

$$(g = 10 \text{ m/s}^2)$$



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5. Find the time taken, by the body projected vertically up with a speed of u , to return back to the ground.



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6. What is the time period of satellite near the earth's surface? (neglect height of the orbit of

satellite from the surface of the earth)?



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7. A body is projected vertically up. What is the distance covered in its last second of upward

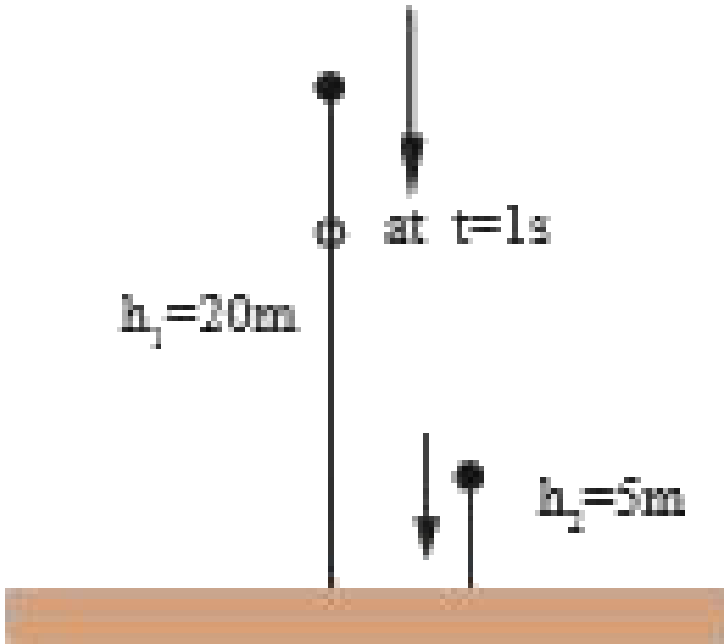
motion? ($g = 10\text{m/s}^2$)



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8. Two bodies fall freely from different heights and reach the ground simultaneously. The time of descent for the first body is $t_1 = 2\text{s}$ and for the second $t_2 = 1\text{s}$. At what height was the first body situated when the other

began to fall? ($g = 10\text{m/s}^2$)

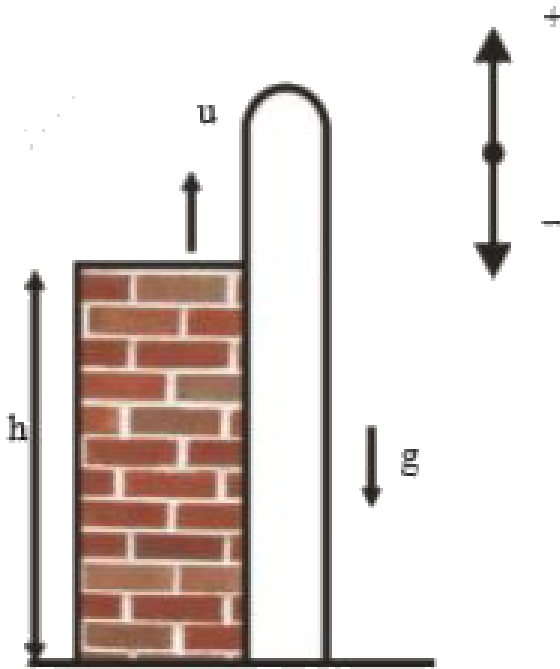


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9. A stone is thrown vertically up from the tower of height 25m with a speed of 20 m/s.

What time does it take to reach the ground? (

$$g = 10\text{m/s}^2)$$



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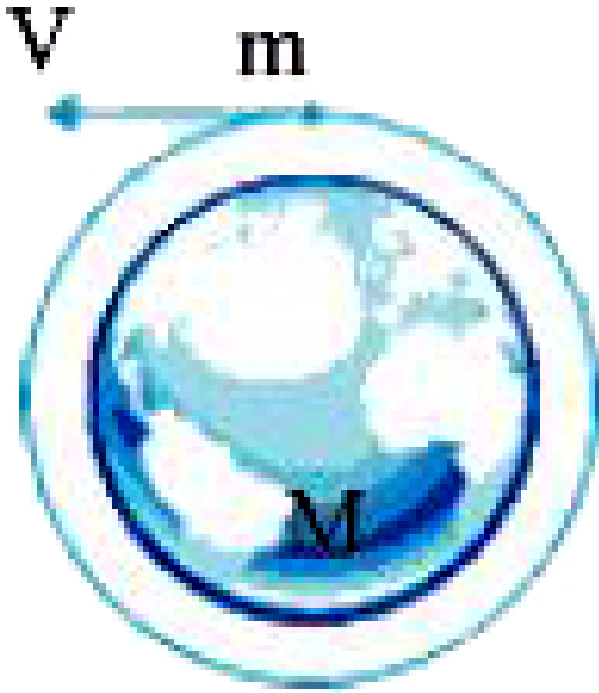
10. Find the time taken, by the body projected vertically up with a speed of u , to return back to the ground.



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11. What is the time period of satellite near the earth surface neglect height of the orbit of

satellite from the surface of ground?



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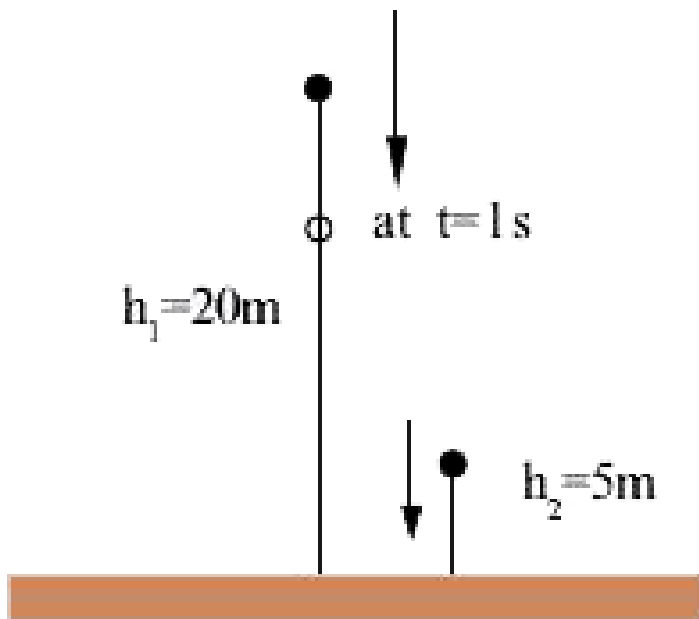
12. A body is projected vertically up. What is the distance covered in its last second of upward motion? ($g = 10m / s^2$)



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13. Two bodies fall freely from different heights and reach the ground simultaneously. The time of descent for the first body is $t_1 = 2s$ and for the second $t_2 = 1s$. At what height was the first body situated when the other

began to fall? ($g = 10\text{ m/s}^2$)

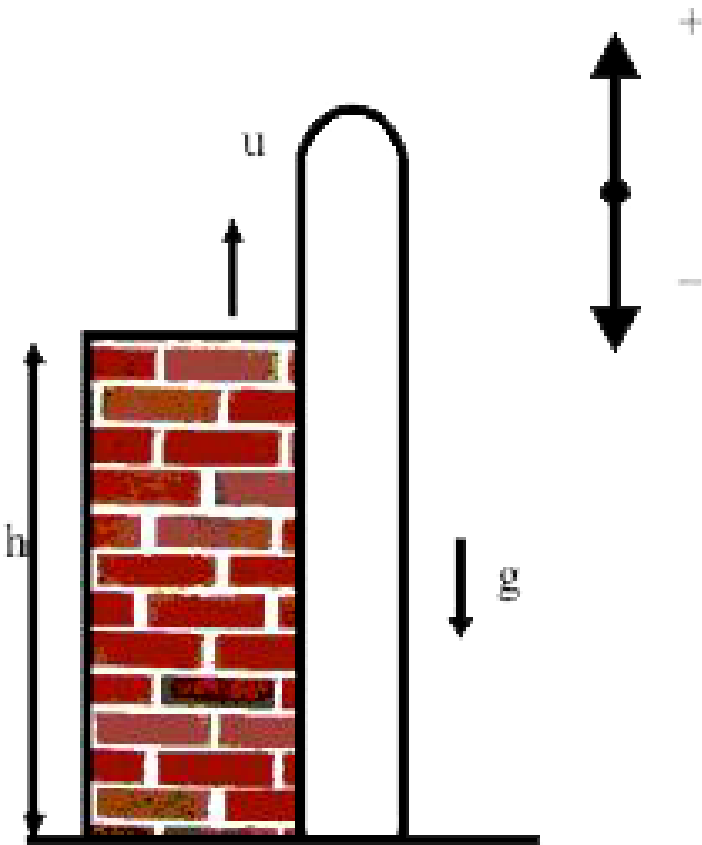


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14. A stone is thrown vertically up from the tower of height 25 m with a speed of 20 m/s .

What time does it take to reach the ground?

$$(g = 10\text{m} / \text{s}^2)$$



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15. Find the time taken, by the body projected vertically up with a speed of u , to return back to the ground.



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Let Us Improve Our Learning Application Of Concepts

1. A car moves with constant speed of 10 m/s in a circular path of radius 10m . The mass of

the car is 1000 kg. How much is the required centripetal force for the car?



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2. What is the speed of an apple dropped from a tree after 1.5 second? What distance will it cover during this time? Take $g = 10m/s^2$
(AS_1)



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3. A ball is projected vertically up with a speed of 50 m/s. Find the maximum height, the time to reach the maximum height, and the speed at the maximum height ($g = 10 \text{ m/s}^2$) (AS_1)



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4. Two spherical balls of mass 10 kg each are placed with their centers 10 cm apart. Find the gravitational force of attraction between them. (AS_1)





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5. Find the free-fall acceleration of an object on the surface of the moon, if the radius of the moon and its mass are 1740 km and 7.4×10^{22} kg respectively. Compare this value with free fall acceleration of a body on the surface of the earth. (AS_1)



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6. A ball is dropped from a height. If it takes 0.2s to cross the last 6m before hitting the ground, find the height from which it is dropped. Take $g = 10 \frac{m}{s^2}$ (AS₁)



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7. The bob of a simple pendulum of length 1 m has mass 100g and a speed of 1.4 m/s at the lowest point in its path. Find the tension in

the string at this moment. Take

$$g = 9.8 \text{ m/sec}^2 (AS_1)$$



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8. A car moves with constant speed of 10 m/s in a circular path of radius 10m. The mass of the car is 1000 kg. How much is the required centripetal force for the car? AS_1



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9. What is the speed of an apple dropped from a tree after 1.5 second? What distance will it cover during this time? Take $g = 10 \text{ m/s}^2$

AS₁



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10. A ball is projected vertically up with a speed of 50 m/s. Find the maximum height, the time to reach the maximum height, and

the speed at the maximum height (

$$g = 10\text{m/s}^2) AS_1$$



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13. A ball is dropped from a height. If it takes 0.2s to cross the last 6m before hitting the

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14. The bob of a simple pendulum of length 1 m has mass 100g and a speed of 1.4 m/s at the lowest point in its path. Find the tension in the string at this moment. Take $g = 9.8 \text{ m/sec}^2$ AS_1



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Improve Your Learning

1. A car moves with constant speed of 10 m/s in a circular path of radius 10m . The mass of the car is 1000 kg . Who or what is providing the required centripetal force for the car? How much is it?

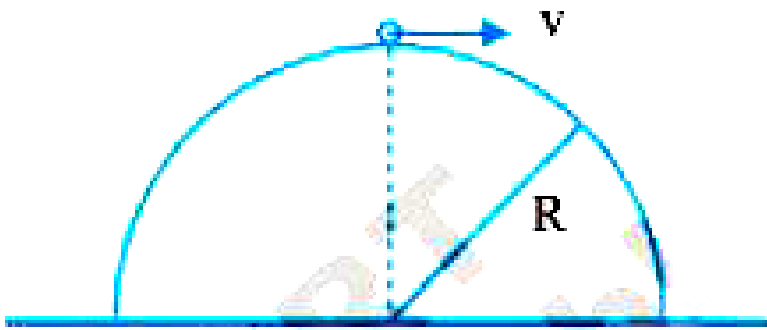


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2. A small metal washer is placed on the top of a hemisphere of radius R . What minimum

horizontal velocity should be imparted to the washer to detach it from the hemisphere at the initial point of motion? (See figure)

(AS_1, AS_7)



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3. What is the speed of an apple dropped from a tree after 1.5 second? What distance will it

cover during this time? Take

$$g = 10 \text{ m/s}^2 (AS_1)$$



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4. A body is projected with a speed of 40 m/s vertically up from the ground. What is the maximum height reached by the body? What is the entire time of motion? What is the velocity at 5 seconds after the projection? Take

$$g = 10 \text{ m/s}^2 (AS_1)$$



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5. A boy is throwing balls into the air one by one in such a way that when the first ball thrown reaches maximum height he starts to throw the second ball. He repeats this activity. To what height do the balls rise if he throws twice in a second? (AS_1 . AS_7)

A. $1/4$ m

B.

C.

D.

Answer: 1/4m



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6. A ball is dropped from a height. If it takes 0.2s to cross the last 6m before hitting the ground, find the height from which it is dropped. Take $g = 10m / s^2$ (AS1)

A. 54.45m

B.

C.

D.

Answer: 54.45m



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7. A ball is dropped from a balloon going up at a speed of 5 m/s. If the balloon was at a height 60 m. at the time of dropping the ball, how long will the ball take to reach the ground?

(AS_1, AS_7)

A. 4s

B.

C.

D.

Answer: 4s



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8. A ball is projected vertically up with a speed of 50 m/s. Find the maximum height, the time to reach the maximum height, and the speed at the maximum height ($g = 10\text{ m/s}^2$) (AS_1)



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9. Two cars having masses m_1 and m_2 move in circles of radii r_1 and r_2 respectively. If they complete the circle in equal time. What is the ratio of their speeds and centripetal accelerations? (AS_1)



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10. Two spherical balls of mass 10 kg each are placed with their centers 10 cm apart. Find the gravitational force of attraction between them. (AS_1)

A. $10^4 G$

B.

C.

D.

Answer: $10^4 G$



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11. Find the free-fall acceleration of an object on the surface of the moon, if the radius of the moon and its mass are 1740km and $7.4 \times 10^{22}\text{kg}$ respectively.

Compare this value with free fall acceleration of a body on the surface of the earth. (AS_1)



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12. A scooter weighing 150kg together with its rider moving at 36 km/hr is to take a turn of radius 30 m. What force on the scooter towards the center is needed to make the turn possible? Who or what provides this? (AS_1)

A. 500N

B.

C.

D.

Answer: 500N



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13. The bob of a simple pendulum of length 1 m has mass 100g and a speed of 1.4 m/s at the lowest point in its path. Find the tension in the string at this moment. (AS_1)

A. 1.076N

B.

C.

D.

Answer: 1.076N



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