



PHYSICS

BOOKS - ICSE

MOTION

Solved Examples

1. A boy walks first a distance of 0.5 km in 10 minutes, next 10 km in 20 minutes and last 1.5

km in 30 minutes. Is the motion uniform ? Find the average speed of the boy in ms^{-1} .



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2. A car travels 100 km with a speed of 50 km h^{-1} and another 200 km with a speed of 20 km h^{-1} . Is the motion uniform ? Find the average speed of the car.



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3. A train travels from Agra to Delhi with a constant speed of 50kmh^{-1} and returns from Delhi to Agra with a constant speed of 40kmh^{-1} . Find the average speed of the train.



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4. A boy walks from his home to a post office at a distance of 0.5 km in 20 min. He then

returns to his home in time 25 min. Find the average speed of the boy.



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5. A train takes 3 h to reach from station A to station B at a distance of 400 km and 5 h in its return journey. Find the average speed of the train.



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6. The mass of a body is 20.0 kg. Taking the pull of gravity on mass 1 kg equal to 10 N, express the weight of the body in newton .



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7. The mass of a body is 20.0 kg. Taking the pull of gravity on mass 1 kg equal to 10 N, express the weight of the body in kgf .



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8. A boy is of mass 40 kg. If the pull of gravity on 1 kg on the surface of earth is 9.8 N and at the surface of moon is 1.6 N, find the weight of boy at the earth's surface



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9. A boy is of mass 40 kg. If the pull of gravity on 1 kg on the surface of earth is 9.8 N and at the surface of moon is 1.6 N, find mass and weight of the boy at the moon's surface.



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Test Yourself True Or False

1. Two trains going in opposite directions with the same speed are at rest relative to each other. True/False.



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2. A ball is thrown vertically upwards, its motion is uniform throughout. True/False.



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3. The motion of a train starting from one station and reaching at another station is non-uniform. True/False.



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4. A motion which repeats itself after a fixed interval of time is called periodic motion. True/false.



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5. A ball thrown by a boy from a roof-top has oscillatory motion.



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6. Mass has both magnitude and direction.



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7. Weight always acts vertically downwards



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8. Mass varies from place to place but weight does not.



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Test Yourself Fill In The Blanks

1. Two boys cycling on the road with the same speed are relative to each other.



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2. The motion in a is rectilinear motion



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3. One to and fro motion of a clock pendulum
takes time =



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4. $36\text{kmh}^{-1} = \dots\dots\dots \text{ms}^{-1}$

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5. Total distance travelled = $\dots\dots\dots$ x total time taken.

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6. The weight of a girl is 36 kgf. Her mass will be.....





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7. The weight of a body is measured using.....



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[Test Yourself Match The Column](#)

1. Match the following:

Column A

- (a) Circular motion
- (b) Periodic motion
- (c) Vibratory motion
- (d) Rotatory motion
- (e) Non uniform motion

Column B

- (i) a running fan
- (ii) a car moving in a market
- (iii) movement of the hands of a clock
- (iv) motion of wire of a guitar
- (v) motion of pendulum of a clock



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Test Yourself Select The Correct

1. A book lying on a table is an example of:

A. a body at rest

B. a body in motion

C. a body neither at rest nor in motion

D. none of these

Answer: A



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2. The motion of a pendulum is

A. rotatory

B. oscillatory

C. curvilinear

D. rectilinear

Answer: B



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3. A car moving on a straight road is an example of:

- A. rotatory motion
- B. rectilinear motion
- C. oscillatory motion
- D. periodic motion

Answer: B



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4. A ball falls down vertically. Its motion is :

A. periodic

B. linear

C. circular

D. vibratory

Answer: B



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5. If a body covers equal distances in equal intervals of time, the motion is said to be :

A. uniform

B. non-uniform

C. oscillatory

D. rotatory

Answer: A



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6. A boy goes from his house to school by bus at a speed of 20kmh^{-1} and returns back through the same route at a speed of 30kmh^{-1} . The average speed of his journey is :

A. 24kmh^{-1}

B. 25kmh^{-1}

C. 30kmh^{-1}

D. 20kmh^{-1}

Answer: A





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7. The earth attracts a body of mass 1 kg with a force of 10 N. The mass of a boy is 50 kg. His weight will be :

A. 50kg

B. 500N

C. 50N

D. 5N

Answer: B



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Test Yourself Short Long Answer Questions

1. Explain the meaning of the terms rest and motion.



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2. Comment on the statement 'rest and motion are relative terms'. Give an example.



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3. Fill in the blanks using one of the words : at rest, in motion.

A person walking in a compartment of a stationary train is relative to the compartment and is relative to the platform



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4. Fill in the blanks using one of the words : at rest, in motion.

A person sitting in a compartment of a moving train is relative to the other person sitting by his side and is..... relative to the platform.



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5. Name five different types of motion you know.





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6. What do you mean by translatory motion ?

Give one example.



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7. Explain the meanings of rectilinear motion.

Give one example



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8. Explain the meanings of curvilinear motion.

Give one example



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9. What is rotatory motion? Give two examples.



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10. What is meant by circular motion? Give one example.



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11. How does rotatory motion differ from circular motion?



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12. Explain oscillatory motion by giving one example.



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13. What is vibratory motion? Give one example



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14. Differentiate between periodic and non-periodic motions by giving an example of each.



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15. What is random motion? Give an example.





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16. Name the type/types of motion being performed by the Vehicle on a straight road



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17. Name the type/types of motion being performed by the Blades of an electric fan in motion



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18. Name the type/types of motion being performed by the Pendulum of a wall clock



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19. Name the type/types of motion being performed by the Smoke particles from chimney



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20. Name the type/types of motion being performed by the Hands of a clock



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21. Name the type/types of motion being performed by the Earth around the sun



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22. Name the type/types of motion being performed by the A spinning top



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23. Give two examples to illustrate that a body can have two or more types of motion simultaneously.



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24. State the types of motion of the needle of a sewing machine



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25. State the types of motion of the wheel of a bicycle



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26. State the types of motion of the drill machine



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27. State the types of motion of the carpenter's saw



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28. Distinguish between uniform and non-uniform motions, giving an example of each.



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29. How do you determine the average speed of a body in non-uniform motion ?



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30. Define the term weight and state its S.I. unit.



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31. How are the units of weight, kgf and newton related ?



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32. State three differences between mass and weight.



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33. Which quantity : mass or weight, does not change by change of place ?



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34. State which of the quantities, mass or weight is always directed vertically downwards.



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Test Yourself Numerical

1. A car covers a distance of 160 km between two cities in 4 h. What is the average speed of the car?



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2. A train travels a distance of 300 km with an average speed of 60 kmh^{-1} . How much time does it take to cover the distance ?



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3. A boy travels with an average speed of 10 ms^{-1} for 20 min. How much distance does he travel ?



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4. A boy walks a distance of 30 m in 1 minute and another 30 m in 1.5 minute. Describe the type of motion of the boy and find his average speed in ms^{-1}



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5. A cyclist travels a distance of 1 km in the first hour, 0.5 km in the second hour and 0.3 km in

the third hour. Find the average speed of the cyclist in kmh^{-1} .



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6. A cyclist travels a distance of 1 km in the first hour, 0.5 km in the second hour and 0.3 km in the third hour. Find the average speed of the cyclist in ms^{-1} .



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7. A car travels with speed 30 km h^{-1} for 30 minutes and then with speed 40 km h^{-1} for one hour. Find the total distance travelled by the car



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8. A car travels with speed 30 km h^{-1} for 30 minutes and then with speed 40 km h^{-1} for one hour. Find the total distance travelled by the car





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9. A car travels with speed 30 km h^{-1} for 30 minutes and then with speed 40 km h^{-1} for one hour. Find the average speed of car



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10. On earth the weight of a body of mass 1.0 kg is 10 N. What will be the weight of a boy of mass 37 kg in kgf



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11. On earth the weight of a body of mass 1.0 kg is 10 N. What will be the weight of a boy of mass 37 kg in N ?



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12. The weight of a body of mass 6.0 kg on moon is 10 N. If a boy of mass 30 kg goes from earth to the moon surface, what will be his mass



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13. The weight of a body of mass 6.0 kg on moon is 10 N. If a boy of mass 30 kg goes from earth to the moon surface, what will be his weight ?



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