PHYSICS

BOOKS - CHETANA PUBLICATION

LAWS OF MOTION

Example

1. The displacement that occurs in unit time is called.....

A. displacement

B. distance

C. velocity

D. acceleration

Answer:

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2. The unit of velocity in the SI system is.....

A. cm / s

B. m / s^2

C. cm / s^2

D. m / s

Answer:

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3. $v^2 = u^2 + 2as$ is the relation between.....and.....

A. speed and velocity

B. distance and acceleration

C. displacement and velocity

D. speed and distance

Answer:

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4. .....is the relation between displacment and time

A. $v = u + at$

B. $v^2 = u^2 + 2as$

C. s=ut+1/2at^2`

D. $v = u + 2as$

Answer:

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5. The force necessary to cause an acceleration of $1m/s^2$ in an object of mass 1kg is called.....

A. 1 dyne

B. $1m/s$

C. 1 Newton

D. 1 cm//s`

Answer:

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6. Even if the displacement of an object is zero, the actual distance traversed by it.....

A. may not be zero,

B. will be zero

C. will be constant

D. will be infinity

Answer:

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7. If the velocity changes by equal amounts in equal time intervals, the object is said to be in.....

A. uniform acceleration

B. uniform velocity

C. non-uniform acceleration

D. non-uniform motion

Answer:

8. If an object is moving with a uniform velocity.....

A. its speed remains the same, but direction of motion change

B. its speed changes but direction of motion is same

C. its speed and direction both change

D. its speed and direction both remain the same

Answer:

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9. .....is an example of positive acceleration.

A. A stone is thrown vertically upwards

B. A stone falls freely towards the earth

C. Brakes are applied by the truck driver

D. The train arriving at the station

Answer:

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10. An object continues to remain at rest or in a state of uniform motion along a staingt line unsless an .....acts on it

A. internal unbalanced force

B. external unbalanced force

C. internal balanced force

D. external balanced force

Answer:

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11. The ..... Is proportonal to the appliled force and it occurs in the direction of the force.

A. change of momentum

B. rate of change of velocity

C. change of velocity

D. rate of change of momentum

Answer:

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12. .....is a relative concept.

A. Motion

B. Direction

C. Power

D. acceleration

Answer:

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13. .....is the length of the actual path travelled by an object in motion while going from one point to another

A. Distance

B. Displacment

C. speed

D. velocity

Answer:

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14. The distance covered by a body in unit time is called its.....

A. velocity

B. speed

C. displacement

D. rest

Answer:

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15. S.I. unit ofspeed is.....and in C.G.S unit it is.....

A. m/s and cm/s

B. km/s and cm/s

C. m/s and mm/s

D. m/s and nm/s

Answer:

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16. The distance travelled in a particular direction by an object in unit time is called its....

A. velocity

B. speed

C. displacement

D. rest

Answer:

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17. Units of speed and velocity are the

A. Same

B. Different

C. Greater than each other

D. Unequal

Answer:

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18. ...is related to distance , while is related to displacment.....

A. Gravity and magnetism

B. Speed and force

C. Speed and velocity

D. Motion and rest

Answer:

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19. If an object covers equal distancesin equal time intervals, it issaid to be moving with

A. Uniform

B. Non uniform

C. Changing

D. Random

Answer:

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20. If an object covers unequal distances in equal time intervals, it is said to be moving with.... Speed.

A. Uniform

B. Non uniform

C. Changing

D. Random

Answer:

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21. The rate of change of velocity is called

A. Speed

B. Acceleration

C. Velocity

D. Rest

Answer:

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22. Speed of light in dry air is.....m/s.

A. 3×10^7

B. 3×10^8

C. 3×10^9

D. 3×10^3

Answer:

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23. When velocity of a body increases, its acceleration is

A. Negative

B. Zero

C. Positive

D. Equal

Answer:

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24. When velocity of a body decreases, its acceleration is.....

A. Negative

B. Zero

C. Positive

D. Equal

Answer:

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25. Negative acceleration is also called .....or.....

A. Deceleration or retardation

B. Deceleration or acceleration

C. acceleration or retardation

D. Zero

Answer:

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26. In case of .....motion, object travels equal..... in equal intervals of time

A. Uniform, distance

B. Non-Uniform, distance

C. Uniform, displacemen

D. Uniform , displacement

Answer:

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27. Motion of an object wasstudied by.....

A. Sir Albert Einstein

B. Sir Thomas Edison

C. Sir Isaac Newton

D. Sir Ravindranath Tagore

Answer:

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28. When an object moves in a circular path with uniform speed, its motion is.....motion

A. Non uniform circular

B. Random circular

C. Uniform circular

D. Uniform linear

Answer:

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29. When a coin moves along a circular path, the direction of its motion at every point is.....

A. Circular

B. Concave

C. Tangentia

D. Convex

Answer:

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30. For all uniformly accelerated motions, the volcity time graph is a.....

A. Curved line

B. Straight line

C. Negative line

D. Positive line

Answer:

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31. In the distance-time graph, the slope of the straight line indicates

A. Acceleration

B. Velocity

C. Speed

D. Rest

Answer:

Watch Video Solution

32. The first equation of motion gives relation between.....and time.

A. Acceleration

B. Velocity

C. Speed

D. Rest

Answer:

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33. Newton'sfirst law explains the phenomenon of.....

A. Rest

B. Inertia

C. Speed

D. Velocity

Answer:

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34. .....cause a change in the state of an object at rest or in uniform motion.

A. Balanced forces

B. Zero forces

C. Unbalanced forces

D. None of them

Answer:

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35. To describe an object's momentum, we must and specify its

A. Mass and displacement

B. Mass and direction

C. Mass and velocity

D. Mass and acceleration

Answer:

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36. .....is the product of mass and velocity of an object

A. Speed

B. Acceleration

C. Momentum

D. Force

Answer:

Watch Video Solution

37. The rateof changeof momentumisproportional to the applied.....

A. Balanced force

B. Unbalanced force

C. Mass

D. Velocity

Answer:

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38. S.I. unit of momentum is

A. $kgcm/s$

B. kgm/s

C. gm/s

D. m/s

Answer:

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39. .....is always conserved in a collision.

A. Force

B. Power

C. Speed

D. Total momentum

Answer:

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40. When a bullet is fired from the gun, the gun moves in backward direction. This motion is called as

A. Momentum

B. Velocity

C. Acceleration

D. Recoil

Answer:

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41. In CGS system, the unit of force is.....

A. Newton

B. Watt

C. Horse power

D. Dyne

Answer:

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42. Find the odd man out

Displacement, Force, Momentum, Mass

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43. Find the odd man out

Speed, Power, Energy, Acceleration

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44. Find the odd man out

Newton's 1st law, Newton's 2nd law, Newton's 3rd law, Kepler'slaws of motion

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45. Find out the correlation

Speed zero: Body at rest :: Negative acceleration : Retardation

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46. Find out the correlation

Displacement : Vector quantity :: Distance : Scalar quantity

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47. Find out the correlation

Uniform circular motion: Displacement is zero :: Uniform velocity : Acceleration is zero

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48. Find out the correlation

Inertia : Newton's 1st law :: Rate of change of momentum :

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49. Balanced force : body at rest :: Force equation :.....

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50. Distinguish between

Positive acceleration and Negative acceleration

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51. Distinguish between

Scalar quantity and Vector quantity

Watch Video Solution

52. Distinguish between

Balanced force and Unbalanced force

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53. State whether the following statements are true or false:

The velocity of a body is given by the distance covered by it in unit time in a given direction.

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54. State whether the following statements are true or false:

Displacement is a scalar quantity

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55. State whether the following statements are true or false:

Uniform acceleration means that the body is moving with a uniform velocity.

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56. State whether the following statements are true or false:

The direction of acceleration can be opposite to that of velocity.

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57. State whether the following statements are true or false:

Work is a vector quantity.

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58. Displacement is always greater than distance

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59. State whether the following statements are true or false:

The distance and displacement are equal only if, motion is along a straight path

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60. State whether the following statements are true or false:

If an object experiences acceleration, a force is acting on it.

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61. State whether the following statements are true or false:

A train pulling out from a station isin uniform motion

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62. State whether the following statements are true or false:

If a bus in motion is suddenly stopped, the passengersfall backwards.

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63. State whether the following statements are true or false:

If a single force is acting on an object, it will always accelerate.

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64. State whether the following statements are true or false:

In circular motion, direction of motion is tangential.

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65. State whether the following statements are true or false:

The inertia of a body is measured in terms of its mass.

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66. The scientist who summarized motion in a set of equations of motion.

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67. Motion of an object along a circular path with uniform speed.

Watch Video Solution

68. What isthe backward motion of the gun called?

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69. The motion in which the object covers equal distance in equal intervals of time.

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70. S. I. unit of acceleration

Watch Video Solution

71. CGS unit of momentum

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72. When is acceleration said to be positive?

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73. What is negative acceleration?

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74. What is the direction of velocity of an object performing uniform circular motion?

Watch Video Solution

75. Give the mathematical expression used to determine velocity of an object moving with uniform circular motion.

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76. What kind of force keeps the body at rest?

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77. Which law of motion gives the measure of force?

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78. What are vectors and scalers?

Watch Video Solution

79. Which of the quantities distance, speed , velocity, time and displacement are scalars and

which are vectors?

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80. Give formula:

Force =

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81. Give formula:

Final velocity (v) =

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82. Give formula:

Displacement (s) =

Watch Video Solution

83. Give formula:

Final $velocity^2\left(v^2\right)$ =

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84. Give formula:

velocity of an object moving with uniform circular motion =

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85. When an object falls freely to the ground, its acceleration is uniform.

Watch Video Solution

86. Give scientific reasons:

Even though the magnitudes of action force and reaction force are equal and their directions are opposite, their effects do not get cancelled.

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87. Give scientific reasons:

It is easier to stop a tennis ball as compared

to a cricket ball, when both are travelling with, the same velocity.

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88. Give scientific reasons:

The velocity of an object at rest is considered to be uniform.

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89. Motion is relative.

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90. Newton's first law of motion is called as law of inertia. OR

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91. The launching of a rocket is based on Newton's third law of motion

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92. An athlete is running on a circular track. He runs a distance of 400 m in 25 s before returning to his original position. What is his average speed and velocity?

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93. Solve the following examples: (numerical problems)

A person swims 100 m in the first 40 s, 80 m in the next 40 s and 45 m in the last 20 s. What is the average speed?

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94. Solve the following examples: (numerical problems)

An object moves 18 m in the first 3 seconds, 22 m in the next 3 seconds and 14 m in the last 3 seconds. What is its average speed?

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95. An aeroplane taxies on the runway for 30 s with an acceleration of $3.2 m / s^2$ before taking off. How much distance would it have covered on the runway?

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96. A kangaroo can jump 2.5 m vertically. What must be the initial velocity of the kangaroo?

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97. A motorboat starts from rest and moves with uniform acceleration, if it attains the velocity of $15m/s$ in 5s, calculate the acceleration and the distance travelled in that time.

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98. The mass of a cannon is 500 kg and it recoils with a speed of $0.25m/s$. What is momentum of the cannon?

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99. Explain the three different ways to change the velocity

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100. Explain what is positive, negative and zero acceleration.

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101. What inference do we draw from the velocity time graph for a uniformly accelerated motion?

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102. State the three equations of motion and give the relationship explained bt them.

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103. Explain recoil and recoil velocity. Derive its expression.

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104. Complete the flow chart:

Newton's laws

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105. Distinguish between:

Distance and Displacement:

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106. Distinguish between:

Uniform motion and non-uniform motion

Watch Video Solution

107. Distinguish between:

Speed and Velocity:

Watch Video Solution

108. Distinguish between

Balanced force and Unbalanced force

Watch Video Solution

109. Give examples:

scalar quantities

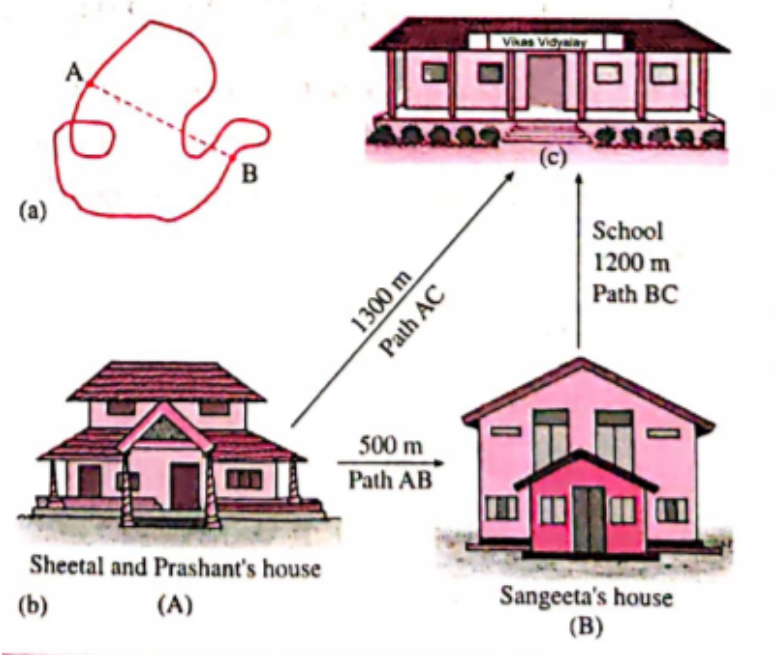
Watch Video Solution

110. Give examples:

Vector quantities

Watch Video Solution

111. Measure the distance between points A and B in different ways as shown in figure



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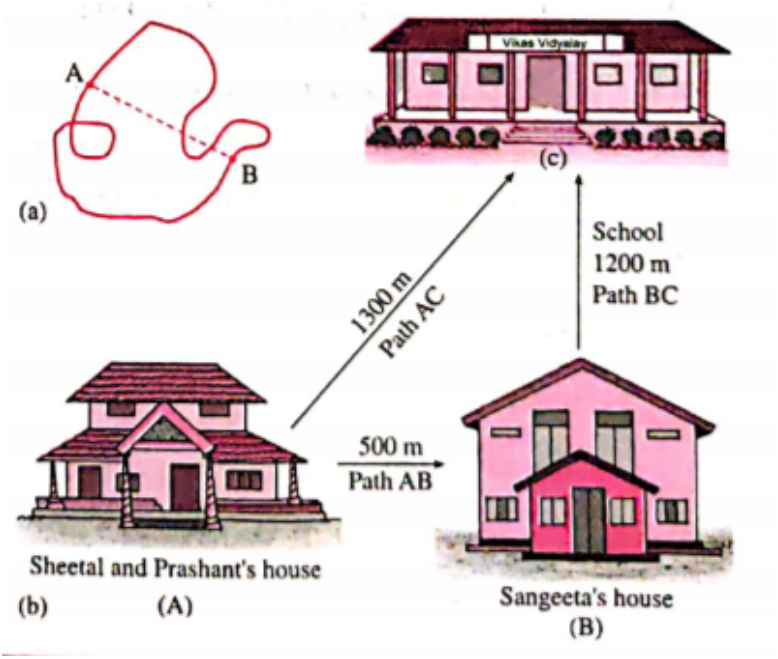
112. Measure the distance along the dotted line. Which distance is correct according to you and why?



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113. Solve the following examples: (numerical problems)

A person travels a distance of 72 km in 4 hours. Calculate the average speed in $\frac{m}{s}$.

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114. 2 balls have masses of 50 gm and 100 gm and they are moving along the same line in the same direction with velocities of 3m/s and 1.5 m/s respectively. They collide with each

other and after the collision, the first ball moves with a velocity of 2.5 m/s. Calculate the velocity of the other ball after collision.

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115. Solve the following examples: (numerical problems)

An object of mass 16 kg moving with an acceleration of 3 m/s^2 ?, Calculate the applied force. If the same force is applied on

an object, of mass 24 kg, how much will be the acceleration ?

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116. Solve the following examples: (numerical problems)

A bullet having a mass of 10 g and moving with a speed of 1.5 $\frac{m}{s}$ penetrates a thick wooden plank of mass 90 g. The plank was initially at rest. The bullet gets embedded in

the plank and both move together. Determine their velocity.

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117. Write laws and explain/write implications: Newton's third law of motion

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118. Explain Newton's second law of motion and derive the formula

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119. State the Law of conservation of momentum and derive the formula.

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120. What is speed? State its units and types. Explain instantaneous speed and average spee

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121. What is velocity? State its units and types.

Watch Video Solution

122. What is acceleration? State its units and types.

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123. Explain Newton's second law of motion and derive the formula

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125. Equation for displacement-time relation

Watch Video Solution

126. Equation for displacement-velocity relation

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127. .....is a relative concept.

A. motion

B. direction

C. power

D. acceleration

Answer:

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128. ...is related to distance , while is related to displacment.....

A. Gravity and magnetism

B. Speed and force

C. Speed and velocity

D. Motion and rest

Answer:

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129. Motion of an object wasstudied by.....

A. Sir Albert Einstein

B. Sir Thomas Edison

C. Sir Isaac Newton

D. Sir Ravindranath Tagore

Answer:

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130. When a bullet is fired from the gun, the gun moves in backward direction. This motion is called as

A. Momentum

B. Velocity

C. Acceleration

D. Recoil

Answer:

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131. Find the odd man out

Speed, Power, Energy, Acceleration

Watch Video Solution

132. Find the odd man out

Displacement, Force, Momentum, Mass

Watch Video Solution

133. Find the correlation :

Displacement : vector :: Distance :.....

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134. Balanced force : body at rest :: Force equation :.....

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135. Motion is relative.

Watch Video Solution

136. Give scientific reasons:

The velocity of an object at rest is considered to be uniform.

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137. Heavier objects offer more interia.

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138. Answer the following: (Any 2)..

What are the implications of Newton'sthird Law of motion?

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139. Distinguish between:

Speed and Velocity:

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140. Explain recoil and recoil velocity.

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141. Answer the following: (Any 3)

A person travels a distance of 72 km in 4 hours. Calculate average speed in m/s

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