

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

molecules attract each other and the oil molecules stick together.

12. What is Rock-candy?

Ans: Rock candy is the best example of super saturated solution. Rock candy is formed by allowing a super saturated solution of sugar and water to crystallize onto a surface suitable for crystal nucleation, such as a string or stick.

13. Define Acetone with some uses?

Ans: Acetone is a liquid solvent that can break down and dissolve other substances. Companies included acetone in a products such as nail polish remover, Paint remover and varnish remover. Some also Use acetone to manufacture plastic, lacquers and textiles.

14. How stirring and Grinding help in the process of dissolving materials?

Ans: **STIRRING**

Dissolving the solute can be speeds up by stirring the mixture. Stirring increases the rate of dissolving because it distributes the solute Particles throughout the solvent.

GRINDING

The amount of solute dissolves faster when it is ground into smaller particles, rather than in large pieces. The process of dissolving can be faster grinding the solute before it is put into the solvent.

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8

FORCE AND MOTION

Questions and Activities

A. MCQs (Choose the correct option)

1. SI unit of force is

- a. kilogram b. centi-second.
c. meter. d. newton.

Ans: d. newton.

2. By dividing distance of a moving body with time, we obtain.

- a. speed. b. mass.
c. gravity d. force.

Ans: a. speed.

3. If a body moves for 10 seconds with speed of 30 m/s then its covered distance is:

- a. 30 m b. 3m
c. 300 m d. 150 m

Ans: a. 30 m

4. Which of the following animal has highest running speed?

- a. Horse b. Turtle
c. Cheetah d. Silver ant

Ans: c. Cheetah

5. Every action has reaction equal in magnitude but

- a. opposite b. perpendicular.
c. parallel. d. anti- parallel.

Ans: a. opposite.

6. Unit of speed is:

- a. N b. m/s
c. kg m d. kg m/s

Ans: b. m/s

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

7. If a body covers equal distance in equal intervals of time then speed will be

- a. Increasing b. decreasing
c. uniform d. zero

Ans: c. uniform.

8. You draw distance-time graph for a moving car and get straight line parallel to time axis.

- a. increasing b. decreasing
c. uniform d. at rest

Ans: c. uniform.

9. A person is swimming in a pool, swimming is an example of

- a. action and reaction forces.
b. friction. c. gravity.
d. all of these.

Ans: a. action and reaction forces

10. Which of the following is non-contact force?

- a. Gravity b. Friction
c. Spring force
d. Tension in string

Ans: a. Gravity

B. True and False (correct the statement if it False)

1. Action and reaction forces never balance each other.

Ans: False. Action and reaction forces balance each other.

2. Action and reaction forces act on same body.

Ans: False. Action and reaction forces act on different body.

3. Force can change direction of motion of the body.

True

4. Distance-time graph of rest car is parallel to time axis.

Ans: True

5. Gravity is a non-contact force.

Ans: True

C. Short questions.

1. Define average speed. Write SI unit of speed.

Ans: Average speed. Average speed of a body is equal to total distance covered by body in total time taken by it.

$$\text{Average Speed} = \frac{\text{Total distance}}{\text{Total time}}$$

SI unit of speed is meter/second (m/s).

2. If a cyclist covers 15 kilometers distance in 1.5 hours. What is his speed in kilometer per hour (km/h) and in meter per second (m/s)?

Ans:

$$1 \text{ km} = 1000 \text{ m}$$

$$1 \text{ hr} = 60 \times 60$$

$$= 3600 \text{ sec}$$

$$1.5 \text{ hr} = 3600 + 1800$$

$$= 5400$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \text{ (In Km/h)}$$

$$= \frac{15}{1.5} = \frac{15 \times 10}{15} = 10 \text{ km/h}$$

In m/s

$$\text{Speed} = \frac{\text{Distance}}{\text{time}}$$

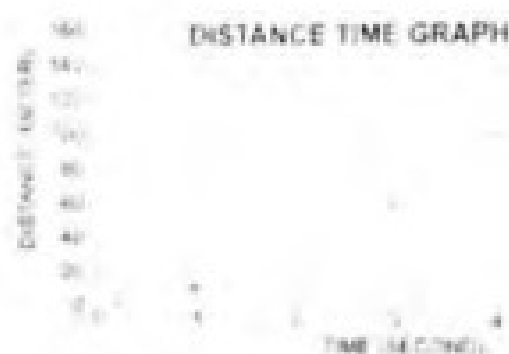
$$= \frac{15000^{50} \text{ m}}{5400_{18}}$$

Approximate 28m/s Ans

3. Draw the distance time graph for increasing speed of the car?

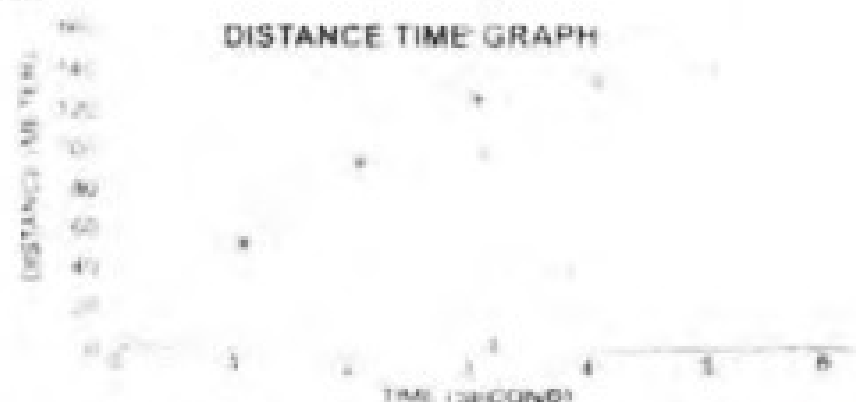
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Ans:



4. A car is moving with uniform speed, driver applies brakes to slow it down after some time and finally stops. Sketch a distance-time graph to represent this motion of the car.

Ans:



5. Explain briefly, why action and reaction forces cannot cancel each other.

Ans: Newton's third law of motion states that every action has an equal and opposite reaction. This indicates that forces always act in pairs. Reaction forces are equal and opposite, but they are not balanced forces because they act on different objects so they don't cancel each other out.

6. How do birds fly in the sky? Briefly explain with action-reaction pair concept.

Ans: The flying of a bird is based on action and reaction forces. While flying, the bird pushes the air down with its wings to get an equal

and opposite reaction in the upward direction which helps the bird go up.

7. Define force and its SI unit.

Ans: Force is a quantity that pulls or pushes an object. In the International system of units, the unit of force is newton (N).

8. Look at the distance-time graph.

- a) Which part is representing uniform motion?

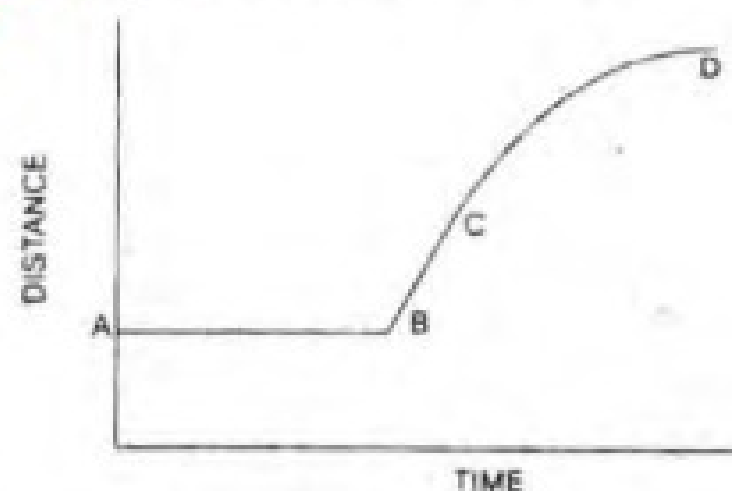
Ans: AB part is representing uniform motion.

- b) Which part is representing decreasing speed?

Ans: BCD part is representing decreasing speed.

- c) Which part of the body is at rest?

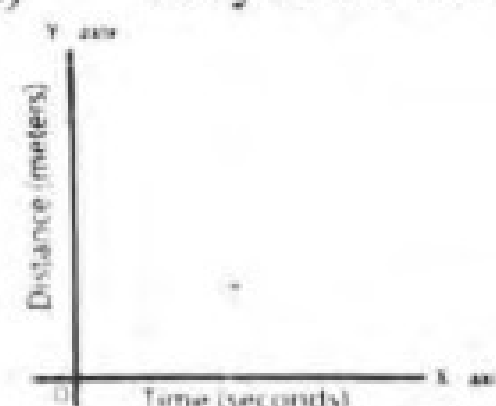
Ans: A part of the body is at rest.



- D. Long questions

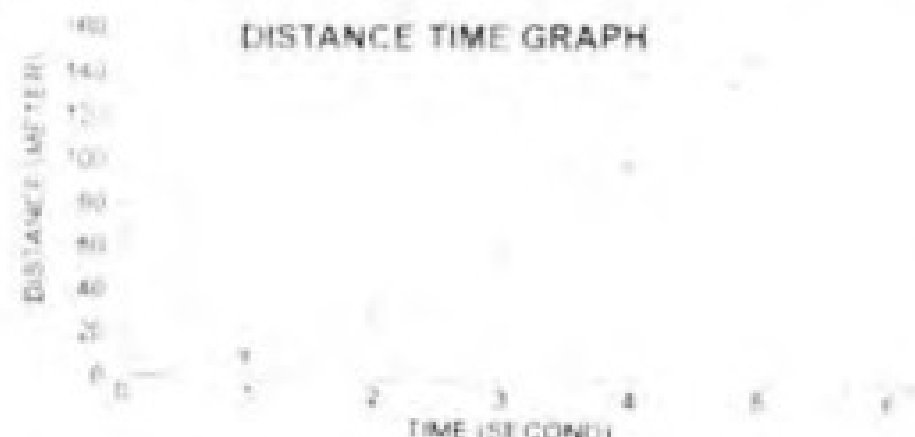
1. Draw a distance-time graph for (a) a body at rest, (b) with uniform speed, (c) moving with increasing speed, (d) decreasing speed.

Ans: (a) A body is at rest.

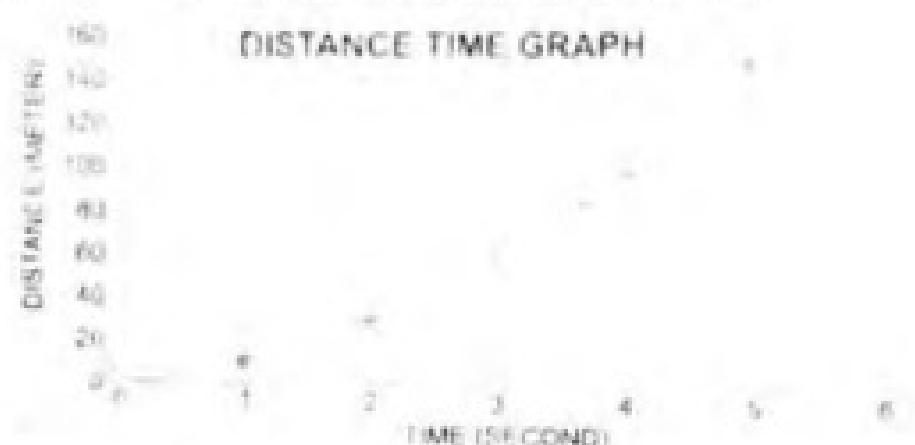


GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

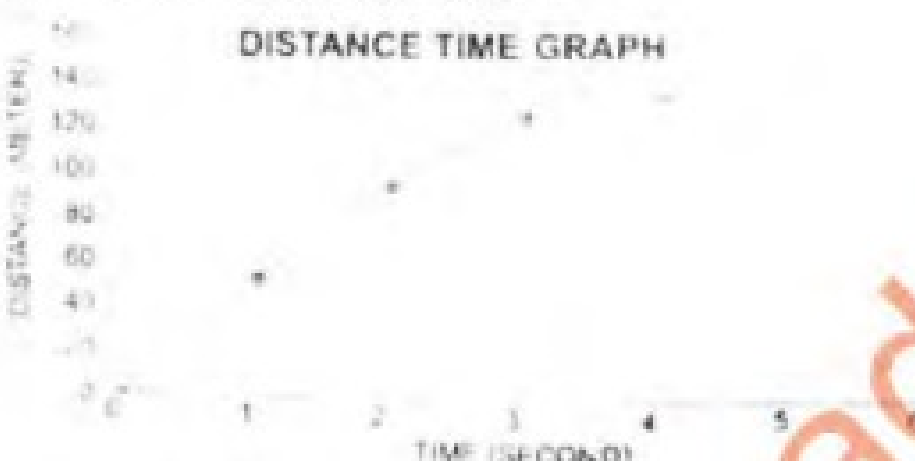
(b) With uniform speed.



(c) Moving increasing speed



(d) decreasing speed



2. Define force and its unit. Give example to explain different effect of forces on a body.

Ans: **Definition of forces** is an agent that pulls or push an object. It can change state of the body. It can speed up or slow down the moving object. It can change direction of motion of the body. It can change shape or size of the body.

Unit of Force

Forces has been given the unit after the name of great scientist "Sir Isaac Newton". So, unit of force is 'newton' in SI units. It's symbol is 'N'.

Example:

- 1) It can change the state of an object rest to motion motion to rest (rest). For example, Pushing a heavy stone in order to move it.
 - 2) May change the speed of an object if it is already moving. For example, catching a ball hit by a batsman.
 - 3) May change the direction of motion of an object. The opening and shutting the door Rubbing, etc.
3. With the help of examples, show that forces act in pair.

Ans: **Gun pushes on bullet.** Bullet pushes back on gun (recoil). Player throws ball forward by exerting a force with on ball pushes back on hand. Student pulls on desk _ desk pulls on student. Standing on the ground. The upward thrust of a rocket. A hammer pushes a nail, magnets attract paper clip.

E. Structure questions

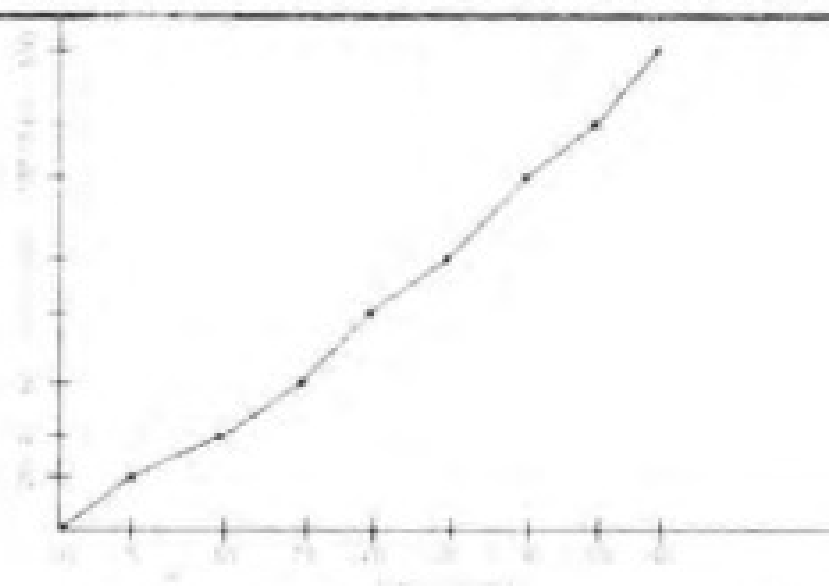
1. A car is travelling on the highway. Its distance and time is recorded at different intervals of time (see the table).

Time (second)	0	5	10	15	20	25	30	35	40
Distance (meter)	0	20	40	60	80	100	120	140	160

a. Draw distance-time graph for this car:

Ans:

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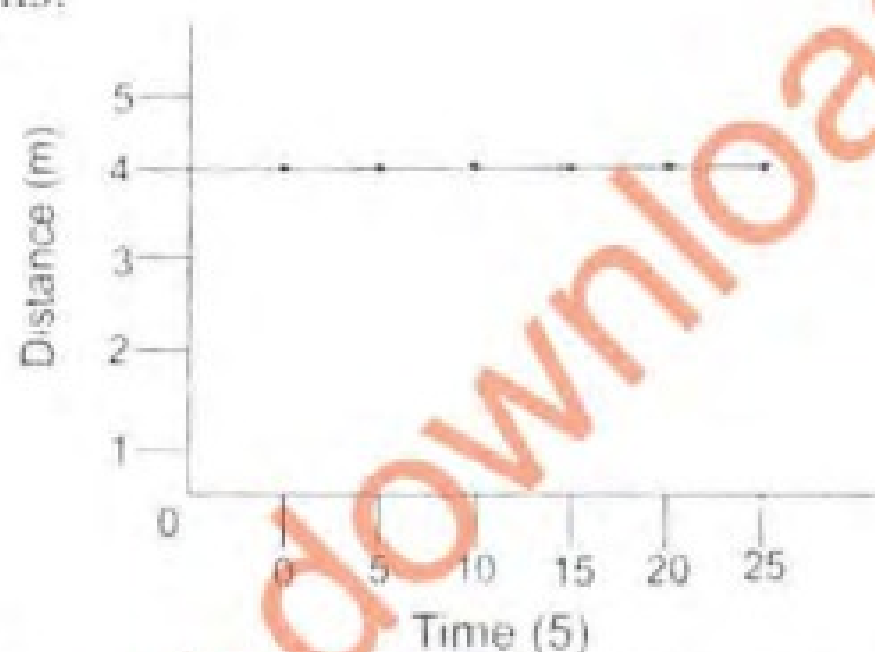


- b. Tell whether it has uniform speed, increasing or decreasing speed. Give reason of your selection

Ans: The car is moving with uniform speed. We see that car is covering equal distance of 20 meters in 5 second. Therefore, car is neither speeding up nor slowing down. It has constant speed.

- c. Draw the speed-time graph of this moving car.

Ans:



2. A boy is standing on the skateboard in skating field and throws the ball as shown

- a. If there is no friction, Will the man move?

Ans: Man will move as direction towards force and ball also move in same direction.

- b. (If boy moves then) In which direction he will move? (in the direction of ball or opposite to it). Support your answer with reason.

Ans: Boy move in forward direction and ball also because force in showing is forward direction by its action.

- c. Give an example that matches with the situation of the question?

Ans: If ball hit in forward direction by foot in play ground, we see it moving or if we fire a bullet with gun.

F. Project Work

Make the working model of water rocket to represent pair forces in action. (Read the material from google search and watch different youtube videos to make it)

Ans: Practical work

- ♦ More MCQs (Choose the correct option)

1. Speed is how _____ an object is moving.

- a. fast b. slow
c. medium d. none of them.

Ans: a. fast

2. Scientists held a conference on weight and measures held in _____ in 1960.

- a. America b. Paris
c. London d. Pakistan

Ans: b. Paris

3. 1 Hour = _____ seconds.

- a. 36 b. 360
c. 3600 d. 3 6000

Ans: c. 3600

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

4. _____ measures the distance covered by car.

- a. speedometer
- b. Galvanometer
- c. Ammeter
- d. Odometer

Ans: d. Odometer

5. When object is at rest then speed will be _____.

- a. 1
- b. 2
- c. 3
- d. 0

Ans: d. 0 (zero)

6. Symbol of force is

- a. W
- b. g
- c. G
- d. N

Ans: d. N

7. Which of the following is contact force?

- a. Weight of body
- b. magnetic force
- c. muscular force
- d. electrostatics force

Ans: c. muscular force

8. We walk on the ground due to.

- a. magnetic force
- b. muscular force
- c. friction force
- d. action and reaction force

Ans: d. action and reaction force

9. _____ force that acts only when there is a physical contact between two bodies.

- a. Contact
- b. non-contact
- c. friction
- d. electrostatic

Ans: d. electrostatic

10. When a rocket is fired, hot _____ move out with action forces.

- a. solids
- b. liquids
- c. gases
- d. water

Ans: c. gases

More Short Questions.

1. How we Compare speeds of cyclist and moving car?

Ans: If a driver in a car and cyclist start their motion from the same point with their usual routine then you can see that car covers larger distance than cyclist in the same time. Faster things covers greater distance than slower things in the same time.

2. Give same information about SI units?

Ans: SI units stands for international system of units. Before SI units, there were different unit systems in use different parts of the world- It was very difficult for scientists and daily life business to run their work or business smoothly with different units. It demanded a unanimous system of units for the whole world.

3. What was the solution if this problem?

Ans: Scientists held a conference on weight and measures held in Paris in 1960 and approved a world-wide system of measurements called International system of unit (SI unit)

4. Who is the world Record Holder of men's 100-m Race? What is his speed?

Ans: Usain Bolt is the world Record Holder of men's 100 meter Race. His speed is 10.4 m/s or 37.5 km/h.

5. How you define a Graph?

Ans: Graph represents relation between two or more quantities in the form of diagram."

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Graph has two perpendicular lines intersecting at the point which is called origin. The horizontal line is called X-axis and vertical line is called Y-axis.

6. **Give same examples in which force acts on an objects?**

Ans: 1) When we pull a string to tighten up the Knot.

2). When we push accelerator of the moving car.

3). When we kick a ball to throw it in goal.

4). Gravitational force is acting down words.

5). Walking on the ground.

6). By applying brake, we slow down the car.

7). **Define contact force with examples.**

Ans: A force that acts only when there is physical contact between two bodies'!

Kicking the foot ball, Opening of a parachute, air resistance, friction, normal reaction force etc.

8). **What is Non-contact Force?**

Ans: Non-contact force is a type of force that acts on the object, without any physical contact with it. For examples gravitational force, magnetic force, between magnets and electrostatics force between charge etc.

9). **Define the 3rd law of motion.**

Ans: Every action has equal but opposite reaction

10) **What do you mean by Bouncing back of ball?**

Ans: When you throw the ball against the wall, the force that ball applies on the wall is action. After striking the wall, ball came back to you due to force exerted by wall on the ball is reaction.

11). **Briefly define the propulsion of rocket.**

Ans: When a rocket is fired, hot gases move out with action force and rocket moves forward due to reaction force.

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WAVES AND ENERGY

Questions and Activities

A. **MCQs (Choose the correct option)**

1. **Hertz (Hz) is the unit of:**

- a. Mass b. Energy
- c. Loudness d. Frequency

Ans: d. Frequency

2. **To hear echo, minimum distance between sound source and obstacle should be:**

- a. 71 m b. 17 m
- c. 17 cm d. 0.17 m

Ans: c. 17 m

3. **Which of the following is a longitudinal wave?**

- a. X-rays
- b. Waves on stretched rope