

Maharashtra Board Solutions Class

7-Science: Chapter 6- Measurement of Physical Quantities

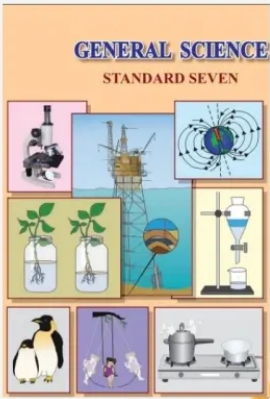
BOOK SOLUTIONS
CLASS 8
GENERAL SCIENCE

CHAPTER 6
Measurement of Physical Quantities

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GENERAL SCIENCE
STANDARD SEVEN

Maharashtra Board Solutions→



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7-Science: Chapter 6- Measurement of Physical Quantities

Class 7: Science Chapter 6 solutions. Complete Class 7 Science Chapter 6 Notes.

Maharashtra Board Solutions Class 7-Science: Chapter 6- Measurement of Physical Quantities

Maharashtra Board 7th Science Chapter 6, Class 7 Science Chapter 6 solutions

Questions and Answers

1. Write answers to the following questions in your own words:

Question a.

Why is the weight of the same object different on different planets?

Answer:

The weight of the same object is different on different planets because weight depends on the gravitational force of the planet and gravitational force on every planet is different so the weight also differs from planet to planet.

Question b.

What precautions will you take to make accurate measurements in day-to-day affairs?

Answer:

Following precautions will be taken to make accurate measurements in day to day affairs:

1. The balance should carry the stamp of standardisation by the department of weights and measures.

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2. Balance should be stable and the pointer of the balance should be upright.
3. The underside of the pan should not be tampered with any other weight or layers of other metal.
4. The weight should be made of metal.

Question c.

What is the difference between mass and weight?

Answer:

Mass	Weight
1. The amount of matter present in a substance is called mass.	1. The gravitational force that acts on this mass is called its weight.
2. It is a scalar quantity.	2. It is a vector quantity.
3. Mass remains same everywhere on the earth.	3. Weight changes from place to place on the ' earth.

2. Who is my companion?

Question 1.

Column 'A'	Column 'B'
1. Velocity	a. Litre
2. Area	b. Kilogram
3. Volume	c. metre/second
4. Mass	d. kilogram/cubic metre
5. Density	e. square metre

Answer:

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Column 'A'	Column 'B'
1. Velocity	c. metre/second
2. Area	e. square metre
3. Volume	a. Litre
4. Mass	b. Kilogram
5. Density	d. kilogram/cubic metre

3. Explain giving examples.

Question a.

Scalar quantity:

Answer:

A quantity that can be completely expressed by its magnitude alone is called a scalar quantity, e.g. length, breadth, area, mass, temperature, density, time, work. In all these examples a value with a unit is used to express quantities. Thus, we say that the length of a tunnel is 2 km.

Question b.

Vector quantity:

Answer:

The quantity that is expressed completely only by magnitude and direction are both given is called a vector quantity. Displacement, velocity are vector quantities e.g. a displacement of 20 km towards north, the aeroplane flying at a velocity of 500 km/hr towards Mumbai.

4. Explain, giving examples, the errors that occur while making measurements.

Question a.

Explain, giving examples, the errors that occur while making measurements.

Answer:

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Major causes of errors in measurement are:

1. Not using the appropriate device.
2. Not using the device properly.

Example: While buying things at grocery shops and the vegetable market remember to look out for the following:

- The balance should carry the stamp of standardisation by the department of weights and measures.
- Balance should be stable. The pointer of the balance should be upright.
- No changes should be done on the underside of the pan of the balance.
- Weight should be made up of metals and it has to be standardized.

5. Give reasons:

Question a.

It is not proper to measure quantities by using body parts as units.

Answer:

It is not proper to measure quantities by using body parts as units because length of the body parts changes from person to person, so accurate measurement can not be found with the body parts as units.

Question b.

It is necessary to get the weights and measures standardized at regular intervals.

Answer:

It is necessary to get the weights and measures standardized at regular intervals because of that accurate weight and measurement can be taken. Errors will be avoided.

6. Explain the need for accurate measurement and the devices to be used for that.

Question a.

Explain the need for accurate measurement and the devices to be used for that.

Answer:

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1. Measurement of substances that are precious or of great importance and used in very small quantities is done meticulously and accurately.
2. Due to advancements in technology, devices that measure very small magnitudes of quantities like distance, mass, time and temperature are available now.
3. e.g. distance and time in connection with very important sports competitions, mass of gold, body temperature etc.
4. Devices to be used for this are thermometer, digital balance (Analytical balance) etc.

Project:**Question 1.**

Collect information about various physical quantities used in day-to-day life and the devices used for their measurement.

Important Questions and Answers***Fill in the blanks:*****Question 1.**

The amount of matter present in a substance is called

Answer:

mass

Question 2.

..... is the qualitative measure of the inertia of an object.

Answer:

mass

Question 3.

The larger the mass, the is the inertia.

Answer:

greater

Question 4.

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Mass is a quantity.

Answer:

scalar

Question 5.

..... does not change from place to place anywhere in the world.

Answer:

mass

Question 6.

The gravitational force that acts on a mass is called its

Answer:

weight

Question 7.

Weight is a quantity.

Answer:

vector

Question 8.

System International (SI) is also called

Answer:

metric system

Question 9.

In Egypt in ancient times, the distance from a man's elbow to the tip of his middle finger was called a

Answer:

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cubit

Question 10.

Gold was weighed in a unit called

Answer:

gun

Who is my companion?

Question 1.

Column 'A'	Column 'B'
1. Gold	a. Hour glass
2. Time	b. Vector
3. Distance	c. Gunj
4. Weight	d. Cubit

Answer

Column 'A'	Column 'B'
1. Gold	c. Gunj
2. Time	a. Hour glass
3. Distance	d. Cubit
4. Weight	b. Vector

Say whether true or false. Correct and rewrite the false statements:

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Question 1.

The standards of the six fundamental units are kept in the National Physical Laboratory at New Delhi.

Answer:

True

Question 2.

Matter has a natural tendency to resist a change in its state, which is called inertia.

Answer:

True

Question 3.

Weight and mass are both equal quantities.

Answer:

False. Weight and mass are both different quantities

Question 4.

Work is a vector quantity.

Answer:

False. Work is a scalar quantity

Question 5.

Velocity is a scalar quantity.

Answer:

False. Velocity is a vector quantity

Question 6.

Unit of time in both the systems is second.

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Answer:

True

Question 7.

Unit of mass in C.G.S. system is kilogram

Answer:

False. Unit of mass in C.G.S. system is gram

Question 8.

Symbol of unit of second is sec.

Answer:

False. Symbol of unit of second is 's'

Question 9.

1 cubic foot means 28.317 ml

Answer:

False. 1 cubic foot means 28.317 litres.

Question 10.

Vector quantity requires magnitude only.

Answer:

False. Vector quantity required magnitude and direction both.

Give scientific reasons:

Question 1.

Weight of our body on the moon is less than that on the earth.

Answer:

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1. Gravitational power of moon is less than the earth.
2. Weight depends on the gravitational power of that place.
3. Since the gravitational power of the moon is less than that of the earth, the weight on moon is less than that on the earth.

Question 2.

Mass is a scalar quantity

Answer:

Mass is a scalar quantity because it can be completely expressed by its magnitude alone, so it is scalar quantity.

Question 3.

Weight is a vector quantity.

Answer:

Weight can be expressed completely only when magnitude and direction are both given so weight is a vector quantity.

Distinguish between the following:

Question 1.

Scalar quantity and Vector quantity

Answer:

Scalar quantity	Vector quantity
1. A quantity that can be completely expressed by its magnitude alone is called a scalar quantity.	1. The quantity that is expressed completely only when magnitude and direction are both given is called a vector quantity.
2. e.g. mass, length, area, breadth, density, time, work etc.	2. e.g. velocity displacement

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Question 2.**M.K.S. system and C.G.S. system****Answer:****M.K.S. system**

1. In this system distance is measured in metres, mass in kilograms and time in seconds.

2. e.g. Unit of velocity is m/sec, Unit of area is square metre.

C.G.S. system

1. In this system distance is measured in centimetres, mass in grams and time in seconds.

2. e.g. Unit of velocity is cm/sec, Unit of area is square centimetre.

Define the following:

1. Mass: The amount of matter present in a substance is called mass.
2. Inertia: Matter has a natural tendency to resist a change in its state, which is called Inertia.
3. Weight: The gravitational force that acts on the mass is called its weight.
4. Physical Quantities: The quantities in day to day life which can be measured are called physical quantities.
5. Standardization: The process of checking things against a standard measure from time to time is called standardization.

Write answers to the following questions in your own words.**Question 1.****What is an atomic clock?****Answer:**

An extremely accurate type of clock which is regulated by the vibrations of an atomic or molecular system such as caesium atom or ammonia is called atomic clock. It is used to maintain standard times of countries accurately.

Answer the following questions:**Question 1.**

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Why would the weight of an object be; maximum at the poles and minimum at the equator?

Answer:

1. The gravitational force that acts on the mass is called the weight.
2. The earth is not exactly spherical, it flattens at the poles.
3. As the distance increases the gravitational force decreases.
4. Therefore due to reduced distance at the poles compared to the equator, the weight is maximum at the poles than equator.

Question 2.

Why is the weight of an object at a high altitude less than its weight at the sea-level?

Answer:

1. The gravitational force that acts on the mass is called the weight.
2. The gravitational force is always inversely proportional to the distance.
3. So as the distance increases between the earth and the object, the gravitational force decreases.
4. The gravitational force by which the earth attracts an object towards its centre is called weight.
5. The weight at the sea-level is higher than at higher altitude, as the object is at a greater distance at higher altitudes compared to sea-level.



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Class 7 Science

- Chapter 1- The Living World: Adaptations and Classification
- Chapter 2- Plants: Structure and Function
- Chapter 3- Properties of Natural Resources
- Chapter 4- Nutrition in Living Organisms
- Chapter 5- Food Safety
- Chapter 6- Measurement of Physical Quantities
- Chapter 7- Motion, Force and Work
- Chapter 8- Static Electricity
- Chapter 9- Heat
- Chapter 10- Disaster Management
- Chapter 11- Cell Structure and Micro-organisms
- Chapter 12- The Muscular System and Digestive System in Human Beings
- Chapter 13- Changes - Physical and Chemical
- Chapter 14- Elements, Compounds and Mixtures
- Chapter 15- Materials We Use
- Chapter 16- Natural Resources
- Chapter 17- Effects of Light
- Chapter 18- Sound: Production of Sound
- Chapter 19- Properties of a Magnetic Field
- Chapter 20- In the World of Stars

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The Maharashtra State Board of Secondary and Higher Secondary Education or MSBSHSE (Marathi: महाराष्ट्र राज्य माध्यमिक आणि उच्च माध्यमिक शिक्षण मंडळ), is an **autonomous and statutory body established in 1965**. The board was amended in the year 1977 under the provisions of the Maharashtra Act No. 41 of 1965.

The Maharashtra State Board of Secondary & Higher Secondary Education (MSBSHSE), Pune is an independent body of the Maharashtra Government. There are more than 1.4 million students that appear in the examination every year. The Maha State Board conducts the board examination twice a year. This board conducts the examination for SSC and HSC.

The Maharashtra government established the Maharashtra State Bureau of Textbook Production and Curriculum Research, also commonly referred to as Ebalbharati, in 1967 to take up the responsibility of providing quality textbooks to students from all classes studying under the Maharashtra State Board. MSBHSE prepares and updates the curriculum to provide holistic development for students. It is designed to tackle the difficulty in understanding the concepts with simple language with simple illustrations. Every year around 10 lakh students are enrolled in schools that are affiliated with the Maharashtra State Board.

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As of now, the MSCERT and Balbharti are responsible for the syllabus and textbooks of Classes 1 to 8, while Classes 9 and 10 are under the Maharashtra State Board of Secondary and Higher Secondary Education (MSBSHSE).

How many state boards are there in Maharashtra?

The Maharashtra State Board of Secondary & Higher Secondary Education, conducts the HSC and SSC Examinations in the state of Maharashtra through its nine Divisional Boards located at Pune, Mumbai, Aurangabad, Nasik, Kolhapur, Amravati, Latur, Nagpur and Ratnagiri.

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