

Maharashtra Board Solutions Class

6-Science: Chapter 15- Fun with Magnets

BOOK SOLUTIONS
CLASS 6
GENERAL SCIENCE

CHAPTER 15
Fun with Magnets

IndCareer

GENERAL SCIENCE
STANDARD SIX

Maharashtra Board Solutions→



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Postal Address

IndCareer.com, 52, Shilpa Nagar, Somalwada Nagpur - 440015
Maharashtra, India

WhatsApp: +91 9561 204 888, **Website:** <https://www.indcareer.com>

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6-Science: Chapter 15- Fun with Magnets

Class 6: Science Chapter 15 solutions. Complete Class 6 Science Chapter 15 Notes.

Maharashtra Board Solutions Class 6-Science: Chapter 15- Fun with Magnets

Maharashtra Board 6th Science Chapter 15, Class 6 Science Chapter 15 solutions

Questions and Answers

1. How will you do this?

Question a.

Determine whether a material is magnetic or non-magnetic.

Answer:

1. To determine whether the material is magnetic or non-magnetic, a magnet is moved over it.
2. If the material sticks to the magnet, it is called magnetic material.
3. If the material does not stick to the magnet, it is non-magnetic.

Question b.

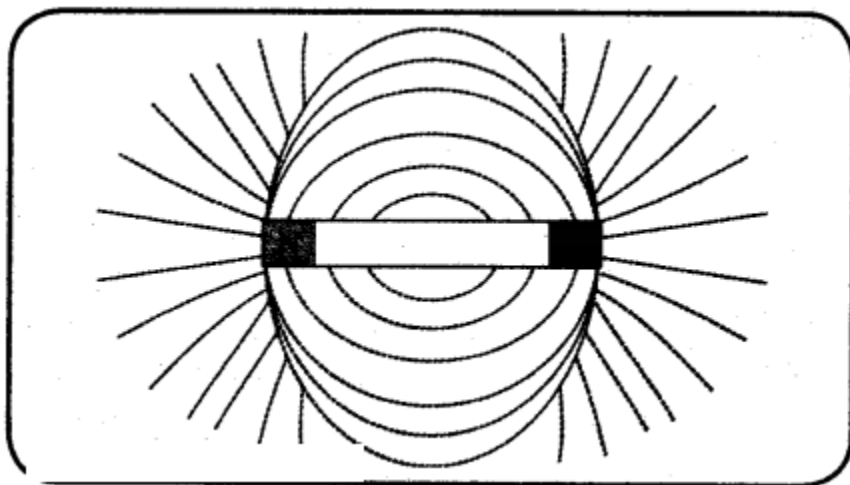
Explain that a magnet has a certain magnetic field.

Answer:

1. The space around a magnet in which the magnetic force is active is called the magnetic field.
2. Place a white paper on a drawing board and place a bar magnet in the middle of the paper.
3. Spread the iron filings on the sheet and gently tap the sheet.

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4. The iron filings arrange around the magnet in definite curved lines forming a symmetric pattern.
5. The lines are closer to each other near the poles and less crowded in the middle region around the magnet.
6. Beyond a particular region, the iron filings, will not get attracted.
7. The region where iron filings are attracted is the magnetic field of the magnets.



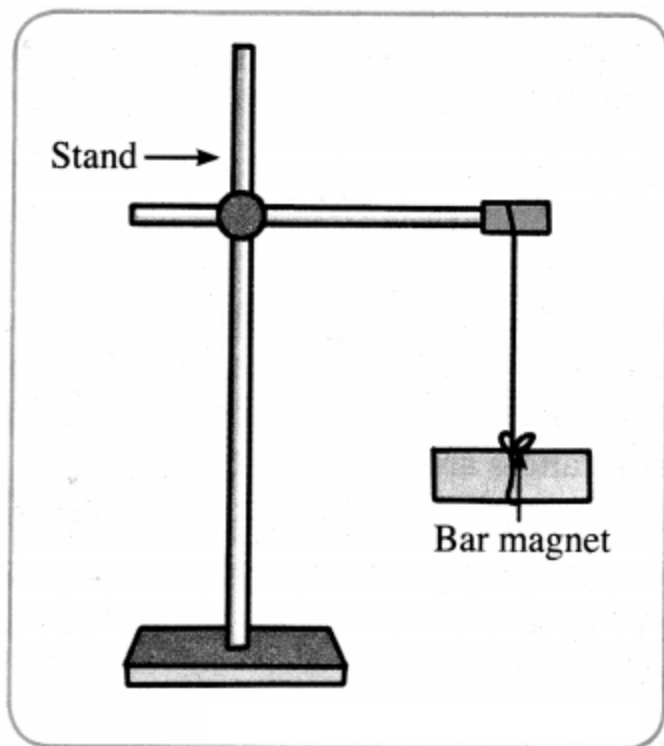
Question c.

Find the north pole of a magnet.

Answer:

1. Take a bar magnet. Tie a thread to the centre of a bar magnet and hang it from a stand.
2. Note the direction in which the magnet settles and turn it around again.
3. Allow it to settle and note the direction.
4. The end of the magnet that points to the north is called the north pole, while the end that points to the south is called the south pole.
5. The north pole is indicated by 'N' and the south pole by 'S'.

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2. Which magnet will you use?

Question a.

Iron is to be separated from a trash.

Answer:

1. Sharp and heavy iron scrap material is attached to a big disc.
2. The disc is a magnet and all scrap is attracted to it.
3. It is not possible to create, store such a big size magnet. Therefore magnetism is induced in the disc with the help of electricity.

An electromagnet is used which is attached to a crane for loading and unloading, transporting scrap and loose iron material from a trash.

Question b.

You are lost in a forest.

Answer:

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1. If we are lost in a forest, we should take help of a mariner's compass which will help us to find the directions while travelling through unknown regions.
2. If mariner's compass is not available, a bar magnet when suspended in the centre will rest in north-south direction.

Question c.

A window shutter opens and shuts continuously in the wind.

Answer:

A bar magnet can be attached to the window pane so that the window will be closed tight during strong winds also.

3. Fill in the blanks with appropriate word.

Question a.

If a bar magnet is hung by a thread tied at its centre, its north pole becomes steady in the direction of the pole of the earth. (south, north, east, west)

Answer:

North

Question b.

If a bar magnet is cut into equal pieces by cutting it at right angles to its axis at two pieces bar magnets are formed, and a total of poles are formed. (6,3,2)

Answer:

3, 6

Question c.

There is a repulsion between the poles of a magnet and attraction between its poles. (opposite, like.)

Answer:

like, opposite

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Question d.

**When magnetic material is taken close to a magnet, the material acquires
(permanent magnetism, induced magnetism, temporary, magnet keeper)**

Answer:

induced magnetism

Question e.

If a magnet attracts a piece of metal, that piece must be made of(any other metal but iron, magnetic material or iron, non-magnetic material, electromagnets)

Answer:

magnetic material or iron

Question f.

A magnet remains steady in a direction. (east-west, north-south,)

Answer:

north-south

4. Write the answers in your words.

Question a.

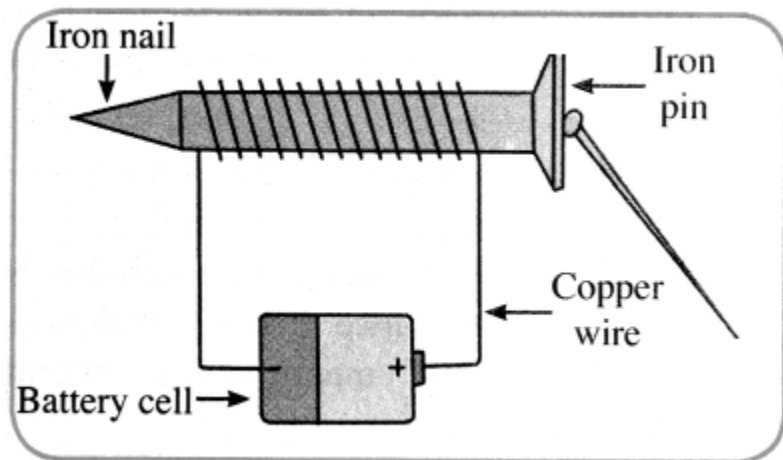
How is an electromagnet made?

Answer:

1. To make an electromagnet we need the following apparatus; An iron nail of 10 cm length, 1 metre long insulated copper wire, a battery cell, pins.
2. Wind the copper wire around the nail as shown in the figure. Connect the free ends of the wire to the two terminals of a cell through a plug key.
3. Close the key to complete the circuit.
4. Bring small pins near the tip of the nail and observe.

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5. When the circuit is completed, the iron pins are attracted by the nail and hence, they stick to the nail.



6. When the circuit is broken, the pins fall off.

7. A magnet is prepared by passing an electric current through an insulated wire wound around the iron nail. This is an electromagnet.

8. When the current is allowed to pass, the nail becomes a magnet and attracts pin / pins stick to it.

9. When the current is put off the nail does not behave as a magnet and therefore, pins fall off.

10. The magnetism is temporary in the case of an electromagnet.

Question b.

Write the properties of a magnet.

Answer:

Magnet possess following properties/ characteristics.

1. Magnet always settles in the north-south direction.
2. The magnetic force is concentrated at the two ends or poles of a magnet.
3. If a magnet is divided into two parts, two independent magnets are formed. It means that the two poles of a magnet cannot be separated from each other.

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4. A magnetic material acquires magnetism when placed near a magnet. This magnetism is called induced magnetism.
5. There is repulsion between like poles of a magnet, while there is attraction between the opposite poles.

Question c.

What are the practical uses of a magnet?

Answer:

1. Magnets are materials to which objects made from iron, nickel, cobalt are attracted. But man explored magnets and its properties and made his life comfortable.
2. Permanent Magnets: are used in caps of pin holders, doors of fridges, doors of cupboards etc.
3. Temporary magnets: Electromagnets are used in electric bells, circuit of various machines, ATM card swipe machines, MRI- Magnetic Resonance Image, loudspeakers, electric cranes, microphones, Mariner's compasses, etc.

Activity

Question 1.

Collect information regarding how the various magnets used in our day-to-day tasks are produced.

Question 2.

Collect information about the magnetism of the earth.

Important Questions and Answers

Fill in the blanks.

Question 1.

Iron objects to a magnet.

Answer:

stick

Question 2.

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A magnet is used in and

Answer:

gadgets and machines

Question 3.

The materials that stick to a magnet are called materials.

Answer:

magnetic

Question 4.

Materials that do not stick to a magnet are called materials.

Answer:

non-magnetic

Question 5.

When a magnet attracts an object, that object is due to the magnetic force.

Answer:

displaced

Question 6.

Magnetism is a form of

Answer:

energy

Question 7.

A magnet always settles in the direction.

Answer:

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north-south

Question 8.

The north pole is indicated by' and the south pole by '.....'.

Answer:

'N'-'S'

Question 9.

The end of the magnet that points to the north is called the

Answer:

Northpole

Question 10.

The end of the magnet that points to the south is called the

Answer:

South pole

Question 11.

The magnetic force is concentrated at the two ends or of a magnet.

Answer:

poles

Question 12.

If a magnet is divided into two parts, two magnets are formed.

Answer:

independent

Question 13.

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It means that the two poles of a magnet cannot be from each other.

Answer:

separated

Question 14.

A magnetic material acquires magnetism when placed near a

Answer:

magnet

Question 15.

Iron filling stick to the iron bar when the is near it.

Answer:

magnet

Question 16.

There is between like poles of a magnet.

Answer:

repulsion

Question 17.

There is between the opposite poles of a magnet.

Answer:

attraction

Question 18.

Magnetic objects magnetism.

Answer:

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induce

Question 19.

Material is a mixture of aluminium, nickel and cobalt.

Answer:

Alnico

Question 20.

..... magnets are made from a mixture of nickel, cobalt and iron.

Answer:

Permanent

Question 21.

The bar of soft or pure iron which protects a magnet is called

Answer:

magnet keeper

Question 22.

Magnetism gets when a magnet is heated, thrown, knocked about or broken into pieces.

Answer:

destroyed

Question 23.

Electromagnetic energy is used in our life.

Answer:

day-to-day

Question 24.

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The metals iron, cobalt, nickel are materials.

Answer:

magnetic

Question 25.

..... is a natural magnet.

Answer:

Magnetite

Match the columns.

Question a.

Column 'A'	Column 'B'
1. Iron, nickel, cobalt	(a) Electromagnet
2. Door bell magnet	(b) Permanent magnet
3. Nickel, cobalt, aluminium	(c) Magnetic metal
4. Cupboard magnet	(d) Mariner's compass
5. Lodestone	(e) Alnico

Answer:

Column 'A'	Column 'B'
1. Iron, nickel, cobalt	(c) Magnetic metal
2. Door bell magnet	(a) Electromagnet
3. Nickel, cobalt, aluminium	(e) Alnico

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4. Cupboard magnet (b) Permanent magnet
5. Lodestone (d) Mariner's compass

State whether true or false. If false, correct the statement.

Question 1.

Material alnico is a mixture of aluminium, nickel and iron.

Answer:

False: Material alnico is a mixture of aluminium, nickel and cobal.

Question 2.

Magnetism of electromagnet is permanent.

Answer:

False: Magnetism of electromagnet is temporary.

Question 3.

The bar of soft or pure iron protects the magnet.

Answer:

True

Question 4.

Like poles attract each other and unlike poles repel each other.

Answer:

False: Like poles repel each other and unlike poles attract each other.

Question 5.

The magnetic force is concentrated at the centre of the magnet.

Answer:

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False: The magnetic force is concentrated at the poles of the magnet

Question 6.

Magnetism is a kind of energy.

Answer:

True

Question 7.

Mariner's compass is used for finding directions while travelling.

Answer:

True

Question 8.

Cobalt is a magnetic material.

Answer:

True

Question 9.

The north pole is indicated by 'S' and the south pole is indicated by 'N'.

Answer:

False: The north pole is indicated by 'N' and the south pole is indicated by 'S'.

Question 10.

Electromagnetism is used in many places in our day-to-day life.

Answer:

True

Answer the following questions in one sentence.

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Question 1.

What is a magnet?

Answer:

The material to which objects made from iron, nickel, cobalt get attracted is called as magnet.

Question 2.

What is magnetism?

Answer:

The property of a material to which objects made from iron, nickel, cobalt get attracted is called as magnetism.

Question 3.

What are magnetic materials?

Answer:

Materials that stick to a magnet are called magnetic materials, e.g. cobalt, nickel, iron.

Question 4.

What are non-magnetic materials?

Answer:

Materials that do not stick to a magnet are called non-magnetic material, e.g. plastic, rubber, glass etc.

Question 5.

What are lodestones?

Answer:

Lodestones are leading stones which are used for finding the directions while travelling through unknown regions.

Question 6.

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How is magnetism a kind of energy?

Answer:

Work is done by magnetic force. Thus, magnetism is a kind of energy.

Question 7.

What is an electromagnet?

Answer:

When magnetism is produced in the iron due to the electric current, it is called an electromagnet.

Question 8.

How are permanent magnets made?

Answer:

Permanent magnets are made from a mixture of nickel, cobalt and iron.

Question 9.

List the instruments where electromagnets are used.

Answer:

Electromagnets are used in doorbells, cranes, loudspeakers, voltmeters, TVs, antennas, radios etc.

Question 10.

How is magnetism destroyed?

Answer:

When magnets are heated, thrown, knocked about or broken into pieces, magnetism gets destroyed.

Question 11.

What is a magnet keeper?

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Answer:

A magnet keeper is a bar of soft or pure iron which protects a magnet. It is a piece of soft iron placed in the box in which a magnet is kept.

Question 12.

Magnets exist in variety of shapes.

Answer:

Today, magnets are used in many machines, gadgets and devices. They are all man-made. Hence, they can have a variety of shapes depending upon their use.

Answer the following briefly.

Question 1.

What are leading stones?

Answer:

1. It was known quite long ago to the people in China and Europe that a piece of magnetite, hung freely always settled in the north-south direction.
2. These rocks then came to be used for finding the directions while travelling through unknown regions.
3. That is why they are called leading stones or Lodestones.

Question 2.

What has led to the invention of the Mariner's compass?

Answer:

Leading stones have led to the invention of the mariner's compass.

Question 3.

List the different shapes of magnets.

Answer:

1. Magnets have a variety of shapes depending on their uses.

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2. They are bar magnets, disc magnets, horseshoe magnets, ring shaped magnets, cylindrical magnets, and small button magnets.

Question 4.

What are permanent magnets?

Answer:

1. Magnets which do not lose their magnetism easily are called permanent magnets or Magnets which are made up of magnetic substances are permanent magnets.
2. e.g. Magnets fixed in a pin holder, magnets of a door of a cupboard are permanent magnets.
3. Permanent magnets are made from a mixture of
 - Nickel, cobalt, iron
 - Aluminium, nickel, cobalt – alnico

Give scientific reasons.

Question 1.

Why is it important to place a magnet keeper in a box along with magnets?

Answer:

Magnetism gets destroyed when a magnet is heated, thrown, knocked about or broken into pieces. A magnet keeper which is a bar of soft or pure iron protects a magnet.

Question 2.

Cranes with magnets are used.

Answer:

When a magnet attracts an object, that object is displaced due to the magnetic force. In factories, ports, garbage depots, large objects are lifted and shifted from place to place using cranes. Hence cranes are fitted with magnets.

Can you tell?

Question 1.

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Pins in a pin holder do not fall? While we are shutting the door of a fridge, we find that it closes automatically from certain distance and does not open unless pulled again.

Answer:

Magnet is fitted in the cap of a pin holder and in the door of a fridge. Iron objects stick to the magnet.

Question 2.

Take a magnet from the laboratory and bring it near various objects in your use. Which of them stick to the magnet? What material is each of them made of? Observe these things carefully. Classify the objects into two groups: those which stick to the magnet, those which do not.

Comb, table, cupboard – iron, spoon, scissors, pen, pencil, eraser, books, mobile, laptops, glass bangles, hair pin, cupboard handle, chair, steel lunch box, magnetic stickers, toys, gold ring.

Answer:

Stick to the magnet	Doesn't stick to the magnet
Iron cupboard, spoon, scissors, hairpin, steel lunch box, magnetic stickers	Comb, table, pen, pencil, eraser, books, glass bangles, chair, mobile, laptops, cupboard handle, toys, gold ring

Question 3.

Take a mixture of sand, pieces of paper, sawdust, iron filings and pins in a saucer and pass a magnet around the mixture. What do you see?

Answer:

When magnet is moved over a mixture of sand, pieces of paper, sawdust, iron filings and pins, pins and iron filings will cling to the magnet. Sand, sawdust and pieces of paper will remain behind.

Question 4.

How is a Mariner's Compass used?

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Answer:

1. A Mariner's Compass is a magnetic needle used in navigation to show direction by deflections.
2. It is a direction-finding instrument used in navigation.
3. It is placed on the maps, grounds, decks as it will point to the magnetic north pole.
4. It has two or more magnets permanently attached to a compass card which moves freely on a pivot.
5. The needle fixed on the compass bowl indicates the ship's heading position.

Question 5.

Find out where the magnet given are used?

Answer:

Magnets	Uses
Horseshoe magnet	used in electric bell
Circular magnet	used in loudspeaker.
Magnetic needle	used in Mariner's Compass.
Disc magnets	used in toys
Bar magnets	used in cupboard doors
Button magnet	supporting side rails or blockouts
Square magnet	Industries
Arc magnet	Electric motors and generators.
Cylindrical magnet	used in medicine, used in treatment of scoliosis patients.

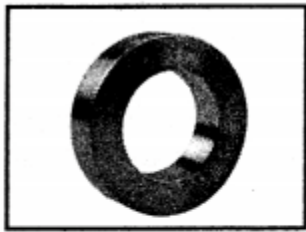
Question 6.

Identify the different types of magnets as shown in the picture below.

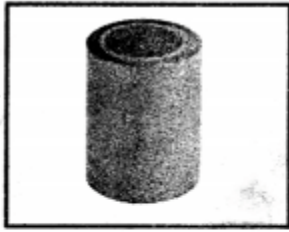
Answer:

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- a. Circular magnet
- b. Cylindrical magnet
- c. Horseshoe magnet
- d. Bar magnet



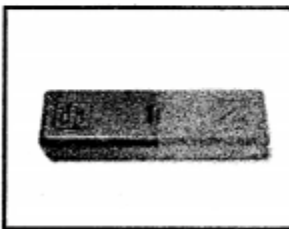
(a)



(b)



(c)



(d)



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Class 6 Science

- Chapter 1- Natural Resources - Air, Water and Land
- Chapter 2- The Living World
- Chapter 3- Diversity in Living Things and their Classification
- Chapter 4- Disaster Management
- Chapter 5- Substances in the Surroundings - Their States and Properties
- Chapter 6- Substances in Daily Use
- Chapter 7- Nutrition and Diet
- Chapter 8- Our Skeletal System and the Skin
- Chapter 9- Motion and Types of Motion
- Chapter 10- Force and Types of Force
- Chapter 11- Work and Energy
- Chapter 12- Simple Machines
- Chapter 13- Sound
- Chapter 14- Light and the Formation of Shadows
- Chapter 15- Fun with Magnets
- Chapter 16- The Universe

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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.

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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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Postal Address

IndCareer.com
52, Shilpa Nagar,
Somalwada
Nagpur - 440015
Maharashtra, India

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