

Chapter 13: Fun with Magnets

NCERT Exemplar · Class 6 · Science

Multiple Choice Questions

Question 1

Observe pictures A and B given in Fig. 13.1 carefully. Which of the following statements is correct for the above-given pictures?

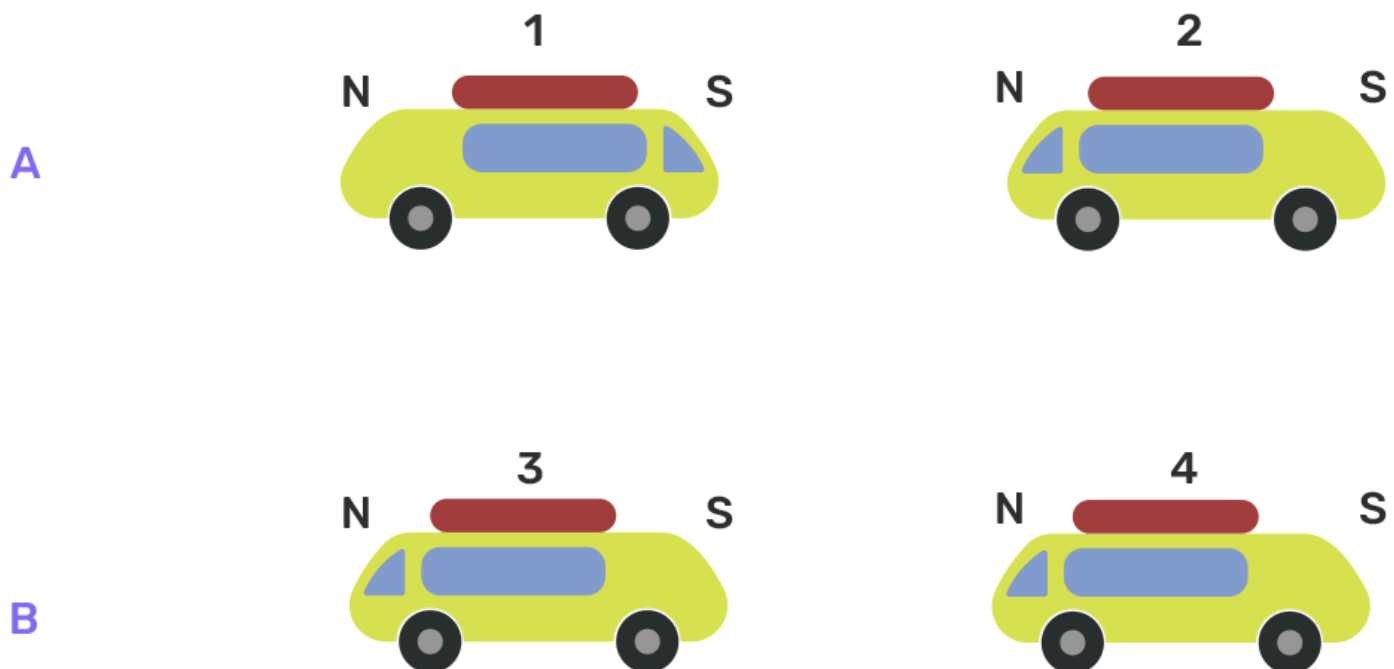


Fig.13.1

A.

In A, cars 1 and 2 will come closer, and in B, cars 3 and 4 will come closer.

B.

In A, cars 1 and 2 will move away from each other, and in B, cars 3 and 4 will move away.

C.

In A, cars 1 and 2 will move away, and in B, 3 and 4 will come closer to each other.

D.

In A, cars 1 and 2 will come closer to each other and in B, 3 and 4 will move away from each other.

Answer

Correct option: D

Solution

Ans: The correct answer is option (d): In A, cars 1 and 2 will come closer to each other and in B, 3 and 4 will move away from each other.

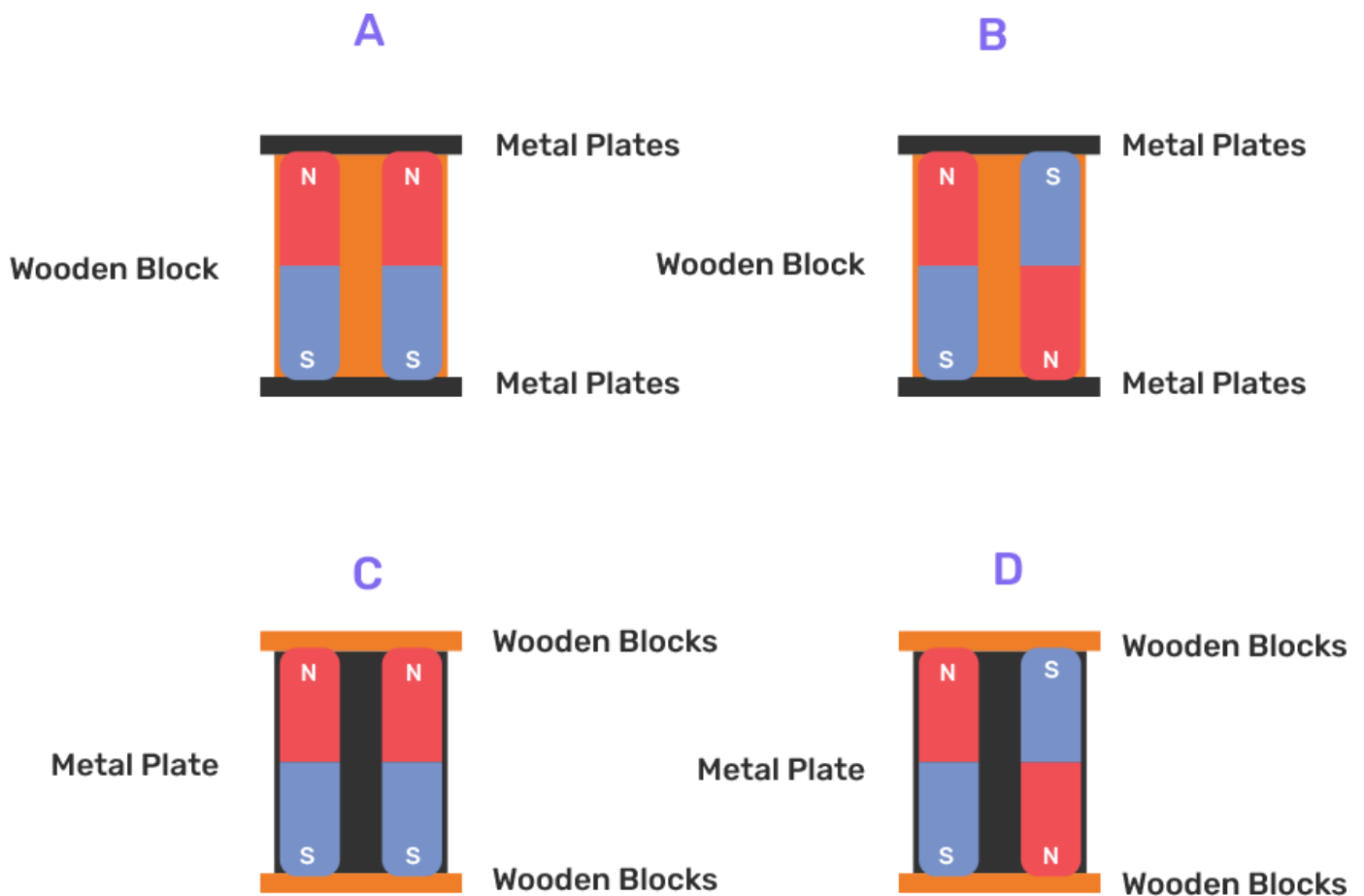
If the magnets on vehicles 1 and 2 are facing each other with opposite poles, the cars will be attracted.

If the magnets on cars 1 and 2 are facing each other with the same poles, the cars will repel each other.

In scenario B, the magnets on vehicles 3 and 4 will repel each other because they have the same pole.

Question 2

The arrangement to store two magnets is shown by figures (a), (b), (c) and (d) in Fig. 13.2. Which one of them is the correct arrangement?



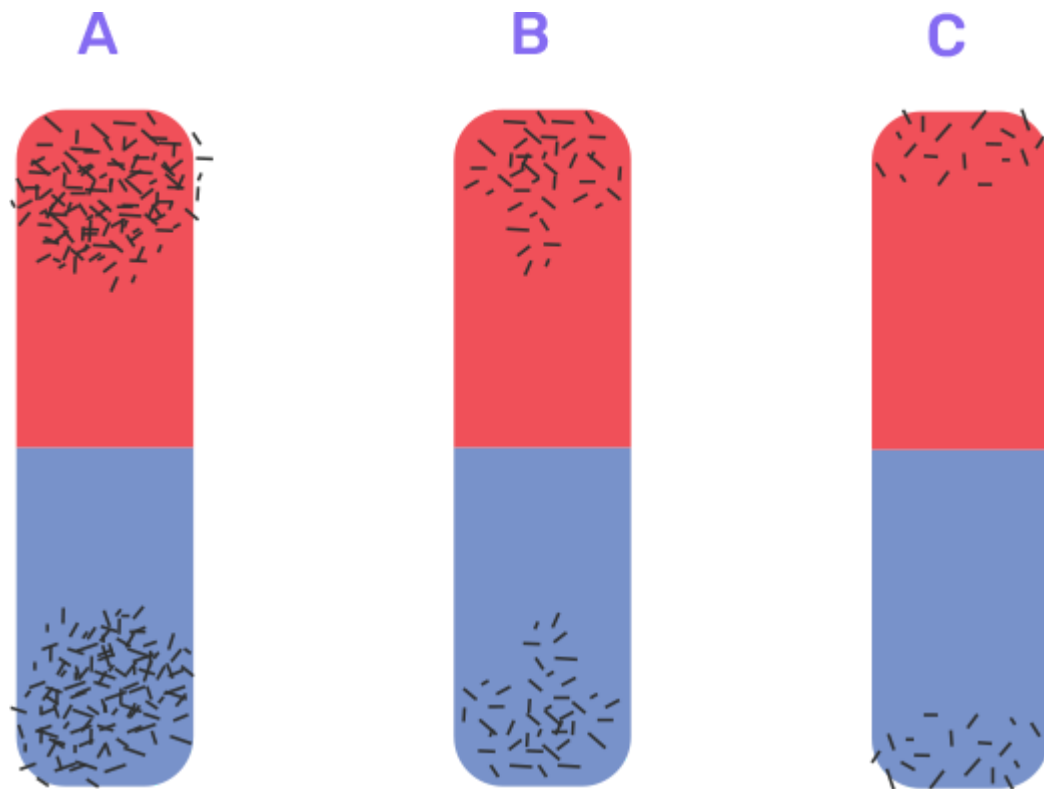
Solution

Ans: The correct answer is option (b).

Two magnets placed on either side of the wooden block with opposite poles are correct to keep magnets.

Question 3

Three magnets A, B and C, were dipped one by one in a heap of iron filing. Fig. 13.3 shows the amount of iron filings sticking to them. The strength of these magnets will be



A.

$$A > B > C$$

B.

$$A < B < B > C$$

C.

$$A = B = C$$

D.

$$A < B > C$$

Answer

Correct option: A

Solution

Ans: The correct answer is option (a) $A > B > C$.

The more the strength of the magnet, the more will be the iron filings stuck to it.

Question 4

North pole of a magnet can be identified by

A.

Another magnet having its poles marked as North Pole and South Pole.

B.

Another magnet no matter whether the poles are marked or not.

C.

Using an iron bar.

D.

Using iron filings.

Answer

Correct option: A

Solution

Ans: The correct answer is option (a) another magnet having its poles marked as the North Pole and the South Pole.

If another magnet with the north pole is brought closer, the first magnet will repel it, and thus North pole can be identified.

Question 5

A bar magnet is immersed in a heap of iron filings and pulled out. The amount of iron filling clinging to the

A.

The North Pole is almost equal to the South Pole.

B.

North Pole is much more than the South Pole.

C.

The North Pole is much less than the South Pole.

D.

Magnet will be the same all along its length.

Answer

Correct option: A

Solution

Ans: The correct answer is option (a) North Pole is almost equal to the South Pole.

The strength of a magnet is identical on both poles.

Very Short Answer Questions

Question 6

Fill in the blanks

(i) When a bar magnet is broken; each of the broken parts will have pole/poles.

(ii) In a bar magnet, magnetic attraction is near its ends.

Solution

Ans: Fill in the blanks- (i) two. (ii) more.

Question 7

Paheli and her friends were decorating the class bulletin board. She dropped the box of stainless steel pins by mistake. She tried to collect the pins using a magnet. She could not succeed. What could be the reason for this?

Solution

Ans: Stainless steel is typically non-magnetic, meaning it is not attracted to magnets. Magnets are exclusively attracted to metals with magnetic properties, such as nickel, iron, and cobalt.

Question 8

How will you test that, 'tea dust' is not adulterated with iron powder?

Solution

Ans: We can use a magnet to detect iron powder impurities in tea dust. If there is iron powder in the 'tea dust', it will get attracted to the magnet, and if there is no iron dust, the magnet will be clear.

Question 9

Boojho dipped a bar magnet in a heap of iron filings and pulled it out. He found that iron filings got stuck to the magnet, as shown in Fig. 13.4.



Fig. 13.4

(i) Which regions of the magnet have more iron filings sticking to it?

(ii) What are these regions called?

Solution

Ans: (i) The strength of the magnet is concentrated at its ends so that the poles will have more filings on them.

(ii) These regions are termed as 'South pole' and 'North pole'.

Short Answer Questions

Question 10

Four identical iron bars were dipped in a heap of iron filings one by one. Fig. 13.5 shows the amount of iron filings sticking to each of them.

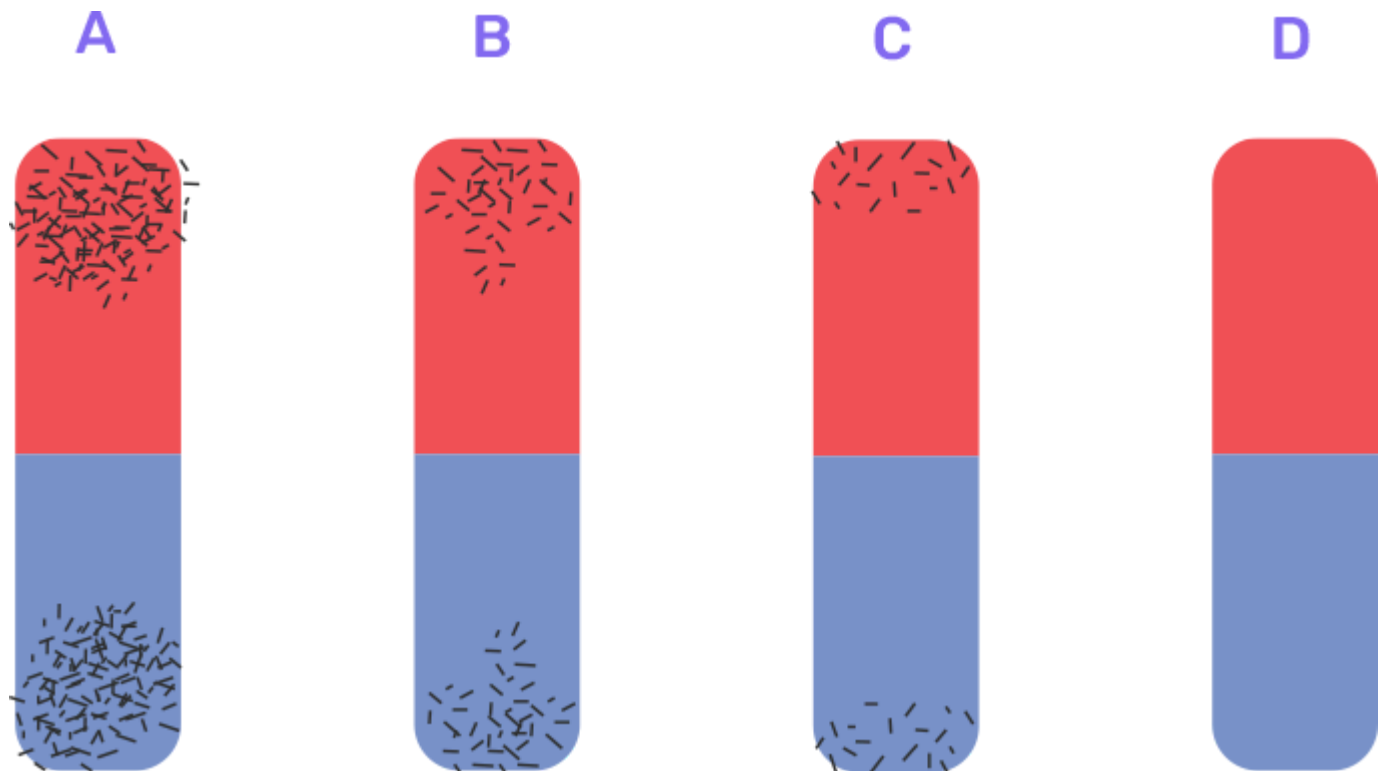


Fig. 13.5

(i) Which of the iron bar is likely to be the strongest magnet?

(ii) Which of the iron bars is not a magnet? Justify your answer.

Solution

Ans: i) Among the four given magnets, the Iron bar marked with (a) is the strongest magnet since many filings are attached to it.

ii) The Iron bar that has no filings attached to it is not a magnet. Such a piece is an Iron bar (b).

Question 11

A toy car has a bar magnet laid hidden inside its body along its length. Using another magnet, how will you find out which pole of the magnet is facing the front of the car?

Solution

Ans: We'll take a bar magnet and point the north pole towards the car, then the south pole is at the front of the car if the automobile is attracted to it. If it is rejected, it indicates that the North Pole is in front of the vehicle. The magnet's attraction and repulsion cause this phenomenon. Poles that are similar repel each other, whereas poles that opposite attracts each other.

Question 12

Match Column I with Column II (One option of A can match with more than one option of B)

Column I	Column II
a) Magnet attracts	(i) Rests along a particular direction.
b) Magnet can be repelled	(ii) Iron
c) Magnet if suspended freely	(iii) by another magnet

d) Poles of the magnet can be identified by	(iv) iron filings
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Solution

Ans: The correct match is

Column I	Column II
a) Magnet attracts	(ii) iron, (iii) another magnet and (iv) iron filing
b) Magnet can be repelled	(iii) another magnet
c) Magnet if suspended freely	(i) Rests along a particular direction
d) Poles of the magnet can be identified by	(iii) another magnet

Question 13

You are provided with two identical metal bars. One out of the two is a magnet. Suggest two ways to identify the magnet.

Solution

Ans: There are two techniques to recognise magnets.

1. Take both metal bars and place them in the iron filings, then remove them immediately. The magnet will be filled with iron filings, while the regular metal bar will have no filings.
2. Place a magnet near each of the metal bars one at a time. The magnetic bar that attracts or repels the magnet is magnetic, whilst the other is not.

Long Answer Questions

Question 14

Three identical iron bars are kept on a table. Two out of three bars are magnets. In one of the magnets the North-South poles are marked. How will you find out which of the other two bars is a magnet? Identify the poles of this magnet.

Solution

Ans: Take the magnet that has the North and South poles marked on it. Keep both iron bars next to it, and both will be drawn to it since they are magnetic. So, one after the other, test each of the two magnet bars for repulsion. If the first magnet bar you grabbed repels the specified magnet bar, this will be the second one. Magnets both attract and repel, whereas iron attracts.

Question 15

Describe the steps involved in magnetising an iron strip with the help of a magnet.

Solution

Ans: The following steps may be used to magnetise an iron strip using a magnet:

1. Lay down the required iron strip to be magnetised on a solid wood surface.
2. Place a bar magnet in your hands with one end on one edge of the strip and the other end on the other.
3. Move the magnet along the length of the strip without lifting it until you reach the opposite edge.
4. Repetition of the preceding stages.
5. Place the iron fillings on the strip and expand them. If it is attracted, the strip will become magnetised; if not, repeat the procedures a few times more.

Question 16

Fig. 13.6 shows a magnetic compass. What will happen to the position of its needle if you bring a bar magnet near it? Draw a diagram to show the effect of the needle on bringing the bar magnet near it.

Also, draw the diagram to show the effect when the other end of the bar magnet is brought near it.

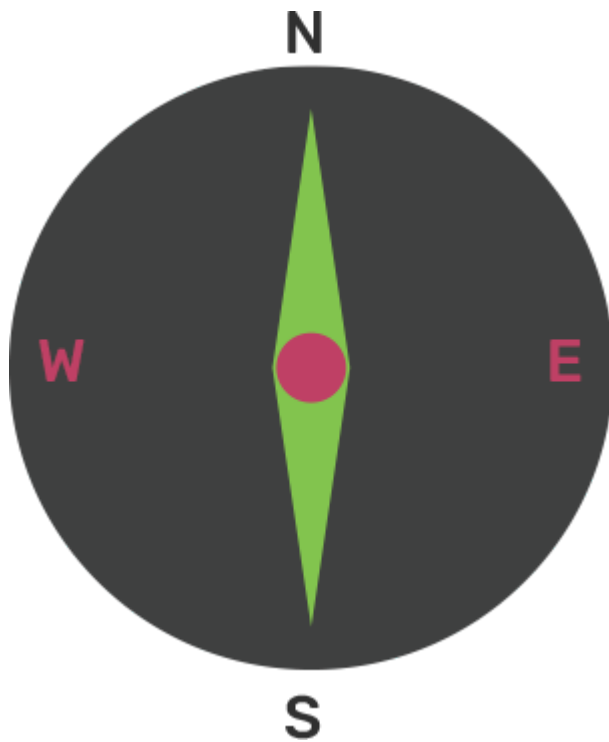


Fig. 13.6

Solution

Ans: There will be deflection in the needle of the magnetic compass. The figure below demonstrates the working of the magnetic compass:



Question 17

Suggest an activity to prepare a magnetic compass using an iron needle and a bar magnet.

Solution

Ans: Using the approach below, you can make a magnetic compass.

1. On a wooden table, place one needle.
2. Move a magnet along the length of the needle without raising it.
3. When you reach the needle's endpoint, raise the magnet and rub it in the same way again.

4. Keep going in the same direction as before and repeat the steps.
5. Now, in a water-filled container, set the needle on the cork.
6. The needle will change and position itself in the "North-South" way.

Question 18

Boojho kept a magnet close to an ordinary iron bar. He observed that the iron bar attracts a pin, as shown in Fig. 13.7. What inference could he draw from this observation? Explain.



Fig. 13.7

Solution

Ans: Boojho can infer that the iron bar behaves like a magnet and possesses magnetic properties till it is in the vicinity of the magnet. The marking of the poles of the iron bar and the pin are shown in the figure below:



Question 19

A bar magnet is cut into two pieces A and B, from the middle, as shown in Fig. 13.8 Will the two pieces act as individual magnets? Mark the poles of these two pieces. Suggest an activity to verify your answer.

**Solution**

Ans: The split magnet's components will function as two separate magnets. They'll have a North Pole and a South Pole as well. Using a compass or a test of repulsion between newly generated magnets, we may identify the poles of split magnets.

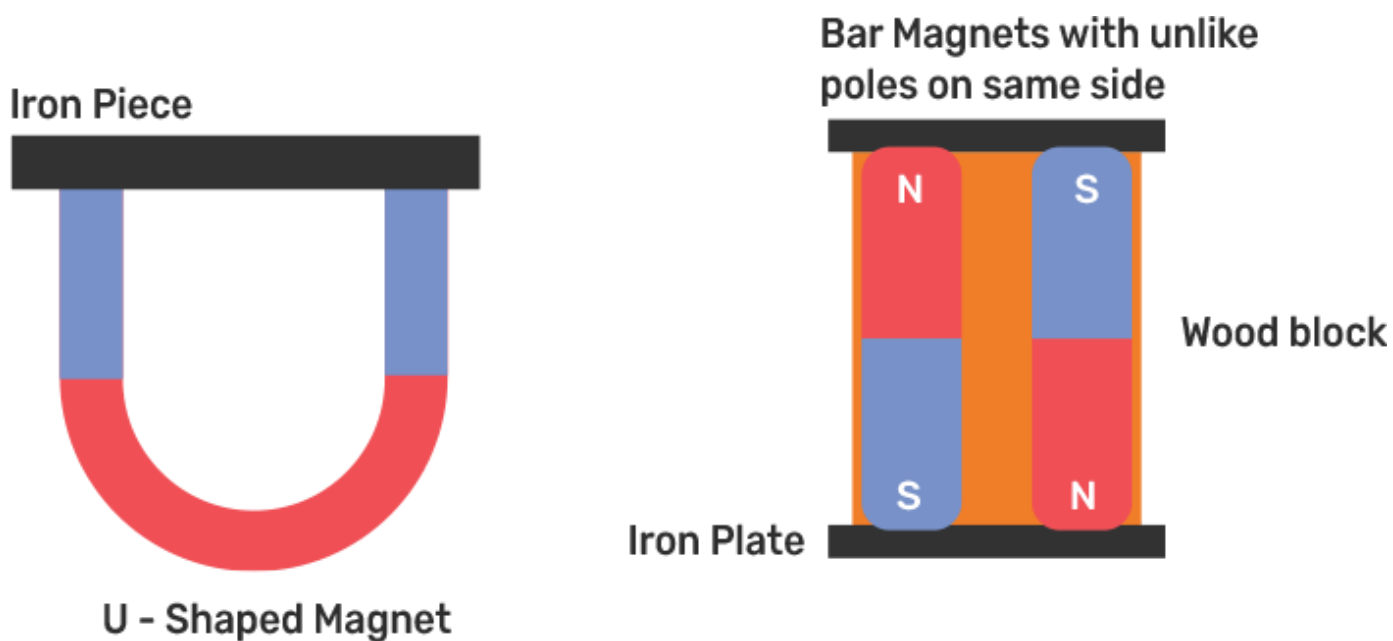
**Question 20**

Suggest an arrangement to store a U shaped magnet. How is this different from storing a pair of bar magnets?

Solution

Ans: A soft iron is placed on the tip of a U-magnet, which is then placed in a wooden box.

To divide the bar magnets that are facing the same way, a wooden block is arranged between them, and the edges are attached to the soft iron bar.



NCERT Exemplar Class 6 Science Solutions: Highlights

- The NCERT Exemplar Class 6 Science Solutions works as a self-assessment guideline for the student.
- There is more clarity supplied by the explanations because they deal with the foundational concepts.
- Students from different Boards of Education can benefit from the solutions because they are based on the subject content.
- The concepts of science must be well understood rather than just memorized. NCERT Exemplar Book for Class 6 Science has questions that are suited for this task. It improves the students' ability to reason more effectively.