

Chapter 9: Methods of Separation in Everyday Life

Practice Worksheet 2

Name: _____ Class & Sec: 6 _____ Date: _____

Section A: Multiple Choice Questions

1. Threshing is the process of:
(a) Picking out stones by hand (b) Beating stalks to remove grains (c) Blowing air to remove husk (d) Passing a mixture through a sieve
2. Sieving is most useful when the components of a mixture differ in:
(a) Colour (b) Size (c) Smell (d) Taste
3. At construction sites, sieves are commonly used to separate:
(a) Cement from water (b) Pebbles and stones from sand (c) Bricks from iron rods (d) Sand from cement bags
4. Which factor is usually essential for filtration?
(a) Apparatus size (b) Presence of air (c) Pore size (d) Temperature of the mixture
5. While heating a china dish containing salt solution, caution is needed mainly because:
(a) It may float away (b) The solution may catch fire (c) The dish and flame can cause burns (d) The salt may turn into a gas
6. The substance that floats to the top during the churning of curd is:
(a) Buttermilk (b) Butter (c) Water (d) Whey
7. The carpenter in the chapter separated iron nails from sawdust using a:
(a) Sieve (b) Magnet (c) Filter (d) Sloop
8. Recyclers use magnets fitted to cranes mainly to separate:
(a) Plastic waste (b) Paper waste (c) Scrap iron (d) Glass waste
9. A mixture is formed when:
(a) Only one substance is present (b) Two or more substances are mixed together (c) A substance changes its state (d) A liquid evaporates completely
10. Which of these is NOT a method of separation mentioned in the chapter?
(a) Winnowing (b) Filtration (c) Photosynthesis (d) Sieving

Section B: Fill in the Blanks

1. Holding a _____ over a plate lets fine flour pass through while bran stays on top.
2. _____ machines perform threshing and winnowing simultaneously.
3. In Sabarmati Ashram they learn about the _____ satyagrah.
4. A _____ is placed below the china dish to support it while heating.
5. Curd is churned using a _____ to obtain butter.
6. After churning, the liquid left behind once butter is removed is called _____.
7. Substances attracted by a magnet are called _____ substances.
8. The method used by the carpenter to separate iron nails from sawdust is called _____.
9. We separate substances either to obtain two useful components or to remove a component that is _____.
10. A mixture having more than two components may need a _____ of several methods to be fully separated.

Section C: True or False

1. Sieving can be used to separate the two liquids in any liquid-liquid mixture. (**True / False**)
2. A china dish is used for heating the salt solution during evaporation. (**True / False**)
3. Wire gauze is placed below the china dish to support it while heating. (**True / False**)
4. Butter is heavier than buttermilk and sinks to the bottom during churning. (**True / False**)
5. Magnetic separation can be used to separate plastic pieces from sawdust. (**True / False**)
6. Recyclers use magnets to separate scrap iron from waste for reuse. (**True / False**)
7. A mixture is formed when only a single substance is present. (**True / False**)
8. If the holes of a sieve are the same size as the particles, sieving may not work properly. (**True / False**)
9. We always need only one method to separate any kind of mixture. (**True / False**)
10. Threshing machines are also called threshers. (**True / False**)

Section D: Answer in Two Lines

1. Why are the holes of a sieve important for sieving to work properly?

2. What precaution should be taken while performing Activity 9.3?

3. What is the role of the wire gauze in Activity 9.3?

4. What happens to butter and buttermilk during churning?

5. Name one electrical kitchen appliance that can help make buttermilk.

6. How did the carpenter's iron nails get mixed with sawdust?

7. How were the iron nails separated from the sawdust?

8. Why can magnetic separation not be used for all kinds of mixtures?

9. State the two purposes for which we separate substances.

10. Why may a mixture need more than one method of separation?

Section E: Short Notes (Answer in 5–8 lines)

1. Describe Activity 9.3 (heating a salt solution in a china dish) and explain what it demonstrates.

2. Explain churning as a method of separation with reference to butter and buttermilk.

3. Explain magnetic separation with the example of the carpenter and iron nails.

4. Why do we separate substances? Explain with examples for both purposes.

5. Explain sieving and how it is used in daily life, giving two examples.

Section F: Case Study Based Questions

Case Study 1

Case Study: Before making chapatis, Rehana's mother takes wheat flour and passes it through a sieve into a big plate. She notices a few small bits of bran and tiny stones remaining on top of the sieve, while soft flour collects in the plate below.

i) Name the method of separation being used here.

ii) On what basis are the flour and the bran/stones separated by this method?

iii) What would happen if the holes of the sieve were too large?

Case Study 2

Case Study: In a school science lab, the teacher pours some salt solution into a china dish, places it on a wire gauze over a spirit lamp, and asks students to observe carefully from a safe distance as she heats it slowly.

i) What is the teacher trying to demonstrate through this activity?

ii) What will be left in the china dish after all the water has boiled away?

iii) Why does the teacher ask students to observe from a safe distance?

Case Study 3

Case Study: Every morning, Priya's grandmother takes the cream collected from boiled milk over several days and churns it in a mathni inside a large earthen pot. After churning for a while, Priya notices a soft yellowish substance floating on top, while a thin liquid remains below.

i) Name the process being carried out by Priya's grandmother.

ii) What are the two components separated, and which one floats to the top?

iii) Name one modern electrical appliance that could make this process faster.

Case Study 4

Case Study: In the school's craft room, students were cutting wood for a project. Afterwards, the teacher noticed that some small iron nails and pins had fallen and

mixed with the wood shavings on the floor. She asked a student to clean this up safely without using bare hands to pick out each nail.

i) Suggest a quick and safe method the student could use to separate the nails from the wood shavings.

ii) Why would this method work well for this mixture?

iii) Name one other place where this same method is used on a larger scale.

Case Study 5

Case Study: *At a construction site, workers pour sand through a wire mesh sieve before mixing it with cement. Vivek, who is visiting his father at the site, notices small stones and pebbles being left on top of the sieve while fine sand falls through into a container below.*

i) Identify the method of separation being used at the construction site.

ii) Why is it necessary to remove stones and pebbles from the sand before using it for construction?

iii) Based on this example, state one more place (other than construction) where this same method could be useful.

Section G: Picture Based Questions

Picture 1



i) Name the process shown in this picture.

ii) What are the people in the picture using to carry out this process?

iii) What happens to the grains as a result of this process?

Picture 2

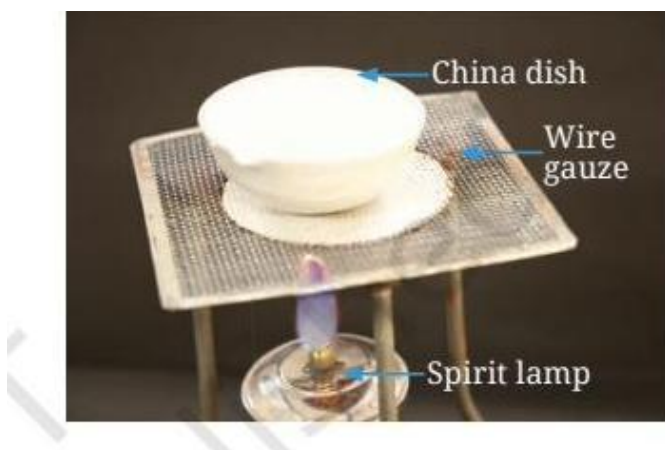


i) Name the method of separation shown in the picture.

ii) What do you think is being separated from what in this picture?

iii) On what property of the particles does this method depend?

Picture 3



i) Identify the apparatus labelled in this picture (name any two).

ii) What is being heated in the china dish, and what process is being demonstrated?

iii) State one safety precaution to be followed while performing this activity.

Picture 4



i) *What method of separation is being demonstrated in this picture?*

ii) *Identify the two components of the mixture being separated.*

iii) *Why does only one of the two components get attracted in this process?*

Picture 5



i) *Look at the picture and state what is being removed and from where.*

ii) *Why is handpicking considered a convenient method here?*

iii) Would handpicking be equally convenient for hundreds of such particles mixed in a huge sack of grain? Justify your answer.

ANSWER KEY — Worksheet 2

Section A: Multiple Choice Questions

1. (b) Beating stalks to remove grains
2. (b) Size
3. (b) Pebbles and stones from sand
4. (c) Pore size
5. (c) The dish and flame can cause burns
6. (b) Butter
7. (b) Magnet
8. (c) Scrap iron
9. (b) Two or more substances are mixed together
10. (c) Photosynthesis

Section B: Fill in the Blanks

1. sieve
2. Thresher
3. namak
4. wire gauze
5. mathni (churner)
6. buttermilk
7. magnetic
8. magnetic separation
9. not useful / unwanted
10. combination

Section C: True or False

1. False — Sieving is used for solid-solid mixtures whose particles differ in size, not for liquid mixtures.
2. True
3. True
4. False — Butter is lighter than buttermilk and floats to the top during churning.
5. False — Magnetic separation only works for magnetic substances like iron; plastic is non-magnetic.
6. True
7. False — A mixture is formed when two or more substances are mixed together.
8. True
9. False — A mixture with many components may need a combination of more than one method.
10. True

Section D: Answer in Two Lines

1. The holes must be smaller than the particles to be retained; if they are too large, even the bigger particles will pass through.
2. One must be careful while heating the china dish, as the dish and the flame can cause burns.
3. The wire gauze supports the china dish above the flame and helps spread the heat evenly.
4. The lighter butter rises and floats to the top, while the buttermilk is left behind below it.
5. An electric mixer-grinder (or blender) can be used to churn curd and make buttermilk.
6. While making a wooden door, the carpenter accidentally dropped a few iron nails into the sawdust.
7. A magnet was moved through the sawdust, and all the iron nails got attracted to it and were lifted out.
8. It works only when one component of the mixture is a magnetic substance, such as iron; it cannot separate non-magnetic mixtures.
9. We separate substances to obtain two different but useful components, or to remove one component that is unwanted.
10. If a mixture has more than two components with different properties, a single method cannot separate all of them, so a combination of methods is needed.

Section E: Short Notes

1. In Activity 9.3, a small amount of salt solution, prepared earlier by dissolving salt in water, is taken in a china dish. The china dish is placed on a wire gauze, which rests on a stand above a spirit lamp. The solution is heated gently and the water in it is allowed to boil away slowly as vapour. Once all the water has evaporated, the china dish is allowed to cool down, and solid salt is found left behind in the dish, which can be felt by touching it carefully. This activity demonstrates the process of evaporation, showing that a dissolved solid like salt can be recovered from its solution by heating away the liquid. Care must always be taken while heating, as the dish and flame can cause burns.
2. Churning is a method of separation used to obtain butter from curd. In this process, curd is vigorously beaten or stirred using a wooden churner called a mathni, which is moved rapidly inside a vessel containing the curd. As churning continues, the fat present in the curd gradually combines to form butter, which is lighter than the remaining liquid and therefore rises and floats on top. The liquid left behind below the butter is called buttermilk. This traditional method has been used in Indian households for generations to make fresh butter at home, and nowadays electrical appliances like mixer-grinders can also be used to churn curd more quickly.
3. Magnetic separation is the method used to separate magnetic substances from non-magnetic substances with the help of a magnet. Magnetic substances, like iron, get attracted towards a magnet, while non-magnetic substances do not. In the chapter, a carpenter making a wooden door accidentally drops a few iron nails into a heap of sawdust. Instead of picking out each nail by hand, the children move a

magnet through the sawdust, and all the iron nails immediately get attracted and stick to the magnet, leaving the sawdust behind. This shows that magnetic separation is much quicker than handpicking when one component of a mixture is magnetic. This same principle is used in recycling units, where magnets fitted to cranes separate scrap iron from huge heaps of waste material.

4. We separate substances mainly for two purposes. The first purpose is to separate two different but useful components present in a mixture, so that both can be used for different needs; for example, separating butter and buttermilk by churning curd, since both are useful in different ways. The second purpose is to remove one component from a mixture because it is not useful or is unwanted; for example, removing small stones and husk from grains before cooking, since they are not needed and could even be harmful if eaten. Understanding the purpose of separation helps us choose the most suitable method for a given mixture.

5. Sieving is a method used to separate the components of a solid-solid mixture when the particles in it are of different sizes. The mixture is passed through a sieve, which has many small holes of a particular size; the smaller particles pass through these holes easily, while the bigger particles remain on top of the sieve and can be removed separately. Sieving is widely used in daily life; for example, wheat flour is sieved before cooking to remove bran and small stones, allowing only the fine flour to pass through. Another common example is at construction sites, where sand is sieved through a wire mesh to remove pebbles and stones before it is mixed with cement, for smoother and stronger construction work.

Section F: Case Study Based Questions

Case Study 1

- i) Sieving.
- ii) They are separated on the basis of the difference in the size of their particles.
- iii) The bran and small stones would also pass through along with the flour, and sieving would not work properly.

Case Study 2

- i) The process of evaporation, by which salt can be recovered from its solution.
- ii) Solid common salt.
- iii) Because heating involves an open flame and a hot dish, which could cause burns if students come too close; safety precautions are necessary.

Case Study 3

- i) Churning.
- ii) Butter and buttermilk are separated; butter, being lighter, floats to the top.
- iii) An electric mixer-grinder/blender (or an electric churner).

Case Study 4

- i) The student could move a magnet through the heap of wood shavings to attract and lift out the iron nails and pins.
- ii) It would work well because iron nails and pins are magnetic substances, while wood shavings are non-magnetic, so only the nails get attracted to the magnet.
- iii) Recycling plants/scrapyards use large magnets fitted to cranes to separate scrap iron from heaps of waste material.

Case Study 5

- i) Sieving.
- ii) Stones and pebbles can weaken the strength and smoothness of the cement mixture, so they need to be removed for good-quality construction work.
- iii) Any valid example, such as sieving flour in the kitchen, or sieving grains on a farm.

Section G: Picture Based Questions**Picture 1**

- i) Threshing.
- ii) They are beating bundles of harvested stalks against a wooden log.
- iii) The grains get separated from the stalks, though they remain mixed with husk, which is later removed by winnowing.

Picture 2

- i) Sieving.
- ii) Fine flour is being separated from bigger particles like bran and small stones.
- iii) It depends on the size of the particles.

Picture 3

- i) China dish, wire gauze, spirit lamp (any two).
- ii) A salt solution is being heated; the process being demonstrated is evaporation.
- iii) One must be careful while heating the china dish, as it and the flame can cause burns; this activity should be done under adult/teacher supervision.

Picture 4

- i) Magnetic separation.
- ii) Iron nails and sawdust.
- iii) Only the iron nails get attracted because iron is a magnetic substance, while sawdust (wood) is non-magnetic.

Picture 5

- i) Whole black peppers are being picked out and separated from the vegetable pulao.
- ii) It is convenient because the black peppers are present in a small quantity and are easy to identify and pick out by hand.
- iii) No, handpicking would become slow and tedious for a huge quantity; a method like sieving or winnowing would be more practical for large amounts.