

Chapter 9: Methods of Separation in Everyday Life

Practice Worksheet 1

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

Instructions: Read every question carefully and write your answers neatly in the space given. An answer key is provided at the end of this worksheet so you can check and correct your own work. All the best!

Section A: Multiple Choice Questions

1. The method of separating substances by picking them out with hands is called:
(a) Sieving (b) Handpicking (c) Threshing (d) Winnowing
2. Beating harvested stalks to separate grains from them is called:
(a) Winnowing (b) Threshing (c) Churning (d) Filtration
3. The traditional bamboo tray used for winnowing is called a:
(a) Sieve (b) Soop (c) Mathni (d) Funnel
4. Winnowing separates the components of a mixture mainly on the basis of:
(a) Colour of particles (b) Heaviness or lightness of particles (c) Taste of particles (d) Solubility of particles
5. Common salt is obtained from seawater mainly by the process of:
(a) Filtration (b) Evaporation (c) Decantation (d) Sieving
6. The solid part that remains on the filter paper after filtration is called the:
(a) Filtrate (b) Residue (c) Sediment (d) Solution
7. Tilting a vessel to pour off the liquid after the heavier particles have settled down is called:
(a) Sedimentation (b) Decantation (c) Evaporation (d) Threshing
8. Which kitchen tool works on the same principle as filtration?
(a) Rolling pin (b) Tea strainer (c) Mathni (d) Soop
9. Butter is separated from curd by the process of:
(a) Churning (b) Threshing (c) Sieving (d) Decantation
10. Iron nails mixed with sawdust can be separated easily by using a:
(a) Sieve (b) Filter paper (c) Magnet (d) Funnel

Section B: Fill in the Blanks (10 × 1 mark = 10 marks)

1. Picking out small stones from rice or wheat using hands is called _____.
2. The process of separating grains from harvested stalks by beating them is called _____.

3. A machine that performs both threshing and winnowing together is called a _____.
4. _____ is the process of converting a liquid into vapour and is used to get back salt from a salt solution.
5. The clear liquid that passes through a filter is called the _____.
6. The settling down of heavier insoluble particles at the bottom of a liquid is called _____.
7. _____ does not completely separate all the particles from a liquid, unlike filtration.
8. A sieve is used to separate solid particles that differ in their _____.
9. Substances that get attracted towards a magnet are called _____ substances.
10. During churning, the lighter _____ floats to the top of the curd.

Section C: True or False

1. Handpicking is a convenient method only when the unwanted particles are present in large quantities. (**True / False**)
2. Winnowing separates heavier and lighter components of a mixture using wind or air. (**True / False**)
3. Sieving is useful when the components of a mixture are of different sizes. (**True / False**)
4. Decantation completely separates all the solid particles from a liquid. (**True / False**)
5. Filtration can be used to separate insoluble solids from a liquid. (**True / False**)
6. Salt cannot be recovered from seawater by evaporation. (**True / False**)
7. The residue stays on the filter paper while the filtrate passes through it. (**True / False**)
8. Iron is an example of a magnetic substance. (**True / False**)
9. Churning is used to separate sand from water. (**True / False**)
10. A thresher performs both threshing and winnowing. (**True / False**)

Section D: Answer in Two Lines

1. What is a mixture?
2. Why is handpicking a convenient method of separation?
3. What is threshing?
4. Name the traditional tool used for winnowing and state what it is made of.

5. Why does husk get blown away during winnowing while grains do not?
6. How is common salt obtained from seawater?
7. What is the difference between residue and filtrate?
8. Why does decantation not completely separate a mixture?
9. What is magnetic separation?
10. Give one use of magnetic separation in industries.

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

1. Explain handpicking with an example from daily life.
2. Describe the process of winnowing with the help of an example.
3. Explain evaporation as a method of separation, giving the example of obtaining salt from seawater.
4. Differentiate between sedimentation and decantation.
5. Explain filtration and name some materials that can be used as filters.

Section F: Case Study Based Questions)

Case Study 1

Case Study: Sarita's mother bought 2 kg of rice from the market. While preparing it for cooking, Sarita noticed a few small stones and tiny pieces of husk mixed in the rice. She decided to clean the rice before cooking it.

i) Which method of separation should Sarita use to remove the stones from the rice? Why?

ii) Would this method work well if there were a very large number of stones mixed in the rice? Give a reason.

iii) Name one more example from your own home where a similar method is used.

Case Study 2

Case Study: During harvest season, Aryan visited his uncle's farm in Punjab. He saw farmers beating bundles of wheat stalks on a wooden log. After this, the workers used a bamboo tray to toss the grains up in the air on a windy day.

i) Name the two separation methods being used one after the other in this scene.

ii) Why did the workers choose a windy day to use the bamboo tray?

iii) What would happen if there was no wind on that day?

Case Study 3

Case Study: Joseph lives near the coast in Tamil Nadu. His family runs a small salt-making business. They collect seawater and store it in shallow, wide pits dug near the shore. Over several days under the hot sun, Joseph notices the water level in the pits going down until only a white solid is left behind.

i) Name the process by which the water disappears from the pits.

ii) What is the white solid left behind in the pits?

iii) Why are the pits made shallow and wide rather than deep and narrow?

Case Study 4

Case Study: Meena's grandmother is preparing tea for the family. After boiling the tea leaves in water and milk, she lets the pan sit undisturbed for a minute. Then she carefully tilts the pan and pours the tea into cups, leaving most of the tea leaves behind in the pan.

i) Which method of separation is grandmother using to remove the tea leaves?

ii) Why might a few tea leaves still end up in the cup despite this method?

iii) Suggest a better method that grandmother could use to get completely clear tea, and name the equipment needed.

Case Study 5

Case Study: A recycling unit receives huge heaps of mixed waste material every day, including scrap iron pieces, plastic, and wood pieces. The workers use a large magnetic crane that moves over the heap before the rest of the waste is sorted further.

i) Which method of separation is used by the magnetic crane?

ii) Why does only the iron get picked up by the crane, and not the plastic or wood?

iii) State one benefit of separating scrap iron in this way.

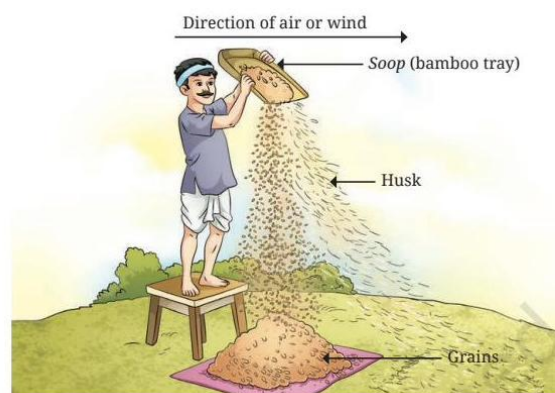
Section G: Picture Based Questions

Picture 1



- i) *What method of separation is shown in this picture?*
- ii) *On what basis (e.g. size, colour, shape) is this method usually carried out?*
- iii) *Give one more example of this method other than the one shown.*

Picture 2



- i) *Name the process shown in the picture and the traditional tool being used.*

ii) Which direction must the person face while performing this activity, and why?

iii) What will happen to the husk and the grains respectively in this process?

Picture 3



i) What process is being used to obtain salt in this picture?

ii) Why is the water kept in shallow pits rather than deep ones?

iii) What two things from nature help speed up this process?

Picture 4

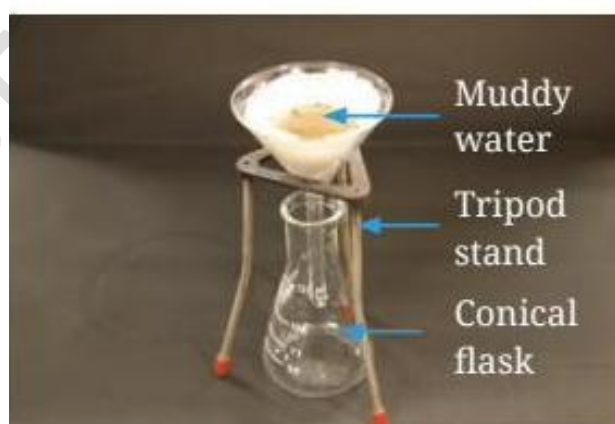


i) Identify the method of separation shown in this picture.

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

iii) Name the process that must happen BEFORE this step can be carried out.

Picture 5



i) Name the process shown in the picture and identify any TWO labelled parts.

ii) *What will collect in the conical flask after this process is complete?*

iii) *What is the substance trapped on the filter paper called?*

Picture 6



Churning

- (i) What activity is being shown in the picture?
- (ii) Why do people traditionally churn curd or cream?
- (iii) This activity shows that force can produce which effect?

ANSWER KEY — Worksheet 1

Section A: Multiple Choice Questions

1. (b) Handpicking
2. (b) Threshing
3. (b) Soop
4. (b) Heaviness or lightness of particles
5. (b) Evaporation
6. (b) Residue
7. (b) Decantation
8. (b) Tea strainer
9. (a) Churning
10. (c) Magnet

Section B: Fill in the Blanks

1. handpicking
2. threshing
3. thresher
4. Evaporation
5. filtrate
6. sedimentation
7. Decantation
8. size
9. magnetic
10. butter

Section C: True or False

1. False — Handpicking is convenient when unwanted particles are present in small quantities.
2. True
3. True
4. False — Decantation does not completely separate all the particles; some light particles may still remain in the liquid.
5. True
6. False — Salt can be recovered from seawater by evaporation.
7. True
8. True
9. False — Churning is used to separate butter from curd.
10. True

Section D: Answer in Two Lines

1. A mixture is formed when two or more substances are mixed together, such as stones mixed with grains.
2. It is convenient when the unwanted particles are few in number and can easily be picked out by hand based on differences in size, colour or shape.
3. Threshing is the process of beating harvested stalks to separate the grains attached to them.
4. The tool is called a soop, which is a tray traditionally made of bamboo.
5. Husk is lighter than grains, so the wind blows it away, while the heavier grains fall straight down.
6. Seawater is kept in shallow pits and exposed to sunlight and air; the water evaporates, leaving behind the salt.
7. Residue is the solid part left behind on the filter, while filtrate is the liquid that passes through it.
8. Some very fine or light particles remain mixed with the liquid even after the vessel is tilted and the liquid poured out carefully.
9. It is the method of separating magnetic substances, such as iron, from non-magnetic substances using a magnet.
10. Recyclers use magnets fitted to cranes to separate scrap iron from heaps of waste material so that it can be reused.

Section E: Short Notes

1. Handpicking is a method of separation in which unwanted particles are picked out and removed by hand from a mixture. It is based on differences in the size, colour, and shape of the particles present in the mixture. This method works best and is most convenient when the particles to be removed are present in small quantities, since picking out a large number of particles by hand would take too long. For example, before cooking rice or wheat, small stones, husk or damaged grains are often picked out by hand. Another example from the chapter is Malli picking out whole black peppers from his plate of vegetable pulao, since the peppers were easy to identify and separate from the rice.
2. Winnowing is the method used to separate the heavier and lighter components of a mixture with the help of wind or by blowing air. A person usually stands on a raised platform and pours the mixture from a bamboo tray called a soop, allowing it to fall in the direction the wind is blowing. As the mixture falls, the lighter husk gets blown away to a distance by the wind, while the heavier grains fall straight down close to the person and collect in a pile. This method is commonly used by farmers after threshing wheat or rice, to separate the grains from the husk. Winnowing only works when wind or moving air is available, so it cannot be performed effectively inside a closed room.
3. Evaporation is the process in which a liquid changes into its vapour form and escapes into the air, leaving behind any solid that was dissolved in it. This method is used to separate a solid that is dissolved in a liquid, when we want to recover the solid. A good example is obtaining common salt from seawater. Seawater, which is a mixture of salt and other substances dissolved in water, is collected and stored in

shallow pits near the coast. These pits are exposed to sunlight and air for several days, during which the water gradually evaporates completely. Once all the water has evaporated, a solid mixture containing common salt is left behind, which is then further purified to obtain pure salt.

4. Sedimentation and decantation are two related but different steps in separating a mixture of a solid and a liquid. Sedimentation is the process in which heavier, insoluble solid particles settle down at the bottom of a liquid when the mixture is left undisturbed for some time; for example, tea leaves settling at the bottom of a pan of tea. Decantation, on the other hand, is the next step, in which the clear liquid lying above the settled solid is carefully removed by gently tilting the vessel, without disturbing the settled particles. While sedimentation only causes the solid to settle down, decantation actually separates the liquid from the settled solid by pouring it off. However, decantation does not completely separate all the solid particles, as some very light particles may still remain mixed with the poured-out liquid.

5. Filtration is the method used to separate insoluble solid particles from a liquid by passing the mixture through a filter, which has tiny holes or pores. The solid particles that are too big to pass through the pores get collected on the filter and are called the residue, while the clear liquid that passes through is called the filtrate. Filtration works better than decantation because it can remove even very fine particles that do not settle down easily. Several materials can be used as filters depending on the size of the particles to be removed, such as a piece of cloth, a tea strainer, filter paper, cotton, charcoal, and even sand. Filter paper is especially effective because it has very fine pores, making it suitable for separating very small particles, such as mud from muddy water.

Section F: Case Study Based Questions

Case Study 1

- i) Handpicking, because the stones are present in a small quantity and can easily be picked out by hand based on differences in size and colour.
- ii) No, handpicking would take too long and would not work well for a large number of stones; another method such as sieving would be more suitable.
- iii) Any reasonable example is acceptable, such as picking out black pepper from pulao or removing small pebbles from pulses before cooking.

Case Study 2

- i) Threshing (beating the stalks to separate grains) followed by winnowing (using the bamboo tray to separate husk from grains).
- ii) Wind is needed to blow away the lighter husk while the heavier grains fall straight down; without wind, winnowing would not work properly.
- iii) The husk would not get separated from the grains, so the workers would need to wait for a windy day or use a machine such as a thresher or an electric fan instead.

Case Study 3

- i) Evaporation - the liquid water turns into vapour and escapes into the air.
- ii) Common salt.
- iii) Shallow, wide pits expose a larger surface area of water to the sun and air, which speeds up evaporation.

Case Study 4

- i) Decantation (after the tea leaves have undergone sedimentation).
- ii) Decantation does not completely separate all the particles; some light tea leaves may still float and get poured along with the tea.
- iii) Filtration, using a tea strainer (or a piece of cloth or filter paper), would give completely clear tea.

Case Study 5

- i) Magnetic separation.
- ii) Iron is a magnetic substance and gets attracted to the magnet, while plastic and wood are non-magnetic and are not attracted to it.
- iii) The separated scrap iron can be recycled and reused, which saves resources and reduces waste (any one valid benefit is acceptable).

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

- i) Handpicking.
- ii) It is carried out on the basis of differences in the size, colour, and shape of the particles.
- iii) Any valid example, such as removing small stones from rice or wheat.

Picture 2

- i) The process is winnowing; the tool used is called a soop (bamboo tray).
- ii) The person faces the direction from which the wind is blowing, because wind is essential to blow away the lighter husk.
- iii) The lighter husk will be blown away by the wind, while the heavier grains will fall straight down onto the ground or mat.

Picture 3

- i) Evaporation.
- ii) Shallow pits expose a larger surface area of water to air and sunlight, which speeds up evaporation.
- iii) Sunlight (heat) and air/wind.

Picture 4

- i) Decantation.
- ii) The liquid tea is being separated from the heavier tea leaves.
- iii) Sedimentation - the tea leaves must first settle down at the bottom.

Picture 5

- i) The process is filtration; labelled parts include muddy water, the funnel with filter paper, tripod stand, and conical flask (any two).
- ii) Clear filtered water, called the filtrate.
- iii) Residue.

Picture 6

- i) **Churning**
- ii) **To separate butter from curd**

- iii) **Change the shape or state of a material** (Churning helps separate butter from curd through continuous motion and force.)

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