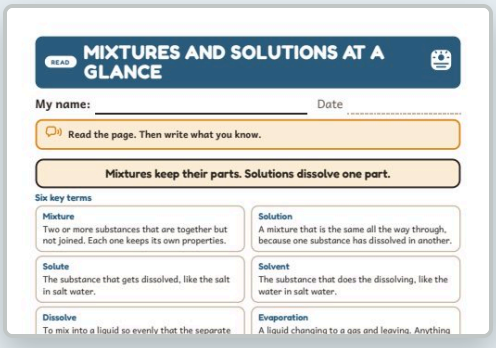
6TH–8TH GRADE · PHYSICAL SCIENCE

SORT + MATCH

MIXTURES AND SOLUTIONS

Label the solute and solvent, sort mixtures and solutions, read a data table, match each separation method to its job, fill in, compare in a Venn diagram, find the mistake, sort by cutting and pasting, and write short answers. Answer keys, a tracker and a family page. Print, or type your answers. PDF.


READ MIXTURES AND SOLUTIONS AT A GLANCE

My name: _____ Date _____

Read the page. Then write what you know.

Mixtures keep their parts. Solutions dissolve one part.

Six key terms

Mixture: Two or more substances that are together but not joined. Each one keeps its own properties.

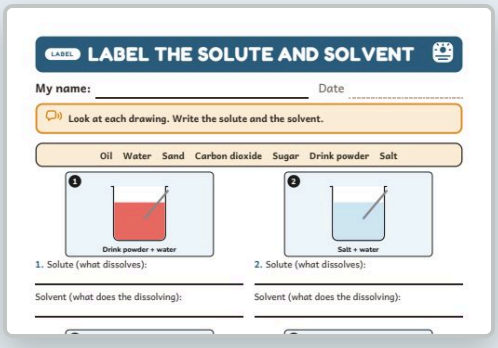
Solution: A mixture that is the same all the way through, because one substance has dissolved in another.

Solute: The substance that gets dissolved, like the salt in salt water.

Solvent: The substance that does the dissolving, like the water in salt water.

Dissolve: To mix into a liquid so evenly that the separate

Evaporation: A liquid changing to a gas and leaving. Anything


LABEL LABEL THE SOLUTE AND SOLVENT

My name: _____ Date _____

Look at each drawing. Write the solute and the solvent.

Oil Water Sand Carbon dioxide Sugar Drink powder Salt

1 Drink powder + water

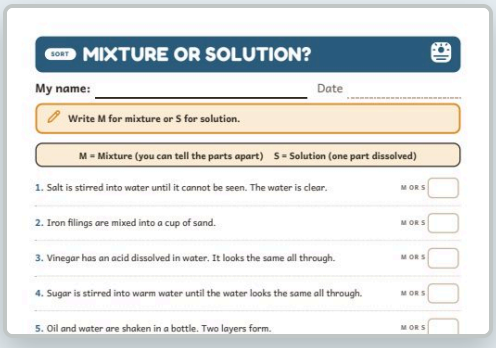
2 Salt + water

1. Solute (what dissolves): _____

Solvent (what does the dissolving): _____

2. Solute (what dissolves): _____

Solvent (what does the dissolving): _____


SORT MIXTURE OR SOLUTION?

My name: _____ Date _____

Write M for mixture or S for solution.

M = Mixture (you can tell the parts apart) S = Solution (one part dissolved)

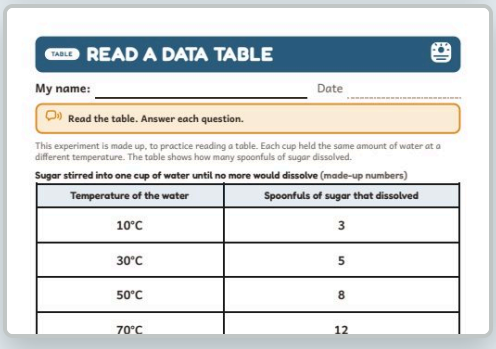
1. Salt is stirred into water until it cannot be seen. The water is clear. M OR S ☐

2. Iron filings are mixed into a cup of sand. M OR S ☐

3. Vinegar has an acid dissolved in water. It looks the same all through. M OR S ☐

4. Sugar is stirred into warm water until the water looks the same all through. M OR S ☐

5. Oil and water are shaken in a bottle. Two layers form. M OR S ☐


TABLE READ A DATA TABLE

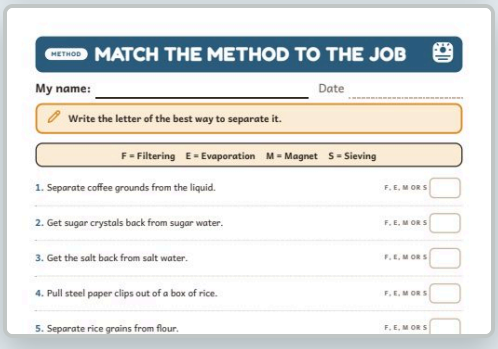
My name: _____ Date _____

Read the table. Answer each question.

This experiment is made up, to practice reading a table. Each cup held the same amount of water at a different temperature. The table shows how many spoonfuls of sugar dissolved.

Sugar stirred into one cup of water until no more would dissolve (made-up numbers)

Temperature of the water	Spoonfuls of sugar that dissolved
10°C	3
30°C	5
50°C	8
70°C	12


METHOD MATCH THE METHOD TO THE JOB

My name: _____ Date _____

Write the letter of the best way to separate it.

F = Filtering E = Evaporation M = Magnet S = Sieving

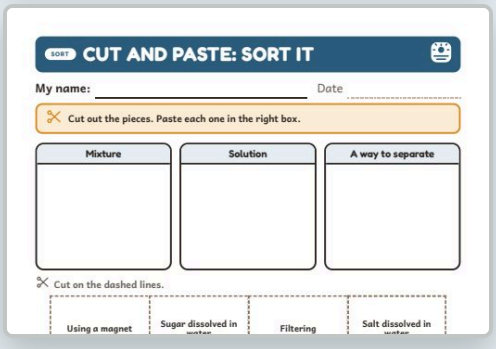
1. Separate coffee grounds from the liquid. F, E, M OR S ☐

2. Get sugar crystals back from sugar water. F, E, M OR S ☐

3. Get the salt back from salt water. F, E, M OR S ☐

4. Pull steel paper clips out of a box of rice. F, E, M OR S ☐

5. Separate rice grains from flour. F, E, M OR S ☐


SORT CUT AND PASTE: SORT IT

My name: _____ Date _____

Cut out the pieces. Paste each one in the right box.

Mixture	Solution	A way to separate

Cut on the dashed lines.

Using a magnet | Sugar dissolved in | Filtering | Salt dissolved in

29 Pages | **15 Page Types** | **98 Items** | **2 Answer Keys**

BRIGHT PATH SPED

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PREVIEW

READ

MIXTURES AND SOLUTIONS AT A GLANCE

My name: _____ Date .....

Read the page. Then write what you know.

Mixtures keep their parts. Solutions dissolve one part.

Six key terms

Mixture
Two or more substances that are together but not joined. Each one keeps its own properties.

Solution
A mixture that is the same all the way through, because one substance has dissolved in another.

Solute
The substance that gets dissolved, like the salt in salt water.

Solvent
The substance that does the dissolving, like the water in salt water.

Dissolve
To mix into a liquid so evenly that the separate pieces can no longer be seen.

Evaporation
A liquid changing to a gas and leaving. Anything that was dissolved in it stays behind.

Four ways to separate a mixture

Filtering
Pour a mixture through filter paper. The paper catches solid pieces and lets the liquid through.

Evaporation
Let the liquid dry away. Anything that was dissolved in it stays behind, like salt crystals.

Magnet
A magnet pulls out bits of iron or steel. It cannot pull out things that are not magnetic.

Sieving
Pour a mixture through a sieve. Small pieces fall through and big pieces stay on top.

Your turn. Write what you know.

A mixture I have seen at home or at school is _____ because

One way a mixture is different from a solution is

PREVIEW

SORT MIXTURE OR SOLUTION?

My name: _____ Date .....

Write M for mixture or S for solution.

M = Mixture (you can tell the parts apart) S = Solution (one part dissolved)

1. Salt is stirred into water until it cannot be seen. The water is clear. M OR S ☐
2. Iron filings are mixed into a cup of sand. M OR S ☐
3. Vinegar has an acid dissolved in water. It looks the same all through. M OR S ☐
4. Sugar is stirred into warm water until the water looks the same all through. M OR S ☐
5. Oil and water are shaken in a bottle. Two layers form. M OR S ☐
6. Drink powder is stirred into water. The color is the same everywhere. M OR S ☐
7. Sand and water are shaken in a jar. The sand sinks to the bottom. M OR S ☐
8. A bowl of trail mix has nuts, raisins and seeds. M OR S ☐

A. Pick one item from this page. Explain how you know whether it is a mixture or a solution.

PREVIEW

METHOD MATCH THE METHOD TO THE JOB

My name: _____ Date .....

Write the letter of the best way to separate it.

F = Filtering E = Evaporation M = Magnet S = Sieving

1. Separate coffee grounds from the liquid. F, E, M OR S ☐
2. Get sugar crystals back from sugar water. F, E, M OR S ☐
3. Get the salt back from salt water. F, E, M OR S ☐
4. Pull steel paper clips out of a box of rice. F, E, M OR S ☐
5. Separate rice grains from flour. F, E, M OR S ☐
6. Separate pebbles from sand. F, E, M OR S ☐
7. Separate sand from water. F, E, M OR S ☐
8. Pull iron filings out of sand. F, E, M OR S ☐

A. Why can a magnet not get salt out of salt water? Name the method that does.

B. Why does filtering work for sand and water but not for salt and water?

PREVIEW

WORDS FILL IN THE BLANKS

My name: _____ Date .....

Pick a word from the box for each blank.

evaporate sieve rusts magnet dissolves solute filter small mixture freeze solvent solution

A (1) _____ is two or more substances that are together. Each one keeps its own properties. A (2) _____ is a mixture that is the same all the way through. In salt water, the salt is the (3) _____ and the water is the (4) _____. The salt (5) _____ in the water. To get the salt back, let the water (6) _____. To pull iron bits out of sand, use a (7) _____. To catch sand from water, pour it through a (8) _____. To separate big pieces from small ones, use a (9) _____. Dissolved salt goes through a filter because its bits are too (10) _____.

A. Pick one word you used in the paragraph. Write what it means in your own words.

B. Two words in the box are not used. Write them here.

_____ _____

PREVIEW

CIRCLE CIRCLE THE TRUE SENTENCE

My name: _____ Date .....

Circle the true sentence in each pair. Write its letter.

1. Which sentence is true?

A. In a solution, the solute is spread evenly through the solvent.

B. In a solution, the solute stays in clumps at the bottom.

A OR B ☐

2. Which sentence is true?

A. The solute is the substance that does the dissolving.

B. The solvent is the substance that does the dissolving.

A OR B ☐

3. Which sentence is true?

A. The parts of a mixture always turn into one new substance.

B. Each part of a mixture keeps its own properties.

A OR B ☐

4. Which sentence is true?

A. Evaporation can get dissolved salt back from salt water.

B. Filtering can get dissolved salt back from salt water.

A OR B ☐

5. Which sentence is true?

A. A magnet can pull iron filings out of sand.

B. A magnet can pull salt out of salt water.

A OR B ☐

6. Which sentence is true?

A. Stirring makes a solute stop dissolving.

B. Stirring helps a solute dissolve faster.

A OR B ☐

PREVIEW

DECIDE TRUE OR FALSE? FIX IT

My name: _____ Date .....

Write T or F. If it is false, rewrite it so it is true.

1. Sand dissolves in water to make a solution. T OR F ☐
If false, write it correctly:
_____

2. The solute is the substance that gets dissolved. T OR F ☐
If false, write it correctly:
_____

3. Filter paper can catch salt that is dissolved in water. T OR F ☐
If false, write it correctly:
_____

4. Each part of a bowl of trail mix keeps its own properties. T OR F ☐
If false, write it correctly:
_____

5. Evaporation can get salt back from salt water. T OR F ☐
If false, write it correctly:
_____

6. A magnet can pull dissolved sugar out of water. T OR F ☐
If false, write it correctly:
_____

7. The solvent is the substance that gets dissolved. T OR F ☐
If false, write it correctly:
_____

8. A solution is the same all the way through. T OR F ☐
If false, write it correctly:
_____

PREVIEW

SORT CUT AND PASTE: SORT IT

My name: _____ Date .....

Cut out the pieces. Paste each one in the right box.

Mixture	Solution	A way to separate

Cut on the dashed lines.

Using a magnet	Sugar dissolved in water	Filtering	Salt dissolved in water
Vinegar (acid in water)	Sand and water	Sieving	Trail mix
Drink powder dissolved in water	Evaporation	Iron filings and sand	Oil and water

1. Write one sentence that tells the difference between a mixture and a solution.

_____

_____

PREVIEW

EXPLAIN EXPLAIN IT

My name: _____ Date .....

Read each prompt. Explain what happens and why.

Starters: **First, I would…** **This works because…** **The solute…**

1. A cup holds sand, iron filings and salt. Explain how to separate all three. Say which method comes first and why.

2. Explain why sand and water make a mixture but salt and water make a solution.

3. Explain why a filter can separate sand from water but cannot separate dissolved salt from water.

PREVIEW

ANSWER KEY KEY: PAGES 11–18

Venn, Multiple Choice, True or False, Circle, Find the Mistake, Cut and Paste, Short Answers and Explain It. Written answers are in the words a student might use; accept any answer that makes the same points.

Venn Diagram page 11

REGION	WORDS
Filtering only	a paper filter catches the solid; works for sand in water; does not work on dissolved salt
Both	separates the parts of a mixture; makes no new substance; each part keeps its properties; can be done at a lab table
Evaporation only	the liquid dries away; gets back a dissolved solid; leaves salt crystals behind

Sentence: Filtering catches solid pieces on paper and lets the liquid through; evaporation lets the liquid dry away so a dissolved solid is left behind.

Multiple Choice page 13

NO.	LTR	ANSWER
1	B	Two or more substances together, each keeping its own properties
2	A	A mixture that is the same all the way through
3	A	The water
4	C	Salt completely dissolved in water
5	D	Pouring it through filter paper
6	D	A magnet
7	B	Salt
8	A	Stirring it

True or False? Fix It page 14

NO.	T/F	KEY IDEA OF A REWRITE
1	F	Sand does not dissolve, so sand and water make a mixture.
2	T	–
3	F	Dissolved salt is too small to be caught; it goes through the paper.
4	T	–
5	T	–
6	F	Sugar is not magnetic and it is dissolved; evaporation gets it back.
7	F	The solute gets dissolved; the solvent does the dissolving.
8	T	–

Circle the True Sentence page 12

NO.	TRUE ONE
1	A
2	B
3	B
4	A
5	A
6	B

Find the Mistake page 15

NO.	THE MISTAKE
1	Dana: Sand does not dissolve. The parts can be told apart, so sand and water make a mixture.
2	Eli: The water does the dissolving, so it is the solvent. The salt is the solute.
3	Priya: Dissolved salt is too small to be caught by the paper. It goes through with the water.
4	Marco: A magnet only pulls iron or steel. It cannot pull out sugar that is dissolved in water.

Corrections: 1. Sand and water make a mixture. 2. In salt water, the salt is the solute and the water is the solvent. 3. Let the water evaporate to get the salt back. 4. Use evaporation to get the sugar back.

Cut and Paste page 16

BOX	PIECES THAT GO IN IT
Mixture	Sand and water; Trail mix; Oil and water; Iron filings and sand
Solution	Salt dissolved in water; Sugar dissolved in water; Drink powder dissolved in water; Vinegar (acid in water)
A way to separate	Filtering; Evaporation; Using a magnet; Sieving

Sentence: In a mixture the parts can usually be told apart; in a solution one substance dissolves, so it looks the same all the way through.

Short Answers page 17

NO.	A FULL ANSWER INCLUDES
1	Two or more substances together, where each keeps its own properties.
2	A mixture that is the same all the way through, because one substance dissolved in another.
3	The solute is the substance that dissolves. The solvent is the substance that does the dissolving.
4	Any two of: filtering, evaporation, using a magnet, sieving.
5	Let the water evaporate. The salt stays behind.

Explain It page 18

NO.	A FULL ANSWER INCLUDES
1	Use a magnet first to pull out the iron filings. Add water so the salt dissolves, then pour it through filter paper to catch the sand. Let the water evaporate to get the salt back.
2	Sand does not dissolve, so its pieces can still be seen. Salt dissolves in water, so the result is the same all the way through.
3	Sand is made of solid pieces that are too big to pass through the paper. Dissolved salt is made of bits too small to be caught, so it passes through with the water.

PREVIEW

CLASS GRID

CLASS PROGRESS GRID

CLASS OR GROUP

UNIT DATES

STUDENT	LABEL (OF 4)	SORT (OF 20)	SEPARATE (OF 18)	DATA (OF 6)	TERMS (OF 16)	CHOOSE / T-F (OF 26)	WRITING (OF 8)

PREVIEW

How to fill this in

For each column, write how many items the student has right (add up the tracker rows). One look across a row shows which kind of page is easiest and which one needs another turn.

Grouping for small-group time

Start with the Terms column. Students low there can reread the reference page (4) and redo Match the Term (9) before the data and writing pages; students near the top of every column can go straight to Explain It (18).

FAMILY PAGE

MIXTURES AND SOLUTIONS AT HOME

STUDENT

WEEK OF

How to help at home, in four steps

- Look at foods and things around the house: a bowl of cereal with fruit, a salad, a bag of mixed nuts, a glass of juice. Ask whether you can tell the parts apart.
- Ask: "Which of these has one part dissolved in a liquid, so it looks the same all the way through?"
- Talk about how you could tell the parts of a mixed bag of things apart, without opening or mixing anything new.
- Stop while it is still going well. Ten minutes is plenty.

My mixtures and solutions notes from home

1. A mixture I saw at home or in a store, and its parts

2. A drink or food that is a solution, and how I know

3. One way a mixture is different from a solution

Say it out loud

- "A mixture keeps its parts. A solution has one part dissolved."
- "The solute dissolves. The solvent does the dissolving."
- "A filter catches solid pieces. Evaporation gets back what was dissolved."

NOTE FROM THE TEACHER

NOTE FROM HOME

PREVIEW

PHRASE BANK

SENTENCE STARTERS AND NOTES

Starters a student can use in a written answer, plus starters for a progress note and a note home. Each one is an observation with a blank for the number or the word — the count comes off the tracker or the page itself, never from memory. Copy a starter onto the writing lines on pages 17, 18 and 11.

Sentence starters for explaining

> ___ is a solution because ___ dissolved and it looks the same all the way through.

> I know it is a mixture because I can still tell the ___ apart.

> The solute is ___ because it is the part that ___.

Sentence starters for reading a table or a drawing

> In the table, the most ___ dissolved at ___ and the least at ___.

> As the water got ___, the number of spoonfuls ___.

> The drawing shows ___ (the solute) in ___ (the solvent).

Sentence starters for comparing and separating

> Both filtering and evaporation ___, but only ___ gets back a ___.

> I would use a ___ because the ___ is ___ and the ___ is not.

> Filtering does not work on a dissolved solid because ___.

Progress note starters

> Labeled ___ of ___ solutes and solvents correctly without a prompt, on ___ (date).

> Used the word ___ correctly in a written answer on ___ of ___ items.

> Needed a word bank / a sentence starter / a model on ___ of ___ items.

Family note starters

> This week we studied mixtures, solutions and ways to separate them.

> At home, ask your child to name one mixture and one solution and tell how they are different.

> The family page for this week is in the folder; please send it back on ___.

PREVIEW

ORGANIZER

DIVIDER TABS

Six divider tabs and a spine label. The pieces touch edge to edge, so the cutting is a few straight lines.

REFERENCE	SOLUTIONS	MIXTURES
SEPARATE	PRACTICE	WRITING

MIXTURES AND SOLUTIONS · BRIGHT PATH SPED

PREVIEW

1. Cut along the dashed lines. Every line is straight: 7 pieces.

2. Fold each tab on its top edge and slide a paper tab into a sleeve, or tape it to a folder edge.

3. The spine label fits a one-inch binder. Trim it to fit a wider one.