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Education

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GET Term 2 Take Home Package
Natural Sciences

Grade 7

REVISION ACTIVITY: Separating mixtures

SECTION A: *Mixtures, physical separation and sorting and recycling materials*

Question 1: Four options are provided as possible answers to the following questions. Each question only has ONE correct answer. **Select** only the correct answer and circle the letter (A-D) next to the answer.

- 1.1 Sarah wants to separate a mixture of fine coffee and iron fillings (both in a solid form). Which separation technique/ method must she use?
 - A. distillation
 - B. sorting
 - C. sieving
 - D. magnetism
- 1.2 A mixture of salt and water can be best separated by ...
 - A. evaporation
 - B. filtration
 - C. sorting
 - D. distillation
- 1.3 Which one of the following pairs of liquids can be mixed (**is miscible**)?
 - A. water and cooking oil
 - B. water and vinegar
 - C. water and paraffin
 - D. water and motor oil
- 1.4 Suppose we want to separate two liquids using distillation as separation method. This will only be possible if the two liquids have different ...
 - A. colours.
 - B. temperatures.
 - C. boiling points.
 - D. volumes.

4 x 1 = ____/4

Question 2: Match the terms in **column A** to the statements in **column B** and write the answer in **column C**. Just write the alphabet letter next to the number, e.g. 2.1 A.

Column A		Column B		Column C
2.1	Mixture	A.	The practice of turning waste into materials that we can use again.	2.1 ____
2.2	Recycling	B.	Pure substances	2.2 ____
2.3	Filtration	C.	Particles that 'melt' into each other.	2.3 ____
		D.	A method of separating mixtures with particles of different size using a filter.	
		E.	A method of separating mixtures with particles of different size using hand sorting.	

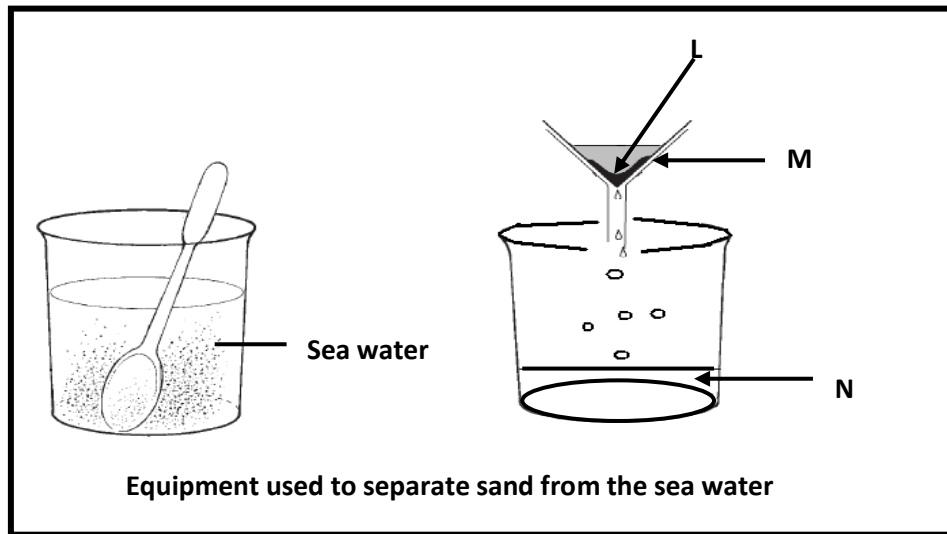
3 x 1 = ____/3

Question 3: The table below contains a list of mixtures. In the righthand column, next to each mixture, write the **best** method for separating the mixture into its components.

	Mixtures	Separating method
3.1	Sand and iron filings	
3.2	Sand and water	
3.3	Colour pigments in ink	
3.4	Stones and sand	

SECTION B: *Mixtures and physical separation*

Question 4: Marius collected some sea water near the beach. The sea water tasted salty and was full of fine sand. He separated the sand from the sea water using the equipment shown below. Answer the questions set below the picture.



- 4.1 Name the apparatus labelled M. (2)
 - 4.2 What name is given to this method of separating sand from the sea water? (1)
 - 4.3 Substance L was captured by the filter paper. Give the name of the substance. (1)
 - 4.4 Substance N passed through the filter paper. Name **one component (constituent)** of substance N. (1)
- ____/5

Question 5: If you are making the sugar solution with water and sugar crystals, identify the:

- 5.1 solute - _____
- 5.2 solvent - _____

2 x 1 = ____/2

Question 6: Describe how you would separate and collect all the materials from a mixture of sand, pebbles/buttons, iron filings, salt and water. List the steps that you will use.

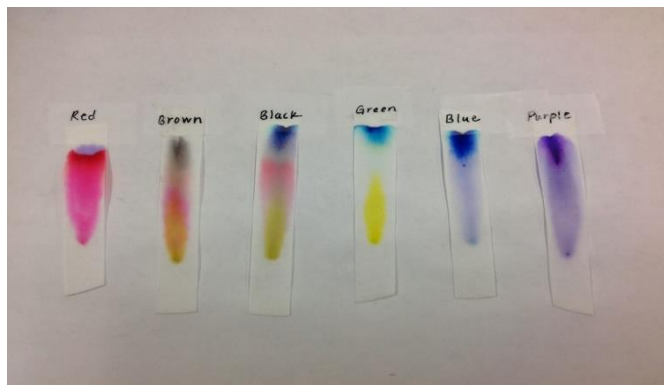
____/7

Question 7: You are given a salt solution and you are requested to separate salt from water.

- 7.1 Provide a list of the resources that you will be using. (7)
- 7.2 Explain how you are going to separate the salt from the water with the resources listed above. (7)

____/14

Question 8: Study the picture and answer the questions that follow:



- 8.1 What do we call this method of separation? (1)

- 8.2 Why do we conduct this experiment? What is the purpose of the experiment? (2)
 8.3 Name at least three industries that will make use of this science. (3) _____/6

SECTION C: Sorting and re-cycling materials

Question 9:

- 9.1 Explain what recycling is? (2)
 9.2 Name the 4 classes of materials that can be recycled. (4)
 9.3 How would you dispose of each of the following non-recyclable materials:
 A. vegetable peels? (2)
 B. running shoes? (2)
 C. expired medicine? (2)
 9.4 Write down TWO ways you can help with recycling. (2) _____/14

SOLUTIONS (Possible Answers)

SECTION A: Mixtures, physical separation and sorting and recycling materials

Question 1:

- 1.1 D ✓ 1.3 B ✓
 1.2 B ✓ 1.4 C ✓ 4 x 1 = _____/4

Question 2:

- 2.1 B ✓ 2.3 D ✓ 3 x 1 = _____/3
 2.2 A ✓

Question 3:

- 3.1 Magnetic sorting ✓ 3.4 Sieving or hand sorting (depends on stones size) ✓
 3.2 Filtration ✓ 3.5 Distillation ✓
 3.3 Chromatography ✓ 5 x 1 = _____/5
Total: _____/12

SECTION B: Mixtures and physical separation

Question 4:

- 4.1 Funnel ✓ and filter paper ✓ (2)
 4.2 Filtering / Filtration ✓ (1)
 4.3 Sand ✓ (1)
 4.4 Salt / Water ✓ (1) _____/5

Question 5:

- 5.1 sugar crystals ✓ 5.2 water ✓ 2 x 1 = _____/2

Question 6:

- Mixture - filtering ✓
- Sand, pebbles/buttons and iron filings in filter paper ✓
- Pebbles/Buttons – hand sorting ✓
- Dry sand and iron filings - magnetic sorting ✓
- Saltwater drain through filter paper into a beaker. ✓
- Boil the water and salt ✓ and through evaporation/distillation ✓ the water will be separated from the salt. _____/7

Question 7:

- 7.1 Spirit lamp/ source of heat, ✓ Matches, ✓
 Test tubes/Test tube and Beaker ✓ Delivery tube ✓
 One holed rubber stopper, ✓ Stand and clamp ✓
 Salt solution ✓ (7)
 7.2 Pour salt solution in a test tube. ✓
 Close the test tube with the stopper. ✓
 Connect the delivery tube to the stopper. ✓
 Put the other end of the delivery tube into the second test tube/beaker. ✓
 Clamp the test tube to a stand and heat the test tube with the mixture until the all the water escapes from the mixture. ✓
 The residue of salt will be left in the test tube. ✓
 Water which has evaporated from the salt solution will be collected in the second test tube/beaker. ✓
 ✓ (7)

Question 8:

- 8.1 Chromatography ✓ (1)
- 8.2 To separate ✓ different components in a complex mixture. ✓ (2)
- 8.3 Cosmetic / Textile / Construction / Pharmaceutical / etc. **Any THREE discussed in class.** (3)

____/6
Total: ____/34

SECTION C: Sorting and re-cycling materials

Question 9:

- 9.1 Recycling involves putting waste materials ✓ through a process to create new products. ✓ **OR**
 Taking old materials and making it new. ✓ ✓ (2)
- 9.2 Glass, ✓ metal, ✓ plastic, ✓ paper ✓ (4)
- 9.3 A. Vegetable peels can be buried in the garden or turned into compost. ✓✓ (2)
 B. Old running shoes can be donated to someone who needs them, or to a shelter. ✓✓ (2)
 C. Expired medicine should be taken to the pharmacy ✓✓ (2)
- 9.4 Pick up papers. ✓
 Sort materials into different bins, e.g. plastic, paper and glass bins. ✓
 Sort out our rubbish at home and put it into different recycling bags.
Any TWO discussed in class. (2)

Total: ____/14

Activity Total: ____/60

REVISION ACTIVITY: Acids, bases and neutral substances

Question 1: Four options are provided as possible answers to the following questions. Each question only has ONE correct answer. **Select** only the correct answer and circle the letter (A-D) next to the answer.

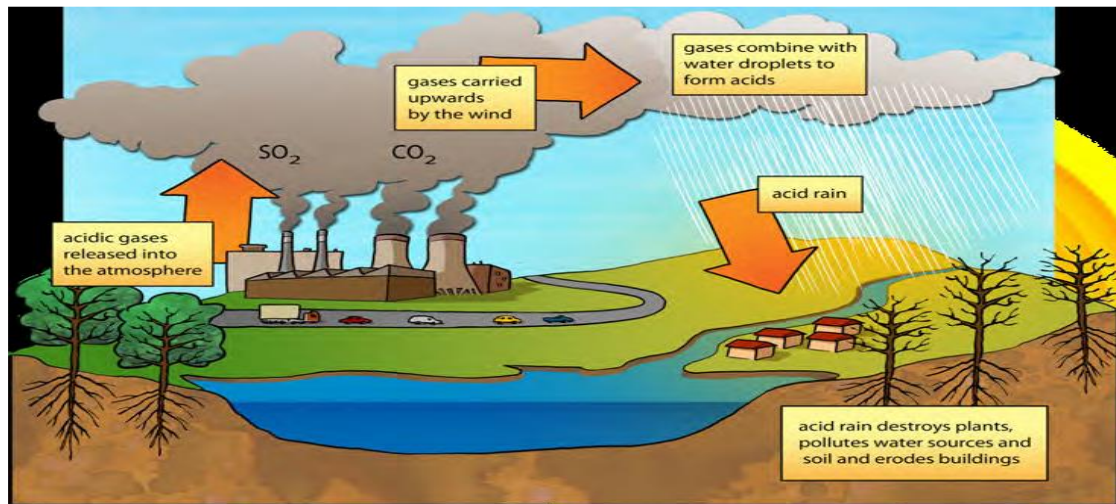
- 1.1 The most well-known of all acid-base indicators is called ...
 A. indicator
 B. red cabbage
 C. corrosive
 D. litmus
- 1.2 Foods that are often ... taste bitter.
 A. indicator
 B. bases
 C. neutral
 D. acids
- 1.3 Some scientists believe the human tongue can taste 4 flavours. These flavours are:
 A. sour, sweet, bitter, salty
 B. sweet, salty, buttery, fatty
 C. bitter, spicy, salty, minty
 D. salty, neutral, fatty, spicy
- 1.4 ... substances are neither acids nor bases.
 A. indicator
 B. bases
 C. neutral
 D. acids

Question 2: Use the ideas in the box and sort them as either properties of acids or bases.

Acids	Bases	Ideas
		<ul style="list-style-type: none"> • Turns red litmus blue • Bleach • Sour taste

		<ul style="list-style-type: none"> • Feels rough • Bitter taste • Feels slippery • Lemon Juice • Turns blue litmus red

Question 3: Have you heard of acid rain before? Read the following information and study the diagram. Then answer the questions that follow.



- 3.1 Which two gases are mentioned in the text and on the diagram which contribute to forming acid rain?

- 3.2 Where do these gases come from?

- 3.3 The gases then combine with water droplets in the atmosphere to make acids. What are some of the environmental impacts of acid rain? Study the diagram for some clues.

- 3.4 Acid rain can also damage buildings as it 'eats away' the stone. What property of acids allow it to do this?

Possible answers: (REVISION ACTIVITY: Acids, bases and neutral substances)

Question 1:

- 1.1 D
 1.2 B
 1.3 A
 1.4 C

Question 2:

Acids	Bases	Ideas
Sour taste	Turns red litmus paper blue	<ul style="list-style-type: none"> • Turns red litmus blue • Bleach

Feels rough	Bleach	<ul style="list-style-type: none"> • Sour taste • Feels rough • Bitter taste • Feels slippery • Lemon Juice • Turns blue litmus red
Lemon juice	Bitter taste	
Turns blue litmus paper red	Feels slippery	

Question 3:

- 3.1 SO₂ (Sulphur dioxide)
CO₂ - (Carbon dioxide)
- 3.2 They come from industries, human activities (such as traffic, fires, farming, etc.), natural occurrences such as volcanoes, etc. (This answer will depend on the class discussion and teaching.)
- 3.3 Water sources turns acidic, houses and buildings are damaged, plant life is destroyed, whole ecosystems are destroyed. (This answer will depend on the class discussion and teaching.)
- 3.4 Acids are corrosive

Grade 7 Consolidation Activity: The Periodic Table

Activity 1

Periodic Table of the Elements Activity

1.1 In the periodic table below, the information for the first 20 elements were omitted. Fill in the blanks with the atomic symbols of the first 20 elements. And then write the element names in the blanks below

Periodic Table of the Elements Activity

Fill in the blanks with the atomic symbols of the first 20 elements. And then write the element names in the blanks below.

Key:

Element name
Atomic number
Symbol

		scandium	titanium	vanadium	chromium	manganese	iron	cobalt	nickel	copper	zinc	gallium	germanium	arsenic	selenium	bromine	krypton
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
		Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
rubidium	strontium	yttrium	zirconium	niobium	molybdenum	technetium	ruthenium	rhodium	palladium	silver	cadmium	indium	tin	antimony	tellurium	iodine	xenon
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe

- | | | | | | | | |
|-----|-------|------|-------|------|-------|------|--------------------------|
| (1) | _____ | (6) | _____ | (11) | _____ | (16) | _____ |
| (2) | _____ | (7) | _____ | (12) | _____ | (17) | _____ |
| (3) | _____ | (8) | _____ | (13) | _____ | (18) | _____ |
| (4) | _____ | (9) | _____ | (14) | _____ | (19) | _____ |
| (5) | _____ | (10) | _____ | (15) | _____ | (20) | _____ |
| | | | | | | | (20) + (3) = (23) |

Activity 2		
2.1	The vertical columns on the periodic table are called groups, how many groups are there on the periodic table?	(1)
2.2	The horizontal rows on the periodic table are called periods, how many periods are there on the periodic table?	(1)
2.3	Using the group and period numbers, identify the elements that are located in each of the following location	
2.3.1	The element in group 10 and period 5 =	(1)
2.3.2	The element in group 1 and period 7 =	(1)
2.3.3	The element in group 15 and period 4 =	(1)
2.3.4	The element in group 18 and period 6=	(1)
2.3.5	The element in group 2 and period 3 =	(1)
		(7)
Activity 3		
The diagram below represents a table in which all the elements known to mankind is arranged. Elements in this table can be divided into three groups as shown. The information about one element given on this table is also shown.		
3.1	Identify the three groups shown on the table.	(3)
3.2	List two physical properties of metals.	(2)
3.3	List two physical properties of non-metals.	(2)
3.4	List the states of matter in which non-metals can exist	(3)
3.5	Give one example of each state in which non-metals can exist mentioned in Question 3.4 above.	(3)
3.6	Define metalloids / semimetals.	(2)
3.7	Give an examples of Metalloids used in:	
3.7.1	computer chips and other electronics	(1)
3.7.2	materials for airplanes / golf clubs / and fishing rods	(1)
3.8	Give THREE physical properties of the metalloid mentioned in Question 3.7.1	(3)
		(20)
TOTAL		(50)
SOLUTIONS TO ACTIVITIES		
Activity 1		
1.1		

1.	Hydrogen ✓ H	6.	Carbon ✓ C	11.	Sodium ✓ Na	16.	Sulphur ✓ S	
2.	Helium ✓ He	7.	Nitrogen ✓ N	12.	Magnesium ✓ Mg	17.	Chlorine ✓ Cl	
3.	Lithium ✓ Li	8.	Oxygen ✓ O	13.	Aluminium ✓ Al	18.	Argon ✓ Ar	
4.	Beryllium ✓ Be	9.	Fluorine ✓ F	14.	Silicon ✓ Si	19.	Potassium ✓ K	
5.	Boron ✓ B	10.	Neon ✓ Ne	15.	Phosphorus ✓ P	20.	Calcium ✓ Ca	
								(20)
For all Correct Symbols ✓✓✓								(3)
								(23)
Activity 2								
2.1	18 groups ✓							(1)
2.2	7 periods ✓							(1)
2.3	2.3.1	Palladium ✓ (Pd)						(1)
	2.3.2	Francium ✓ (Fr)						(1)
	2.3.3	Arsenic ✓ (As)						(1)
	2.3.4	Radon ✓ (Rn)						(1)
	2.3.5	Magnesium ✓ (Mg)						(1)
								(7)
Activity 3								
3.1	Group 1 – metals ✓ Group 2 – semi-metals ✓ Group 3 non-metals ✓							(3)
3.2	Physical Properties of metals - good conductors of heat and electricity. ✓ -- malleable ✓ and - ductile ANY TWO							(2)
3.3	Physical Properties of non-metals - a poor conductors of heat and electricity ✓ - are brittle ✓ - have much lower melting points ANY TWO							(2)
3.4	Non-metals can be: Solid; ✓ Liquid, ✓ or Gas ✓✓✓ at room temperature depending upon the element.							(3)
3.5	Solids: Example = Carbon ✓ / Sulphur, etc., ANY ONE Liquid: Example = Bromine ✓ Gases: Example = Helium ✓ / Hydrogen / Nitrogen / Oxygen / all the group eighteen noble (or inert) gases, etc., ANY ONE							(3)
3.6	Metalloids / semimetals are elements with properties intermediate ✓ between those of metals and non-metals ✓							(2)
3.7	3.7.1	Silicon ✓						(1)
	3.7.2	Boron ✓						(1)
3.8	It is Shiny It is brittle ✓ It conducts electricity ✓							(3)
								(20)
TOTAL								(50)