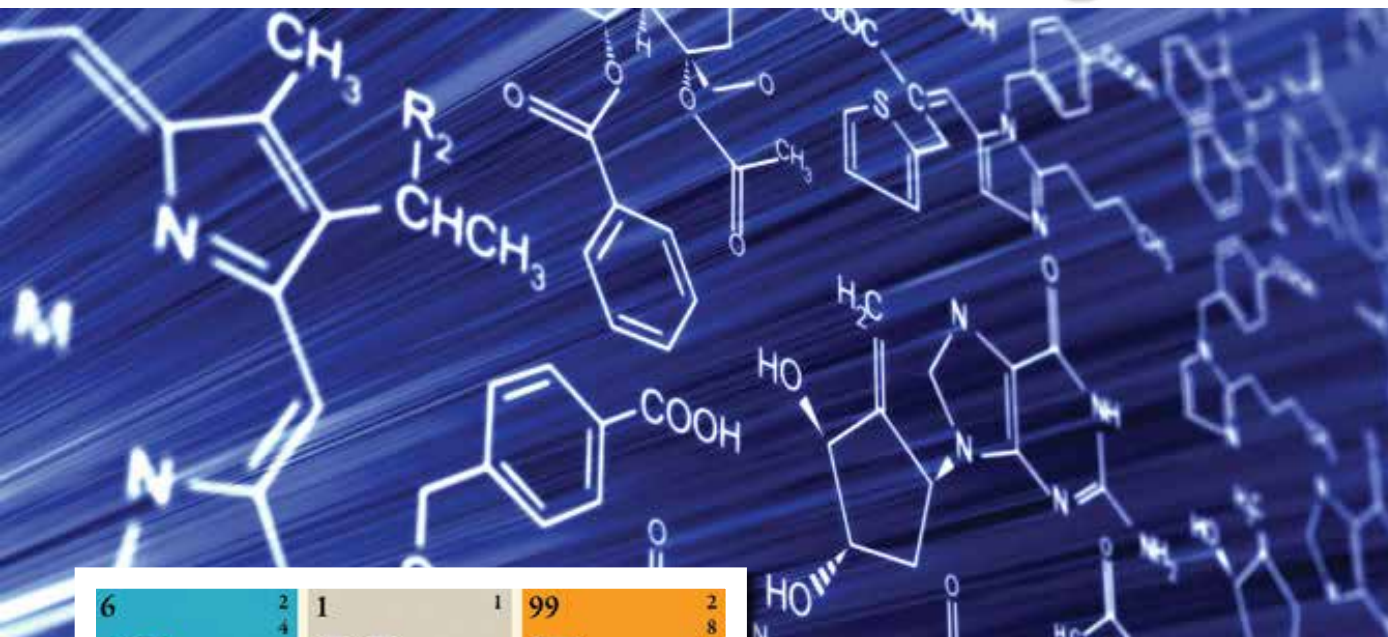


The element of chemistry



6 C Carbon 12.0107	2 4 1 H Hydrogen 1.00794	1 99 Es Einsteinium (252)	2 8 18 32 29 8 2
12 Mg Magnesium 24.3050	2 8 18 18 7 53 I Iodine 126.90447	2 8 18 18 7 16 S Sulfur 32.066	2 8 8 6
22 Ti Titanium 47.867	2 8 10 2 88 Ra Radium (226)	2 8 18 32 18 8 39 Y Yttrium 88.90585	2 8 18 9 2

This is an intermediate level worksheet and is suitable for children from class 7 onwards

Activity 1: Three friends and an outing

Fill in the missing symbols using the clues given in the brackets to complete the story.

____resh (sodium), ____iran (potassium) and ____vi (radium) went for a ____icnic (phosphorus) in a ____r (calcium) without informing ____eir (thorium) ____rents (protactinium).

They ____ave (hydrogen) ____avelled (tritium) a long distan____ (cerium) and reached a ____orest (fluorine) ____ea (argon). Suddenly, the car starts wobbling. They stop the car, get out and find that the____ (iridium) ____ehicle (vanadium) is ____nctured (plutonium). By now it had already ____come (beryllium) dark.

They took out their ____biles (molybdenum) to try and get some assistance. But with no ____gnals (silicon) in the forest, they found that their ____biles (molybdenum) were not ____orking (tungsten). Left with no other option, they started retracing their steps. They reached the main road ____ut (boron) did not fi____ (neodymium) any o____ (neon) to ____lp (helium) them. After a couple of hours of walking they saw a ____uck (tritium) with a ____w (iron) men passing by. The ____uck (tritium) stopped. The men in the ____uck (tritium) ____tacked (astatine) the three friends and took away the____ (iridium) ____luables (vanadium) including the ____biles (mobiles).

After several hours of hardship ____l (aluminium) three of them ____ached (rhenium) their homes. They ____omised (praseodymium) their parents that they would ____ot (nitrogen) go on such long drives with ____ut (oxygen) ____nforming (iodine) them.

A ____eek (tungsten) after this incident t____ three friend____ (sulphur) went to a ____otel (hydrogen) to celebrate ____resh's (sodium) ____rth (bismuth) da____ (yttrium). To their surpri____ (selenium), in the same pla____ (cerium), they ____ound (found) the men who robbed them. They immediately called the ____lice (polonium) and informed them of the robbery. When the men were ____terrogated (indium), they said their names were ____emen (chlorine), ____im (bromine), ____van (iodine) and ____mit (astatine). After some clever questioning, the men ____cepted (actinium) their crime and returned all the things ____cluding (indium) the money to the ____oys (boron).

Activity 2: Pictorial chemistry



Identify the acids, bases, or salts present in the following objects.











Activity 3: Reactivity series

Observe these elements of the “Reactivity series of metals” and answer the following questions. (A small mnemonic to remember the “Reactivity Series” easily is given)

- | | | | |
|--------------|--------------|--------------|--------------|
| 1. Potassium | 5. Aluminium | 9. Tin | 13. Mercury |
| 2. Sodium | 6. Zinc | 10. Lead | 14. Silver |
| 3. Calcium | 7. Iron | 11. Hydrogen | 15. Gold |
| 4. Magnesium | 8. Nickel | 12. Copper | 16. Platinum |

Mnemonic: P.S.C Mazintl Hchaap

1. Why is hydrogen, a non-metal, placed in the reactivity series of metals?

2. If calcium can displace aluminium from its salt solution, nickel cannot displace aluminium but can displace copper, and magnesium cannot displace calcium but can displace nickel and copper, mention the ascending order of the reactivity of these metals.

3. Three beakers A, B, and C are filled with 10ml of CuSO_4 , $\text{Al}_2(\text{SO}_4)_3$, and FeSO_4 . If a small piece of zinc is dropped in all three beakers, in which beaker/beakers will reaction take place? Write the related chemical equations.

4. Manish prepared a solution of iron sulphate and stored it in a can made of zinc. The next day he observed that holes had formed in the can and iron sulphate was leaking from the can. Give reasons.

5. Metals like sodium are stored in kerosene, magnesium is stored in tightly packed bottles, and metals like gold can be exposed to the atmosphere. Give reasons.

Activity 4: Periodic table of elements



1. There is an element with an electronic configuration of 2, 8, 8, 2. Mention its
 - a) Name:
 - b) Valency:
 - c) Group:
 - d) Period:
 - e) Valence electrons:
2. Look at these elements – X_{11}^{23} , Y_{20}^{40} , Z_{18}^{40} , Q_{11}^{24} – and identify
 - a) A pair of isotopes:
 - b) A pair of isobars:
 - c) The non-metal:
 - d) Di positive elements:
 - e) Inert gas:
3. If an element X can form an oxide of formula X_2O_3 . Mention the formula of its
 - a) Chloride:
 - b) Sulphate:
 - c) Nitrate:
 - d) Hydroxide:
 - e) Carbonate:
4. Name the elements and mention their symbols using their given Latin names.
 - a) Kalium:
 - b) Argentum:
 - c) Ferrum:
 - d) Natrium:
 - e) Wolfrum:
5. Identify and name the places using the symbols of the given elements, eg: Neon, Phosphorus, Aluminium:
Nepal
 - a) Plutonium, Neon:
 - b) Chromium, Iodine, Sodium:
 - c) Potassium, erbium, lanthanum:
 - d) Polonium, lanthanum, neodymium:
 - e) Sulphur, protactinium, Iodine, nitrogen:

Activity 5:

Describe the chemical reactions below by looking at these illustrations?

1)



Mention the type of reaction: _____

An example of the reaction: _____

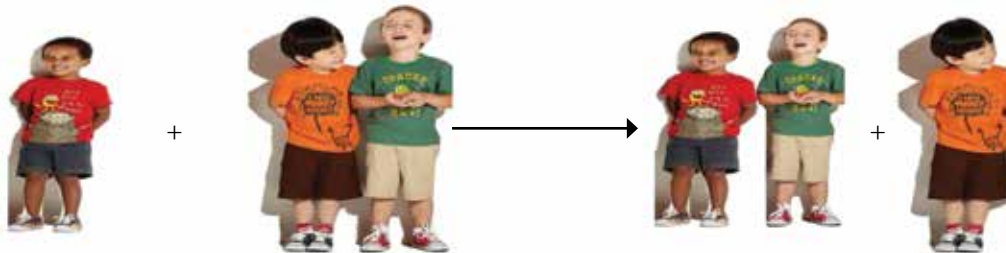
2)



Mention the type of reaction: _____

An example of the reaction: _____

3)



Mention the type of reaction: _____

An example of the reaction: _____

4)



Mention the type of reaction: _____

An example of the reaction: _____

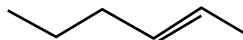
Activity 6: Modern periodic table of elements

1. Name these elements
 - a) K shell is fully filled, L shell is half filled:
 - b) K and L shells are fully filled, M shell has 6 electrons:
 - c) unreactive element with one shell fully filled:
 - d) elements under the DUplet rule:
2. Identify these elements based on their position in the periodic table
 - a) first and last elements of second period:
 - b) second and third elements of 17 group:
 - c) elements of the first period:
 - d) first and third elements of second group:
3. Give reasons for the following
 - a) an element with the atomic number 13 is placed in the thirteenth group and not the third group.
 - b) Helium does not have 8 valence electrons, but it is placed in the 18th group.
 - c) last group of periodic table is noble gases.
 - d) Only two elements are placed the first period of the periodic table.
4. Name the blocks of periodic table from the given information
 - a) block having noble metals –
 - b) block that has highly reactive metals –
 - c) block with metalloids –
 - d) block kept separately so as not to disturb the periodicity –
5. Name the groups or periods in the following
 - a) group of salt generating elements –
 - b) group of strong alkalies –
 - c) period starting with transition elements –
 - d) shortest period –

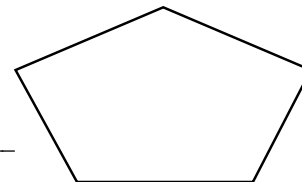
Activity 7: Carbon compounds

1. Mention the functional groups of carbon compounds – a) 4oic acid b) 3nal ?

2. How many double and single bonds are present in 2-hene ?



3. Name and mention the formula of cycloalkane using the following structure.

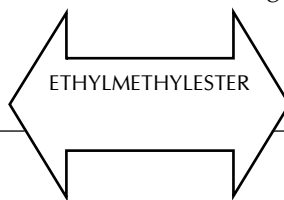


Pentagon



4. The second member of alcohol is taken as beverage and it also has various industrial applications. Which alcohol is added to this to avoid drinking by workers?

5. Mention the constituent acid and alcohol of the given ester.



6. Of the hydrocarbons butane and butyne, which compound burns with sooty flame?



7. Which hydrocarbons in the following can decolourize red bromine liquid?
Ethane, butene, propyne, and cyclopropane.



8. Observe the given picture and name the reaction associated with it using hydrocarbons and also mention the catalyst used in this process.



9. Carboxylic acid X, on reacting with alcohol Y, in the presence of acid catalyst forms compound Z which has a fruity smell. Name the group to which Z belongs.

