WATER TESTING

Acidity and Alkalinity

- Place 5 mL of each water sample in a clean test tube.
- Test for pH using any of the following.
    - ***pH meter*** - records directly.
    - ***3 drops of universal indicator*** - compare the colour of the solution with the chart.
    - aquarium test strips - compare to the chart.

pH Scale **0** **strong acid (red)** → **7** **neutral (green)** → **14** **strong alkaline (purple)**

WATER SAMPLE	pH	LEVEL OF ACIDITY / ALKALINITY (0- 14)

Sulphate Ions (SO_4^{2-})

- Place 5 mL of each water sample in a clean test tube.
- Add ***5 drops of barium chloride*** ($BaCl_2$) to each test tube.
- If a ***white precipitate (solid) forms***, it contains sulphate ions.

WATER SAMPLE	SOLID (yes/no)	LEVEL OF SULPHATE (none, low, medium, high)

Salt - Chloride Ions (Cl^{1-})

- Place 5 mL of each water sample in a clean test tube.
- Add ***5 drops of silver nitrate*** ($AgNO_3$) - compare to the standard test tubes (1%, 2%, 5% salt).

  If a ***white precipitate (solid) forms***, it contains chloride ions. Estimate the percentage of salt.

WATER SAMPLE	CONCENTRATION (%)

Phosphate Ions (PO_4^{3-})

- Place 5 mL of each water sample in a clean test tube.
- Use pool test kit strips to test each sample - compare to the chart.

WATER SAMPLE	LEVEL OF PHOSPHATE (parts per million - ppm)

Nitrate ions (NO_3^{1-})

- Use the aquarium test strips to record levels - compare to the chart.

WATER SAMPLE	LEVEL OF NITRATES (parts per million - ppm)

Chlorine

- Use the aquarium test strips to record levels - compare to the chart.

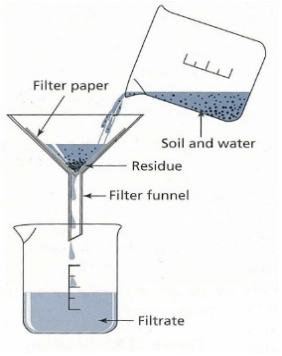
WATER SAMPLE	LEVEL OF CHLORINE (parts per million - ppm)

Alkalinity [carbonate ions (CO_3^{2-})]

- Use the aquarium test strips to record levels - compare to the chart.

WATER SAMPLE	ALKALINITY (parts per million - ppm)

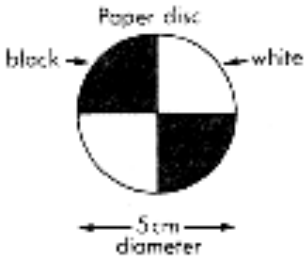
Suspended Materials



- Filter 20 mL of the water through a fine filter paper.
- Let the paper dry.
- Use a hand lens or stereo microscope to observe any trapped solids.
- Take a photo and add it to your report.

WATER SAMPLE	SOLID (yes/no)	DESCRIPTION OF SOLIDS

Clarity (Turbidity)



- Place 50 -100 mL of the water in a tall clear glass tube (gas jar, measuring cylinder, etc).
- Place a black and white turbidity disc under the bottom, or ***draw a black cross on a sheet of paper***.
- Look at the disc or cross through the water.
- If the ***disc is easily seen, it has low or no turbidity***. If it is ***difficult to see, it has a moderate to high turbidity***.
- Take photos to show the clarity - add them to your report.

WATER SAMPLE	AMOUNT OF TURBIDITY

Conclusions

- Look at your results and rank the water samples from best to worst. Give reasons for your decision.

  e.g. Too much salt (Cl^{1-} ions), pH too high or low, etc.

- Use the following table to summarise your results to make it easier to judge.

Water Sample	Acidity (pH)	Sulphate (ppm)	Salt (%)	Phosphate (ppm)	Nitrate (ppm)	Chlorine (ppm)	Carbonate (ppm)

WATER SAMPLE RANKING	REASONS
1.	
2.	
3.	
4.	
5.	