**Unit Two:** Acids and Bases Introduction

You already have some notions about what acids and bases are. With your partner complete the following tasks.

**Task One (Prior Knowledge)** – List as many examples of acids and bases as you can (name and/or formula)

 **ACIDS BASES**

**What makes something an acid?**

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**Task Two** **(Experimental Design)** – You have been supplied with a number of transparent liquids and various other supplies. With your partner you are to categorise each liquid as either an acid or base.

Is there any visible difference between the liquids? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Can you think of any tests you might perform to decide which liquids are acids?

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Test this theory and see if it works. What conclusion can you draw?

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**Indicators**

Earlier in the year you extracted dye from flower petals. Do this again by heating petals in 30 mL of a 50:50 water/methylated spirits mixture.

Use the dye extracted to test each liquid. What do you notice?

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Separate the liquids into three groups. Those that go one colour, those that go the other colour and those that don’t seem to do anything.

Add a small piece of magnesium metal to each liquid.

What happens?

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Use the evidence you have collected to write down how you could tell if a liquid is an acid or a gas.

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Complete the following table

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| --- | --- | --- |
| Acid and its formula | Neutral and its formula | Base and its formula |
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**Acids/bases and their formulas**. Is there a way of using the chemical formula to define an acid?

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Use your textbook to copy the accepted definition of an acid and a base;

**Acid**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Base**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Classify the following: HNO3, Ca(OH)2, C3H8, HF

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**Reactions of acids:**

**Acids plus carbonate**

Add a spatula of sodium carbonate to a test tube. Add some HCl. Test the gas produced with a match.

What happened to the match? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Which gas is produced? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write a balanced equation for the reaction.

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Repeat the reaction using calcium carbonate.

Write an equation for the reaction.

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Write a general equation for the reaction occurring between an acid and a carbonate.

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**Acids plus metals**

Add a small piece of magnesium to some hydrochloric acid in a test tube. Test the gas.

Identify the gas. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write a balanced equation for the reaction occurring when a pop test occurs.

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Write a balanced equation for the reaction occurring between the magnesium and the hydrochloric acid.

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Add a small piece of zinc to sulphuric acid.

Write a balanced equation for this reaction.

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Write a general equation for the reaction occurring between an acid and a metal

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**Acids and bases**

Add a few mL of hydrochloric acid to a test tube.

Add a few drops of indicator.

Add sodium hydroxide until there is a colour change.

Is there a gas produced? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write a balanced equation for the reaction occurring.

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Repeat this procedure using sulphuric acid and potassium hydroxide.

Write a general equation for the reaction between an acid and a base.

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