

Wind

Date:

Name:

Class:



Task 1 – Look at the compass below. Label the **cardinal points**: North **N**, South **S**, East **E** and West **W**.

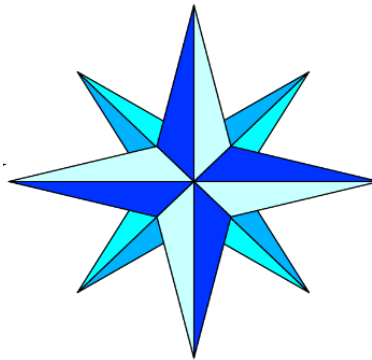
Now see if you can label the **intercardinal points** midway between each cardinal point: northeast **NE**, southeast **SE**, southwest **SW**, and northwest **NW**.

TIP:

When labelling intercardinal points, North **N** or South **S** always comes first!

For example:

NW or **SE**



Task 2 - Match the **descriptions on the post-its** with the relevant turbine parts below.

The first one has been done as an example.

1 This **streamlines** the turbine making it more **aerodynamic** and also **protects** the rotor hub

2 These need to be **deep** and wide enough to **anchor** the turbine in high winds

3 This **measures** the **wind speed**

4 These can be **pitched** (or **feathered** in high winds) depending on wind speed

5 This **turns** the **nacelle** so that the rotor hub is **facing into the wind**

6 This **converts** rotational mechanical energy into **electricity**

7 This **houses** all the working parts and **protects** them from the weather

| | | | | | | |
|----------------------|----------------|----------|--------------|------------|---------|-----------|
| Concrete foundations | The yaw system | Nosecone | Rotor blades | Anemometer | Nacelle | Generator |
|----------------------|----------------|----------|--------------|------------|---------|-----------|



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Task 3 – The turbine challenge!

In your teams, design and make a **horizontal wind turbine** to create the power to **lift a paper cup** off the floor. The turbine will be powered by 'wind' from a fan/hairdryer.

- Use as many or as few of the materials provided
- Choose the number and pitch (angle) of your rotor blades
- Rig up your cup and use the wind source provided to test your design

You can attach your turbine to a desk.

You will be given a paper cup to lift and you can use the following materials:

String ~ plasticine ~ cardboard toilet rolls ~ cardboard ~ tape ~ pencils ~ wooden dowel

Design your wind turbine in the space below or on a separate piece of paper