

Scouting at Home



Suitable for: Cubs | Scouts



Creative, Personal Growth
Challenge Area

Wind speed

Find out how aviators test the direction and speed of wind – and have a go at building the instrument that measures it.



You will need

- Paper cups x 5
- Paper straws x 2
- Tape
- Noticeboard pin
- Pencil with eraser
- Stapler
- Hole punch
- Marker pen

Instructions

1 Punch four holes through one paper cup, 1cm under the rim, one on each side, then to feed two straws through the holes and out the other side, so the straws cross in the middle.

2 Next, take a paper cup and punch a hole near the opening. Holding the cup so the opening is on its side, insert one of the straws on the cross shape into the hole until ½cm to 1cm of the straw is poking through into the cup. Bend this bit of straw flat against the cup and tape

down. Repeat this step with three more cups. Make sure the four cups are all facing the same direction.

3 Turn the anemometer upside down and use a sharpened pencil to pierce a hole in the middle of the bottom of the centre cup. Sharp end first, insert the pencil through the bottom of the centre cup and make a hole big enough for the pencil to fit through. When the hole is big enough, take out the pencil then reinsert it, eraser-end first. Let the eraser meet the place where the straws cross.

4 Next, turn the anemometer the right way up and push the noticeboard pin through the intersecting straws and into the eraser. Don't push the pin right in, so it can still spin round. Finally, mark one of the cups with a marker pen – this will be the cup you use for counting when measuring wind speed.

Measure wind speed

You will need

- Anemometer
- Pen
- Paper
- Stopwatch

Instructions

1 Take your anemometer outside to measure wind speed. You will need to keep time, and count the number of spins, try using a stopwatch.

2 Draw two short columns on the paper, the first column headed 'Time' the second 'Number of spins'. You will use this table to record your findings.

3 Position the anemometer so it has full access to the wind from all directions.

4 Press start on the stopwatch and keep track of how many times the marked cup passes them in one minute.

5 To calculate an average speed, repeat step three a further four more times. With a handmade

Outcomes

This activity will introduce you to the instruments aviators use to measure windspeed and it will enable you to build an anemometer for yourself. Testing out the instrument will show you how it is used to record levels of wind speed. Aviators use this information to measure how long a flight will take and whether or not it is safe to fly. Wind speed has a direct effect on the aeroplane's progress on its journey and can indicate whether or not there is a storm ahead.

Taking it further

The anemometer shows the direction the wind is blowing and how aviators use this information to determine whether there is a headwind or a tailwind. A headwind blows against the direction of travel, which is preferred during takeoff and landing as it helps lift the aircraft and reduces ground speed, resulting in a shorter take-off run. During the flight, pilots will hope for a tailwind as this blows in the direction of travel and means shorter journey times. If air pressure around the wing is disrupted at take-off, lift is decreased and the wing stalls. This can be corrected by an increase in forward pressure.

anemometer, 10 turns per minute indicates a wind speed of one mile per hour.