

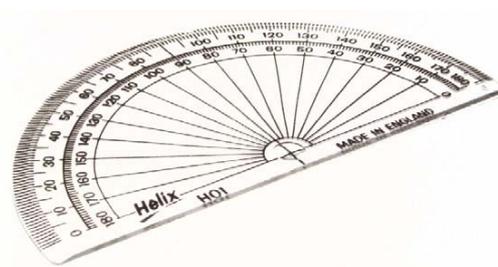
Make your own Anemometer

For measuring wind speed



Equipment

- ◇ 30cm of strong THREAD or fishing line
- ◇ A PING PONG or other small, light, plastic ball
- ◇ SELLOTAPE
- ◇ PROTRACTOR
- ◇ A piece of strong CARDBOARD
15cm x 10cm



Method

1 Stick the protractor to the cardboard with sellotape, with the straight edge at the top of the card.

2

string angle degree	90	80	70	60	50	40	30	20
wind speed m/s	0	3.6	5.3	6.7	8.1	9.4	11.4	14.4

Write the above wind conversion chart onto the cardboard.

3 Using sellotape attach the thread to the ping pong ball. Tie or glue the other end of the thread to the centre of the top edge of the protractor.

4 Hold the cardboard in the direction that the wind is blowing, so the ball is caught by the wind. You will see the thread makes an angle that you can measure on the protractor.
Convert the angle the thread makes to a wind speed using the conversion chart. If you have one, compare your readings to those made with a 'real' anemometer - how does it compare? Otherwise, compare your readings with the Beaufort Scale (see reverse).

The Beaufort Scale

Wind Force	Description	Speed		Specifications
		m/s	knots	
0	calm	0-0.2	0	Smoke rises vertically
1	light air	0.3-1.5	1-3	Direction shown by smoke drift but not by wind vanes
2	light breeze	1.6-3.3	4-6	Wind felt on face; leaves rustle; wind vane moved by wind
3	gentle breeze	3.4-5.4	7-10	Leaves and small twigs in constant motion; light flags extended
4	moderate breeze	5.5-7.9	11-16	Raises dust and loose paper; small branches moved.
5	fresh breeze	8.0-10.7	17-21	Small trees in leaf begin to sway; crested wavelets form on inland waters.
6	strong breeze	10.8-13.8	22-27	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty.
7	near gale	13.9-17.1	28-33	Whole trees in motion; inconvenience felt when walking against the wind.
8	gale	17.2-20.7	34-40	Twigs break off trees; generally impedes progress.
9	strong gale	20.8-24.4	41-47	Slight structural damage (chimney pots and slates removed).
10	storm	24.5-28.4	48-55	Seldom experienced inland; trees uprooted; considerable structural damage
11	violent storm	28.5-32.6	56-63	Very rarely experienced; accompanied by widespread damage.
12	hurricane	32.7+	64+	Devastation

For more advanced students

Can you do your own calculation to relate wind speed to the angle of the string?

Think about the forces acting on the ping pong ball:

