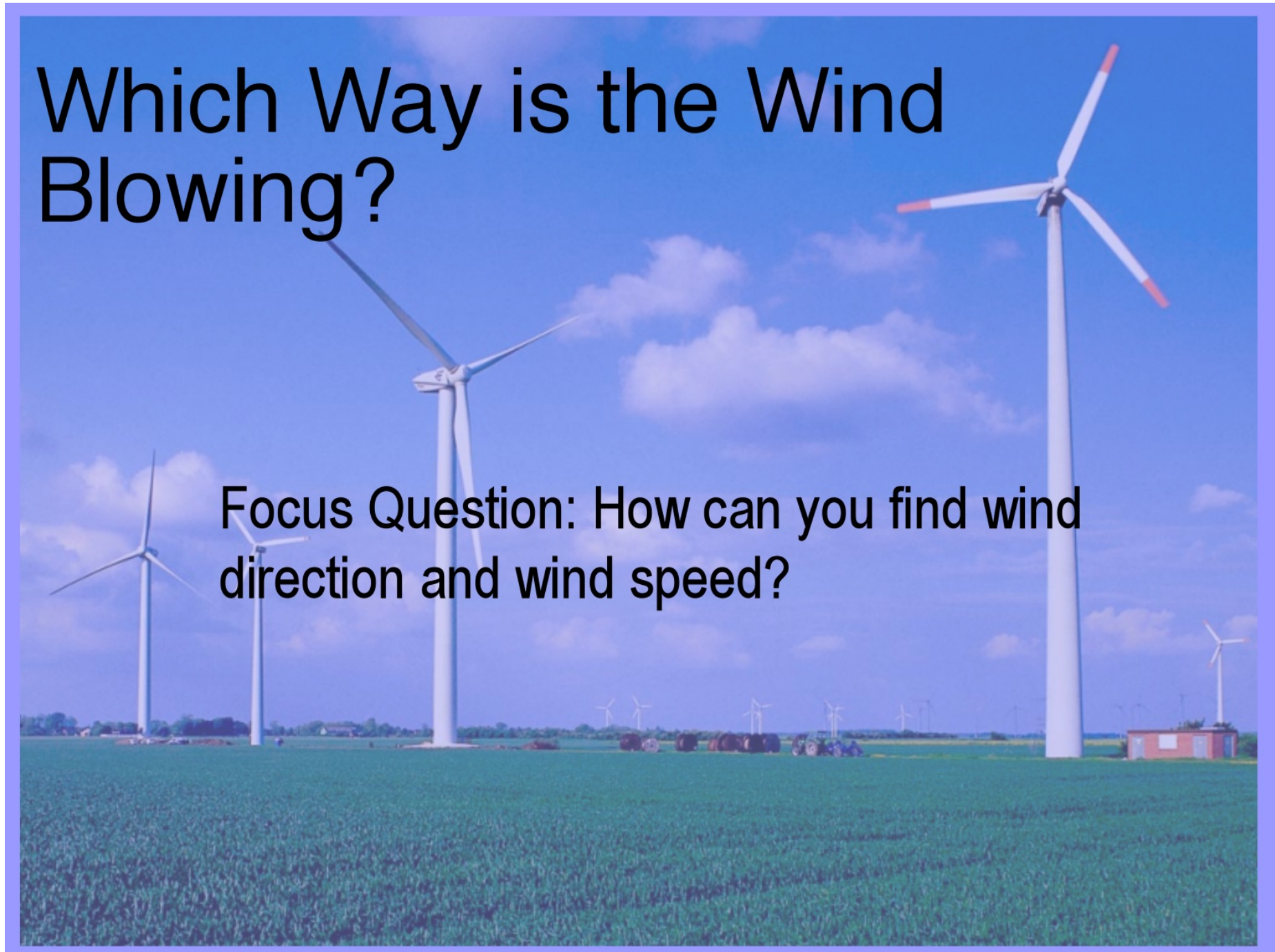


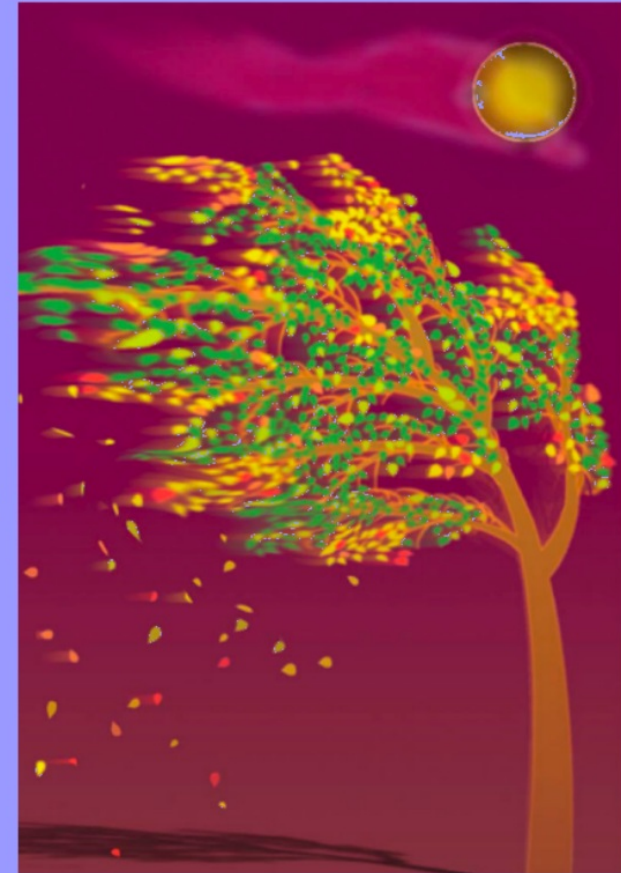
Which Way is the Wind Blowing?

Focus Question: How can you find wind direction and wind speed?



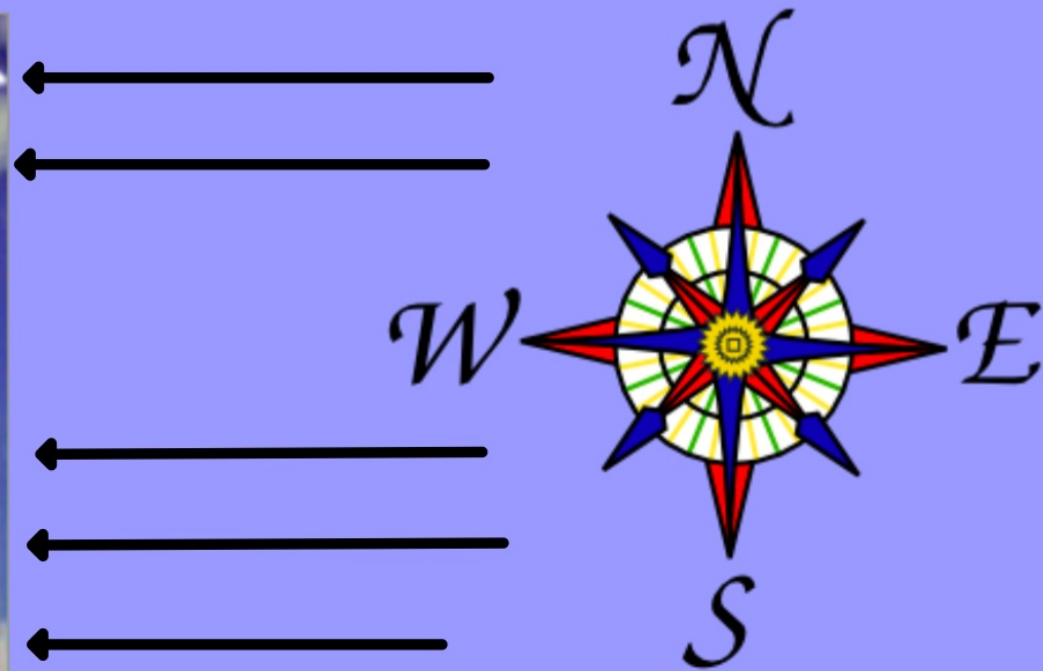
Remember: Wind is moving air...

- The uneven heating of Earth causes wind.
- Winds occur when there is a difference in air pressure between two areas of air.
- Winds move from areas of high pressure to low pressure.

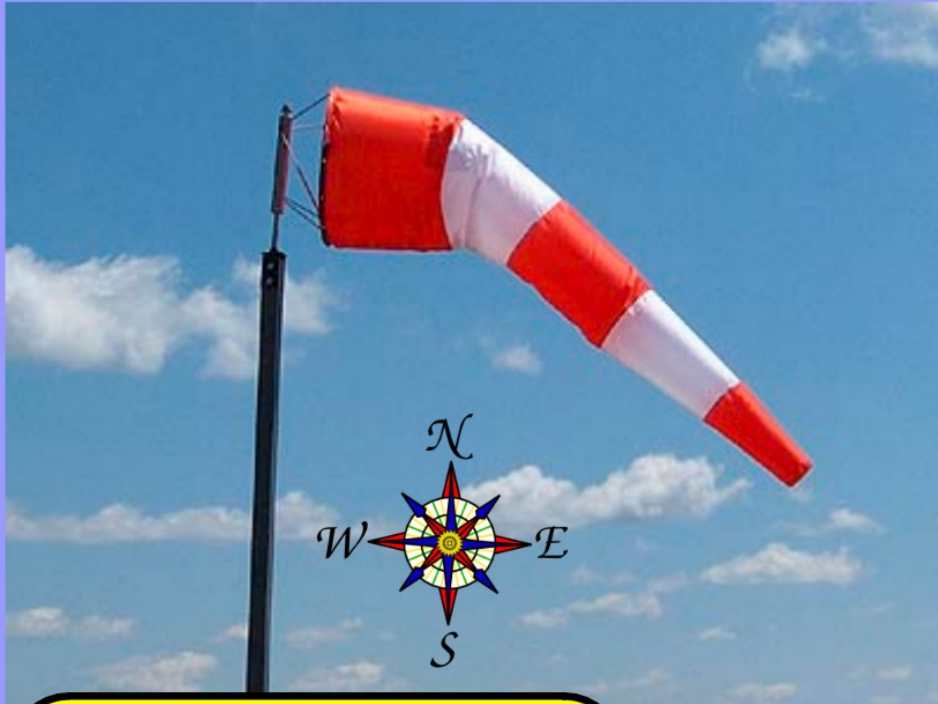


Winds are named for the direction from which they're blowing...

A wind blowing from the East to the West is an ***EAST WIND***



Windsocks



- A cloth bag that is open at both ends, but one end is narrower.
- Air enters the wide end and causes the narrow end to point away from the direction the wind is blowing.

Which direction is the wind blowing?

East

What is the name of this wind?

West Wind

Wind Vane (also known as a Weather Vane)

- Shows wind direction
- When the wind blows, the arrow points INTO the wind.
 - If the arrow points South, it is a South wind.



What direction is the wind here?

Measuring Wind Speed

- The greater the difference in air pressure between two areas, the stronger the winds produced.
- The closer the areas of high and low pressure are to each other, the stronger the winds are.





Anemometer

- Measures wind speed
- Cups attached to spokes, which are attached to a center pole
- The cups "catch" the wind and spin as the wind blows. The faster it spins, the faster the wind.

The Beaufort Scale

"Over thousands of years sailors have learnt to estimate the speed of the wind just by looking about. This technique matured into what we now call the Beaufort scale. The universe tells you everything you need to know about it as long as you are prepared to watch, to listen, to smell, in short to observe!"

.....Howtoons 2006

FORCE 0	SPEED 0 Knots 0 mph 0 km/h	SEA Sea like a mirror
	LAND Smoke rises vertically	

FORCE 1	SPEED 1-3 Knots 1-3 mph 1-6 km/h	SEA Ripples with the appearance of scales are formed, but without foam crests
	LAND Direction of wind shown by smoke but not by wind vanes	

FORCE 2	SPEED 4-6 Knots 4-7 mph 7-11 km/h	SEA Small wavelets. Crests have a glassy appearance and do not break
	LAND Wind felt on face; leaves rustle; ordinary vane moved by wind	

FORCE 3	SPEED 7-10 Knots 8-12 mph 13-19 km/h	SEA Large wavelets. Crests begin to break. Foam of glassy appearance.
	LAND Leaves and small twigs in constant motion; wind extends light flag	

FORCE 4	SPEED 11-16 Knots 13-18 mph 20-29 km/h	SEA Small waves, becoming longer, fairly frequent white horses
	LAND Raises dust and loose paper; small branches are moved	

FORCE 5	SPEED 17-21 Knots 19-24 mph 30-39 km/h	SEA Moderate waves, taking a more pronounced long form; many white horses are formed.
	LAND Small trees in leaf begin to sway; wavelets form on inland waters	

FORCE 6	SPEED 22-27 Knots 25-31 mph 40-50 km/h	SEA Large waves begin to form; the white foam crests are more extensive everywhere.
	LAND Large branches in motion; whistling heard in telegraph wires; umbrellas use difficult.	

FORCE 7	SPEED 28-33 Knots 32-38 mph 51-62 km/h	SEA Sea heaps up and white foam from breaking waves scurrs to slow in streaks with wind.
	LAND Whole trees in motion; umbrellas discarded; inconvenience felt when walking	

FORCE 8	SPEED 34-40 Knots 39-46 mph 63-75 km/h	SEA Moderate high waves of greater length; edges of crests begin to break into spindrift.
	LAND Breaks twigs off trees; generally impedes progress	

FORCE 9	SPEED 41-47 Knots 47-54 mph 70-87 km/h	SEA High waves. Crests of waves begin to curl and roll over. Spray may affect visibility.
	LAND Slight structural damage occurs; chimney pots and signs removed	

FORCE 10	SPEED 48-55 Knots 55-63 mph 88-102 km/h	SEA Very high waves. Surface of the sea takes on a white appearance. Visibility affected.
	LAND Seldom experienced inland; trees uprooted; considerable structural damage occurs	

FORCE 11	SPEED 58-63 Knots 64-72 mph 103-117 km/h	SEA Exceptionally high waves. The sea is covered with long white patches of foam.
	LAND Very rarely experienced on land; accompanied by widespread damage.	

FORCE 12	SPEED over 63 Knots over 72 mph over 117 km/h	SEA Huge waves; air is filled with foam and spray. Sea white with driving spray; visibility very seriously affected.
	LAND Countryside is devastated	

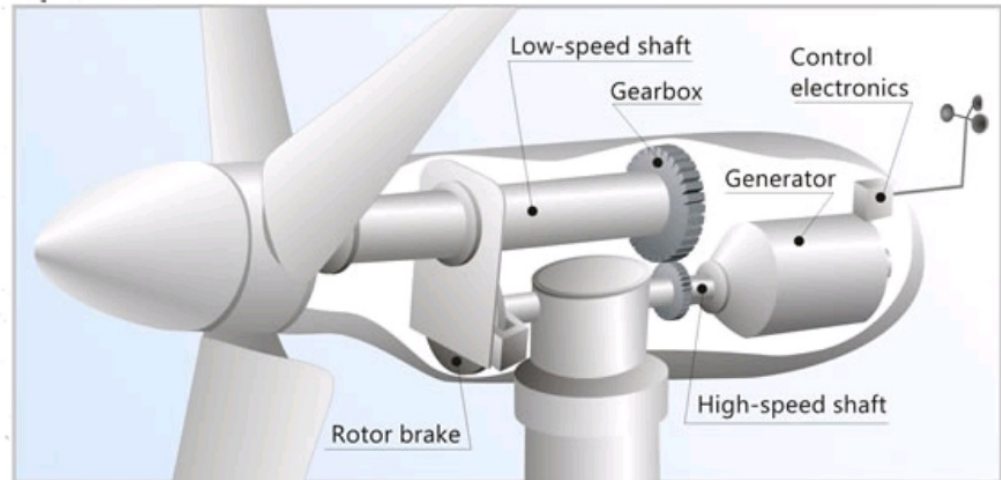
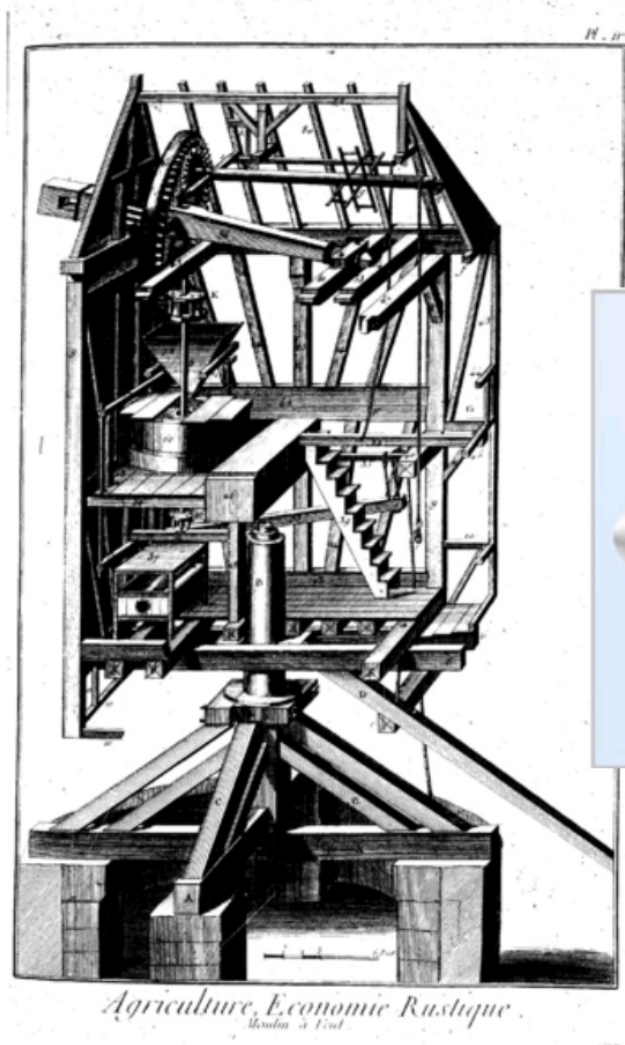
Windmills



Early Wind Machines

- Early designs come from the Middle East
 - Used to grind grain for flour
- Dutch used them to pump water from low land





Altamont Pass Wind Farm, California





