

LESSON | What is wind?

15

You cannot see wind. But you know it is there. You can feel it pressing against your body. You see tree branches bend when it blows. A gentle wind makes you feel fresh. A strong wind can blow you down.

What is this invisible force we call wind?

A **wind** is air that is moving parallel to the ground. (Air that moves up or down is not called wind.)

There are two main groups of winds. They are global winds and local winds.

GLOBAL WINDS move across our entire planet. They cover very large areas.

Most of the time a global wind blows at the same speed and in the same direction. Some global winds blow high in the atmosphere. You cannot always feel them on the ground.

LOCAL WINDS move across small areas. They change direction and speed very often. Local winds blow low in the atmosphere. You can always feel them on the ground.

Every wind has speed and direction. How can you measure wind? There are two instruments that are used, an **anemometer** [an-uh-MOM-uh-tur], and a **wind vane**. An anemometer measures how fast a wind blows. A wind vane tells us from which direction a wind blows.

Do you want to know what causes winds? You will find out in the next Lesson.

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1. N

2. S

3. E

4. W

5. C

6. C

7. C

8. C

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NAMING WINDS

Winds have names. The name of a wind tells us where the wind comes from. For example, sea breezes and land breezes are two kinds of local winds. A sea breeze comes from the sea. It moves toward the land. A land breeze comes from the land and moves toward the sea.

Winds are also named by compass direction. In fact, most winds are named this way. For example, in North America, the important global winds come from the west. They are called the prevailing westerlies.

A compass has four main direction points. They are: north (N), east (E), south (S), and west (W) (Figure A).

The directions between these main points are: northeast (NE), southeast (SE), southwest (SW), and northwest (NW).

A north wind comes from the north. It moves toward the south.

A southwest wind blows from the southwest. It heads towards the northeast.

COMPASS DIRECTIONS

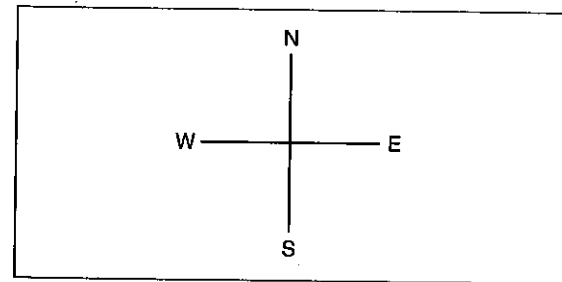


Figure A The four main points of a compass.

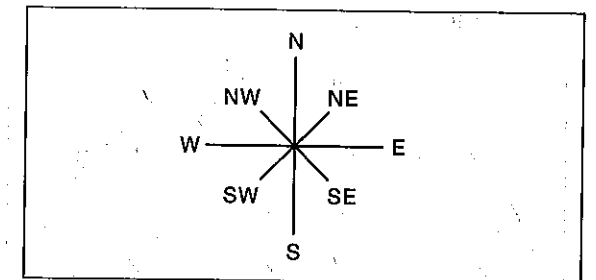


Figure B The four in-between compass points.

1. N stands for _____.
2. S stands for _____.
3. E stands for _____.
4. W stands for _____.
5. Opposite of north is _____.
6. Opposite of south is _____.
7. Opposite of east is _____.
8. Opposite of west is _____.
9. NE stands for _____.
10. SE stands for _____.
11. SW stands for _____.
12. NW stands for _____.
13. Opposite of northeast is _____.
14. Opposite of southeast is _____.
15. Opposite of southwest is _____.
16. Opposite of northwest is _____.

WIND DIRECTIONS

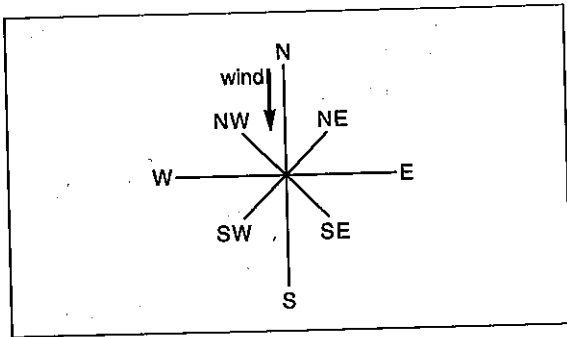


Figure C

1. The wind shown here is coming from the _____.
2. It is heading towards the _____.
3. The wind is a _____ wind.

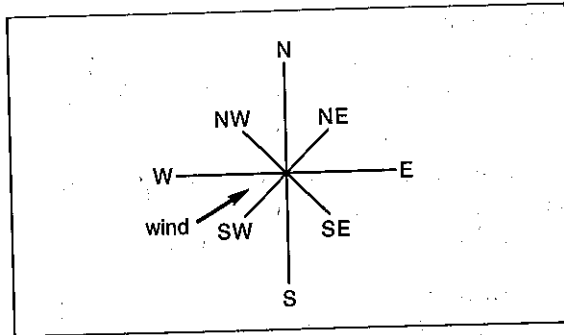


Figure D

4. The wind shown here is coming from the _____.
5. It is moving towards the _____.
6. The wind is a _____ wind.

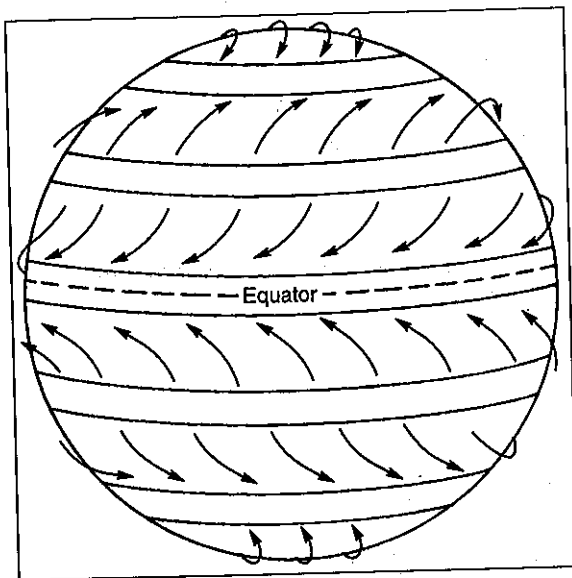


Figure E

Look at Figure E. The arrows show the directions of the main global winds.

7. Do they all blow in the same direction? _____

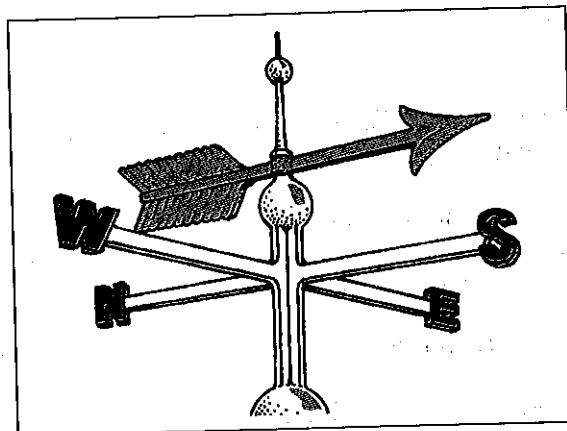


Figure F

Figure F shows a wind vane.

8. Where is the wind coming from? _____
9. This wind is a _____ wind.

WIND DIRECTIONS

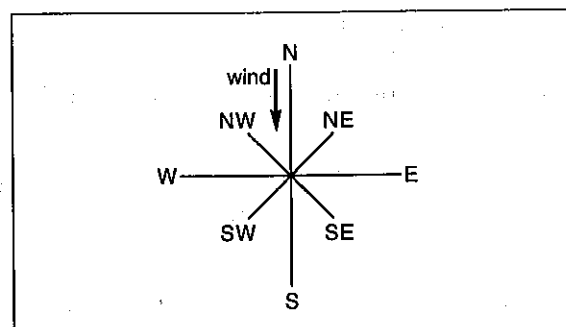


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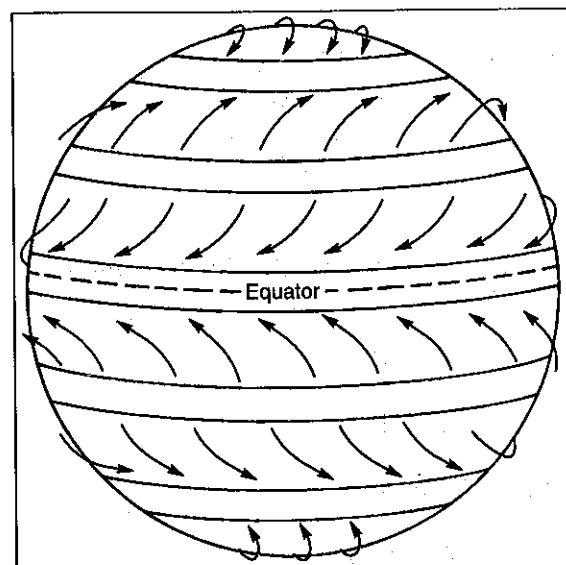


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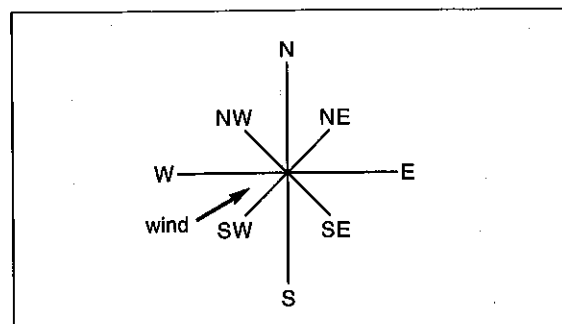


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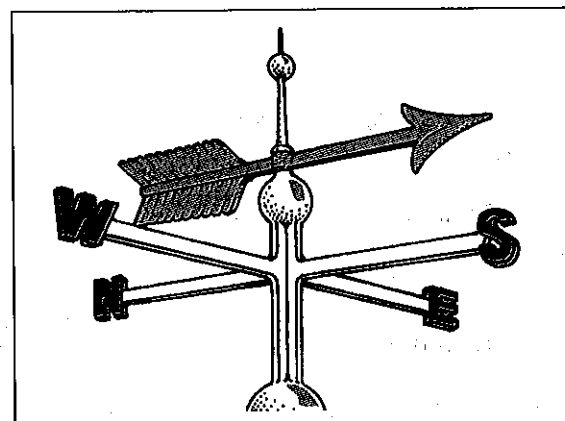


Figure F

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8. Where is the wind coming from?

9. This wind is a _____ wind.

WIND SPEED

Figure G shows an anemometer.

1. What does an anemometer measure?

A wind makes the anemometer's cups turn.

2. The stronger the wind, the _____ the cups turn.
slower, faster

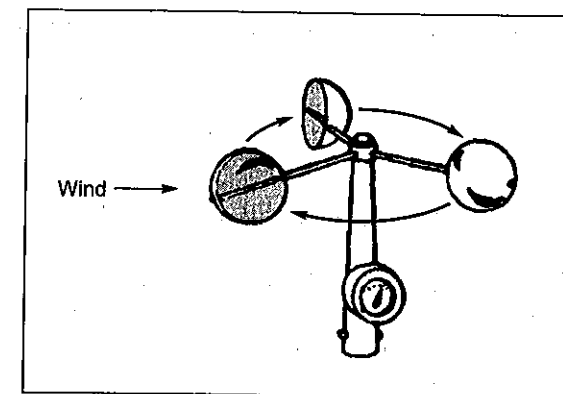


Figure G

FILL IN THE BLANK

Complete each statement using a term or terms from the list below. Write your answers in the spaces provided. Some words may be used more than once.

anemometer
global
speed
parallel to the ground

air
high
wind vane
ground

direction
always
local

1. A wind is _____ that is moving _____.
2. The two main groups of winds are _____ winds and _____ winds.
3. Winds that move across the entire planet are called _____ winds.
4. Some planetary winds blow _____ in the atmosphere.
5. You cannot feel some global winds on the _____.
6. A global wind usually blows at the same _____ and _____.
7. Winds that move across small parts of the earth are called _____ winds.
8. Local winds can _____ be felt on the ground.
9. Local winds often change _____ and _____.
10. An _____ measures wind speed; a _____ shows wind direction.

COMPLETE THE CHART

Complete the chart by filling in the missing information. Put a check in the proper box.

| | | Global Wind | Local Wind |
|----|-----------------------------------|-------------|------------|
| 1. | Covers small area | | |
| 2. | Often changes speed and direction | | |
| 3. | Covers large area | | |
| 4. | Always felt on the ground | | |
| 5. | Can be high above the ground | | |
| 6. | Speed and direction stay the same | | |

TRUE OR FALSE

In the space provided, write "true" if the sentence is true. Write "false" if the sentence is false.

- _____ 1. You need air to have a wind.
- _____ 2. The moon has winds.
- _____ 3. Air that moves up or down is a wind.
- _____ 4. There is only one kind of wind.
- _____ 5. Global winds cover large areas.
- _____ 6. All global winds blow high in the atmosphere.
- _____ 7. Global winds often change speed and direction.
- _____ 8. Local winds cover small areas.
- _____ 9. You can always feel a local wind.
- _____ 10. Local winds often change speed and direction.

COMPLETE THE CHART

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| | | Global Wind | Local Wind |
|----|-----------------------------------|-------------|------------|
| 1. | Covers small area | | |
| 2. | Often changes speed and direction | | |
| 3. | Covers large area | | |
| 4. | Always felt on the ground | | |
| 5. | Can be high above the ground | | |
| 6. | Speed and direction stay the same | | |

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- _____ 7. Global winds often change speed and direction.
- _____ 8. Local winds cover small areas.
- _____ 9. You can always feel a local wind.
- _____ 10. Local winds often change speed and direction.

The arrows on this map stand for winds. Study each arrow. Then fill in the chart below the map.

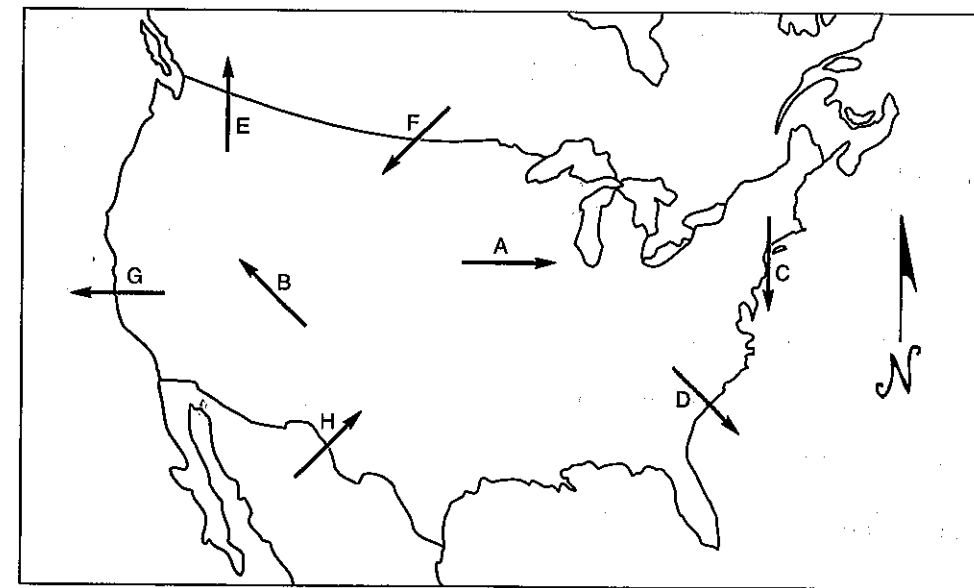


Figure H

| Wind | Coming From Which Direction? | Heading Towards Which Direction? | Wind Name |
|------|------------------------------|----------------------------------|-----------|
| A | | | |
| B | | | |
| C | | | |
| D | | | |
| E | | | |
| F | | | |
| G | | | |
| H | | | |

MATCHING

Match each term in Column A with its description in Column B. Write the correct letter in the space provided.

- | Column A | Column B |
|---------------------|------------------------|
| _____ 1. compass | a) main compass points |
| _____ 2. wind vane | b) heads NE |
| _____ 3. N, S, E, W | c) turns with the wind |
| _____ 4. SW wind | d) comes from the NE |
| _____ 5. NE wind | e) tells direction |

LL IN THE BLANK

Complete each statement using a term or terms from the list below. Write your answers in the spaces provided. Some words may be used more than once.

north
southwest
wind vane
compass direction

northeast
west
northwest
comes from

east
wind
south
southeast

1. Air moving parallel to the ground is called _____.
2. A _____ tells us from which direction a wind blows.
3. Most winds are named by _____.
4. A wind's name is the direction the wind _____.
5. The main points of the compass are _____, _____, _____, and _____.
6. Four in-between compass points are _____, _____, _____, and _____.
7. Opposite of northwest is _____.
8. Opposite of west is _____.
9. A southwest wind comes from the _____.
10. A south wind blows toward the _____.

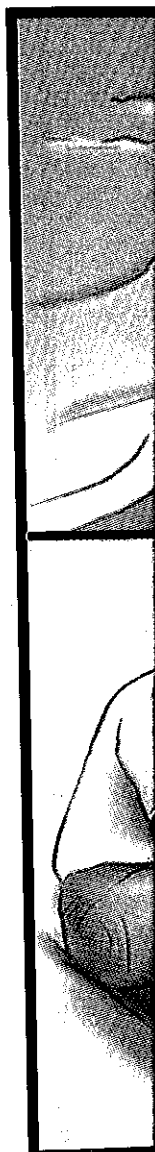
REACHING OUT

The arrow shows one of the positions of the jet stream in the Northern Hemisphere.



In the 1940s, global winds were discovered by B-17 pilots during World War II. These global winds are called jet streams. They are high-speed winds in the upper atmosphere. Their speeds may be as high as 500 km/hour. The jet streams flow from west to east. Why do you think airplanes traveling in the jet stream gain speed going from west to east, but lose speed going from east to west?

Wha



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Figure I