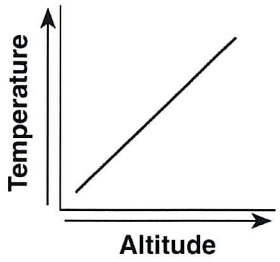
Name KOM
Period Date

Weather Review
Earth Science

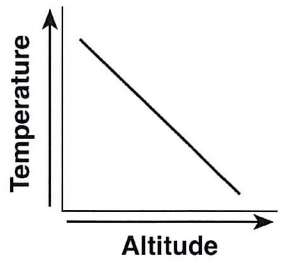
2 1) Which graph best shows the general relationship between altitude and temperature in the troposphere? p. 14 ESRT

1)



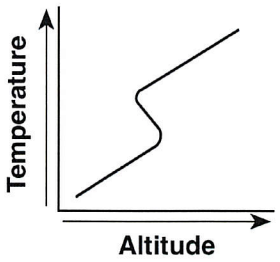
Temp ↓ as Alt. ↑

2)

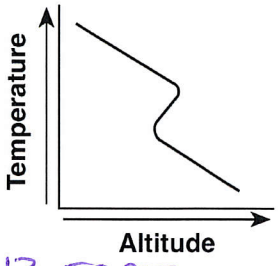


← indirect inverse

3)



4)



4 2) An air temperature of 30°C is equal to P13 ESRT

1) –22°F
2) –2°F
3) 74°F
4) **86°F**

30°C
80

___ 3) How many joules of heat energy must be added to 5 grams of liquid water to change its temperature from 10°C to 30°C?

1) 83.6 joules
2) 100 joules
3) **312.6 joules**
4) 418 joules

p. 1 ESRT specific heat

$4.18 \times 5g \times 20°C =$

3 4) Which weather variable is measured by a barometer? atmospheric barometric

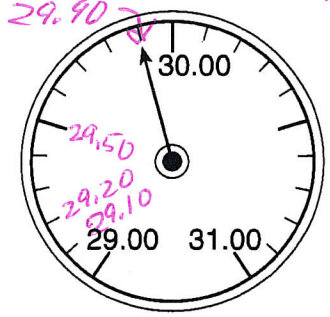
1) dewpoint
2) wind speed
3) **air pressure**
4) visibility

2 5) A barometric pressure of 1021.0 millibars is equal to how many inches of mercury? p. 13

1) 29.88
2) **30.15**
3) 30.25
4) 30.50

30.20
1021.0
30.10

2 6) The diagram below represents an aneroid barometer that shows the air pressure, in inches of mercury. p. 13 ESRT



1013.0
1012.0
← 29.90

When converted to millibars, this air pressure is equal to

1) 1009.0 mb
2) **1012.5 mb**
3) 1015.5 mb
4) 1029.9 mb

1 7) Surface winds on Earth are primarily caused by differences in

1) **air density due to unequal heating of Earth's surface** – memorize
2) ocean wave heights during the tidal cycle
3) rotational speeds of Earth's surface at various latitudes
4) distances from the Sun during the year

4 8) Air pressure is usually highest when the air is

Cold air sinks

1) warm and humid
2) warm and dry
3) cold and humid – Weighs less
4) **cold and dry** – Weighs more

1

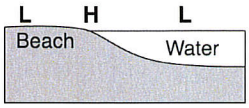
3

9) Which cross section below best shows the locations of high air pressure and low air pressure near a beach on a hot, sunny, summer afternoon?

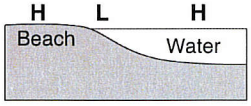
Low P. Hot — High Pressure cold

Key	
H	High air pressure
L	Low air pressure

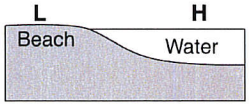
1)



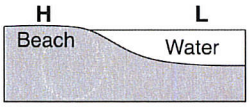
2)



3)

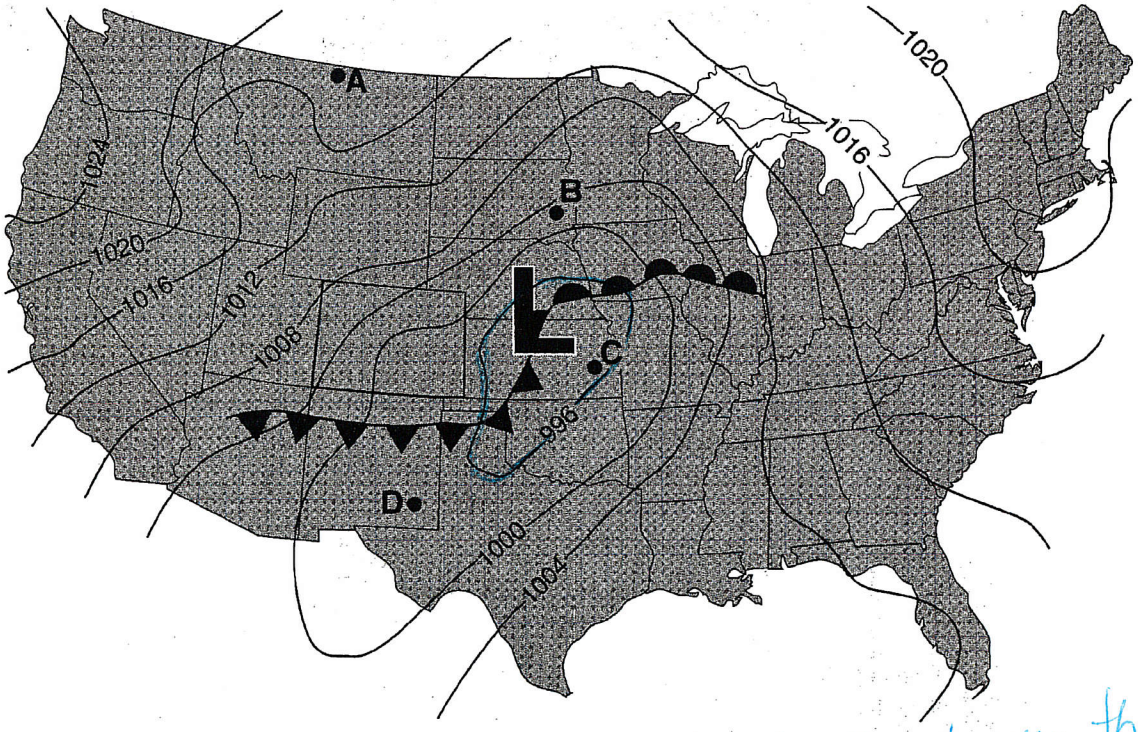


4)



2

10) Base your answer to the following question on the weather map below, which shows a low-pressure system over the central United States. Isobars are labeled in millibars. Points *A*, *B*, C, and *D* represent locations on Earth's surface.



The air pressure at the center of this low is

What # is the low? Lower than 996. There is no 992, so higher than 992.

1) 991 mb 2) **994 mb** 3) 997 mb 4) 1001 mb

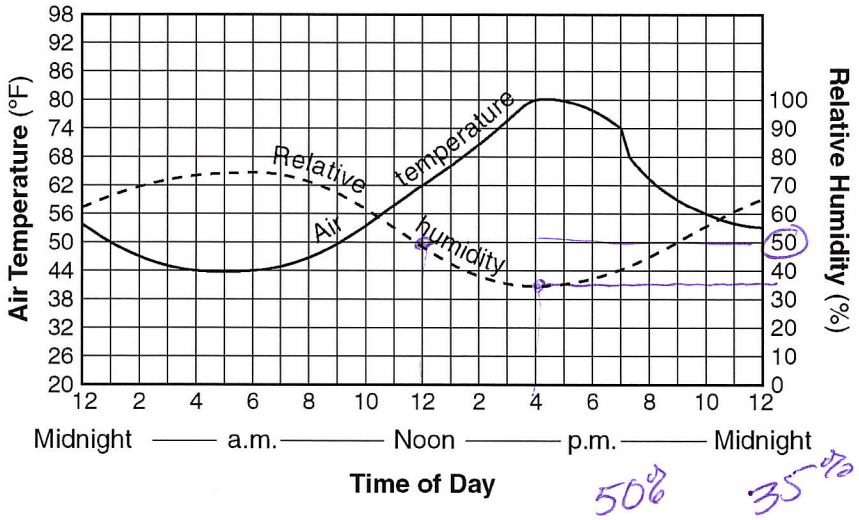
2 11) Which is a form of precipitation? — water falling through the sky

1) frost 3) dew

2) **snow** 4) fog

frozen water that falls the

(2) 12) Base your answer to the following question on the graph below. The graph shows air temperature and relative humidity at a single location during a 24-hour period.



50% 35% 50% - 35% = 15%

What was the approximate change in relative humidity from 12 noon to 4 p.m.?

1) 10% 2) **15%** 3) 20% 4) 30%

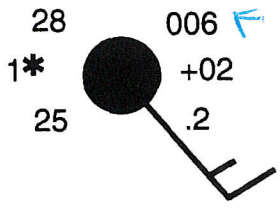
(2) 13) Pollutants are most likely to be removed from the atmosphere by — dirt, dust, smoke... condensation nuclei

1) evaporation
2) **precipitation**
3) volcanic activity
4) transpiration

(4) 14) Atmospheric transparency is most likely to increase after — what clears the air?

1) volcanic eruptions
2) forest fires
3) industrial activity
4) **precipitation**

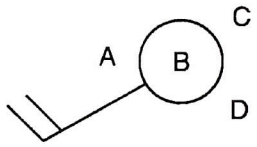
(3) 15) What is the air pressure indicated on the weather station model shown below?



1000.6 mb

1) 900.6 mb 3) **1000.6 mb**
2) 960.0 mb 4) 1006.0 mb

(4) 16) Weather data is normally recorded at positions *A*, *B*, *C*, and *D* on the weather station model shown below.



At which position should the measurements from a rain gauge be recorded? — measures rain

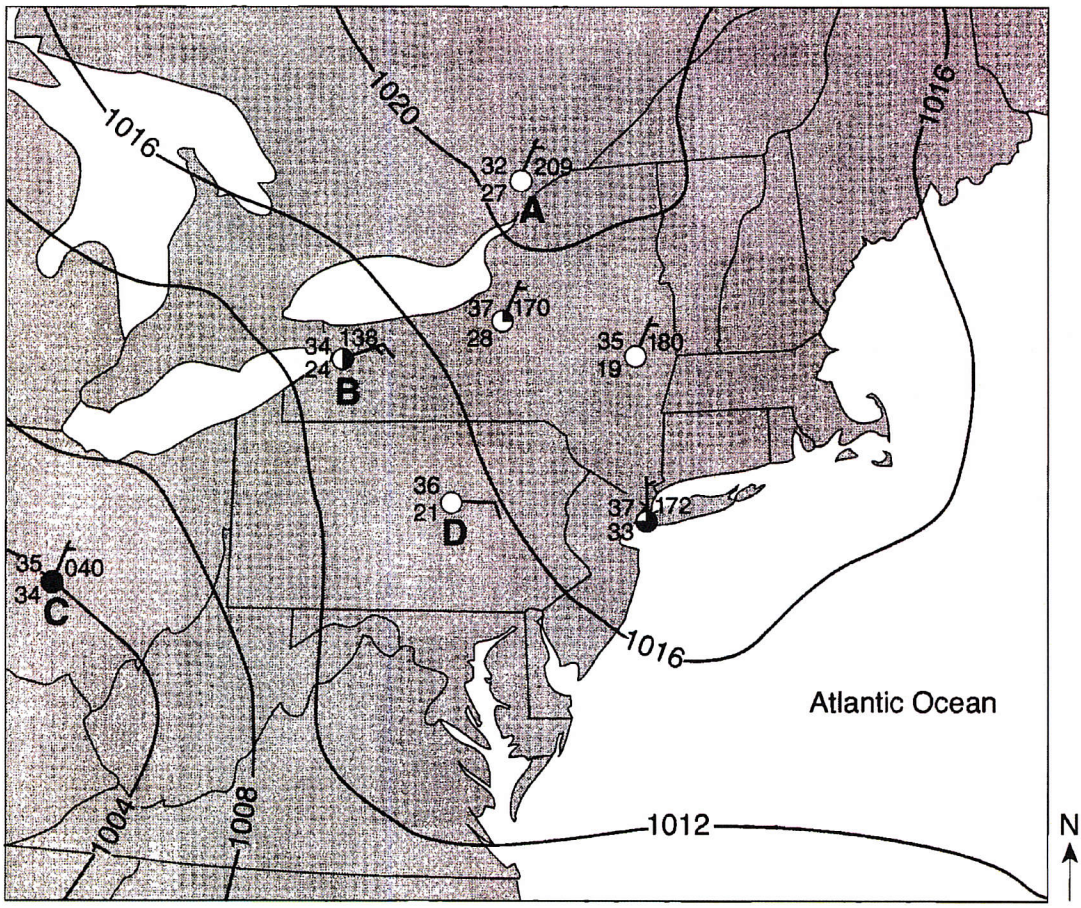
1) *A* 2) *B* 3) *C* 4) ***D***

(2) 17) In order for clouds to form, cooling air must be

1) saturated and have no condensation nuclei — water vapor, dirt + dust
2) **saturated and have condensation nuclei**
3) unsaturated and have no condensation nuclei
4) unsaturated and have condensation nuclei

3

18) Base your answer to the following question on the weather map below. The map shows isobars and seven weather station models. Four of the weather stations are identified by letters *A*, *B*, *C*, and *D*.



Which weather information shown at station *B* was measured with an anemometer and weather vane? direction windspeed

1) 34 2)  3)  4) 138

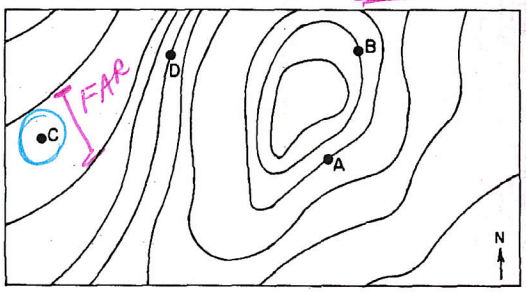
4

19) Which statement best explains how atmospheric dust particles influence the water cycle? condensation nuclei

1) Dust particles are the main source of dissolved salts in the sea.
2) Dust particles increase the capacity of the atmosphere to hold water vapor.
3) Dust particles increase the amount of evaporation that takes place.
4) **Dust particles provide surfaces on which water vapor can condense.**

C 3

20) The map below represents a portion of an air-pressure field at the Earth's surface. At which position is wind speed *lowest*?



1) *A* 2) *B* 3) *C* 4) *D*

4

snow

3 21) On which station model would the present weather symbol * most likely be found?

1) 70 warm
69

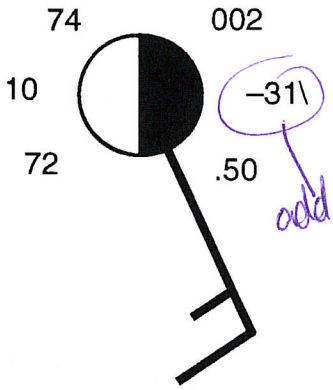
2) 28
16

3)
30
29

4) 48
42

cold
Cloudy
small difference between air temp + dew pt temp.

2 22) The station model below shows the weather conditions at Houston, Texas, at 9 a.m. on a particular day in June.



add 1000.2 mb + 3.1 = 1003.3

What was the barometric pressure at Houston 3 hours earlier on that day?

1) 997.1 mb
3) **1003.3 mb**
2) 999.7 mb
4) 1009.1 mb

3 23) What is the dewpoint if the relative humidity is 100% and the air temperature is 20°C? P. 12 in ESRT

1) 0°C
3) **20°C**
2) 10°C
4) 100°C

Air temp = dew pt then 100%

3 24) On a cold winter day, the air temperature is 2°C and the wet-bulb temperature is –1°C. What is the relative humidity at this location? P. 12

3 ↓ 2 →

1) 6%
3) **51%**
2) 37%
4) 83%

~~-3 -2~~ -1 0 1 2 ~~3 4~~

2 + 1 = 3

3 25) The table below shows air temperatures and dew point temperatures at different elevations above sea level.

Elevation (km)	Air Temperature (°C)	Dewpoint Temperature (°C)
3	–2 cold	–2
2	8	0
1	18	2
0	28	4

Clouds that form at an elevation of 3 kilometers will most likely be composed of

1) raindrops
3) **ice crystals**
2) ozone
4) sleet

1 26) What is the dewpoint temperature when the dry-bulb temperature is 12°C and the wet-bulb temperature is 4°C? P. 12

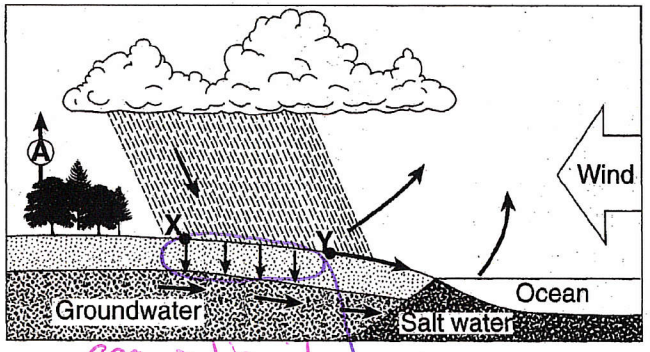
1) **–9°C**
3) 8°C
2) 19°C
4) 4°C

8 ↓ 12 →

1

27) Base your answer to the following question on the diagram of the water cycle below. Letter *A* represents a process in the water cycle. Points *X* and *Y* represent locations on Earth's surface.

Water Cycle



gas → liquid

liquid → gas

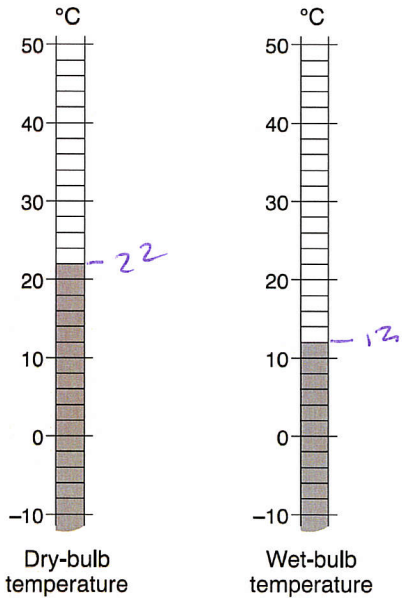
Which process in the water cycle is directly responsible for cloud formation?

1) **condensation** 2) infiltration 3) precipitation 4) evaporation

3

28) The diagram below shows dry-bulb and wet-bulb temperature readings for a parcel of air.

an area



What is the dewpoint of the air?

1) 27°C
2) 10°C
3) **3°C**
4) –5°C

p. 12 ESRT

10 ↓

22 →

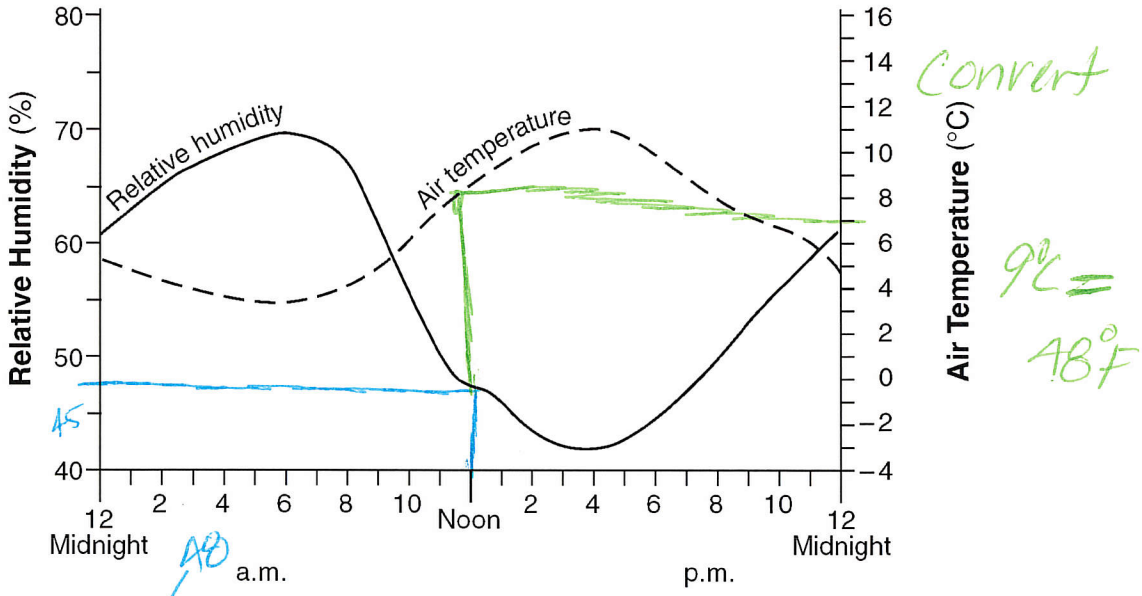
10

2

29) People sometimes release substances into the atmosphere to increase the probability of rain by

1) raising the air temperature within the clouds
2) **providing condensation nuclei**
3) lowering the relative humidity within the clouds
4) increasing the energy absorbed during condensation and sublimation

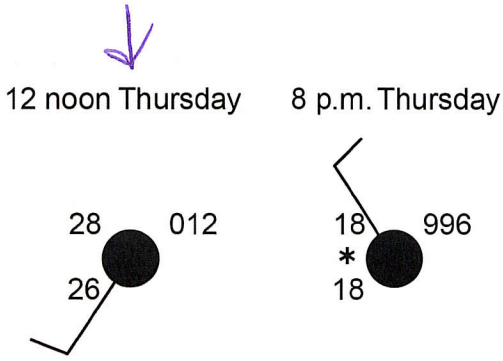
___ 30) Base your answer to the following question on the graph below, which shows the changes in relative humidity and air temperature during a spring day in Washington, D.C.



What were the relative humidity and air temperature at noon on this day?

1) 47% and 32°F 2) 65% and 32°F **3) 47% and 48°F** 4) 65% and 48°F

Base your answers to questions **31** and **32** on the station models below and on your knowledge of Earth science. The changing weather conditions at a location in New York State during a winter storm are recorded on the station models.



Time and Day	Actual Barometric Pressure (mb)	Cloud Cover (%)	Wind Direction From the
12 noon Thursday	1001.2	100	SW

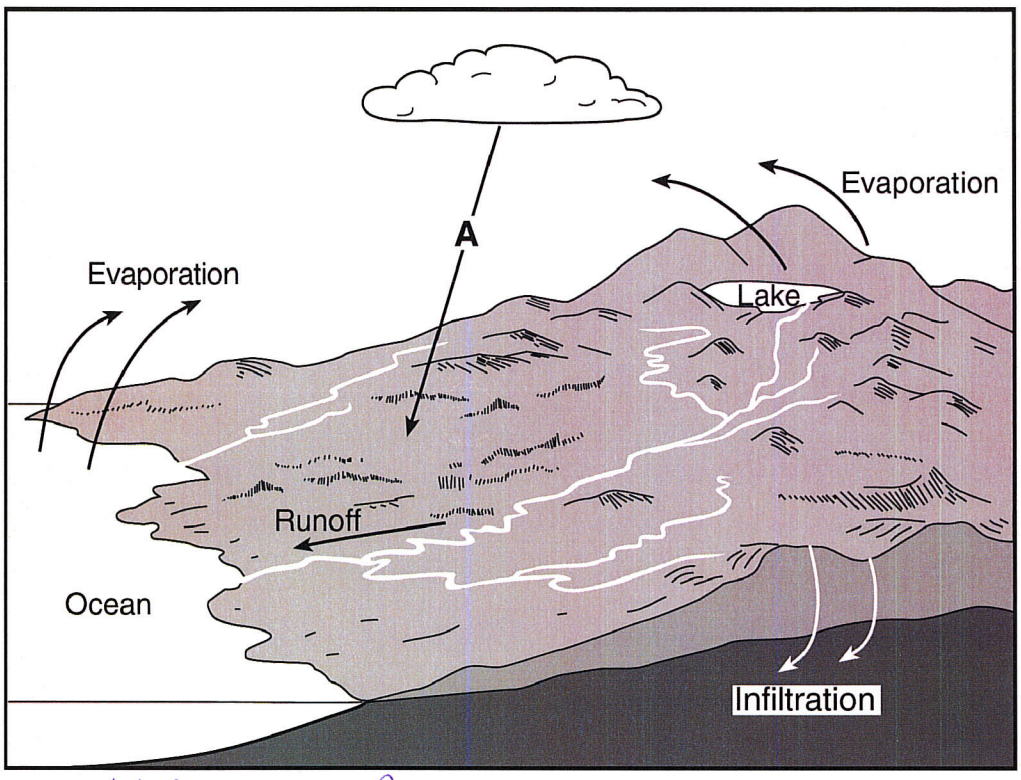
100 no

___ 31) State the relative humidity at this location at 8 p.m. Thursday.

because the air temp is = to the dew point temp.

___ 32) Complete the table by recording the weather data shown on the station model for 12 noon Thursday.

Base your answers to questions **33** and **34** on the model below and on your knowledge of Earth science. The model shows the movement of water in the water cycle. Arrow *A* represents a process within the water cycle.



Not for this exam

4520 5

___ 33) How many joules of heat energy are required to evaporate 2 grams of water from the lake surface?

p.1 ESRT - 2260 for one gram

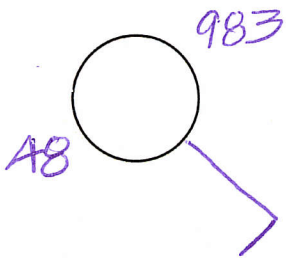
2260 × 2 = 4520

___ 34) Identify *one* water cycle process represented by arrow *A*.

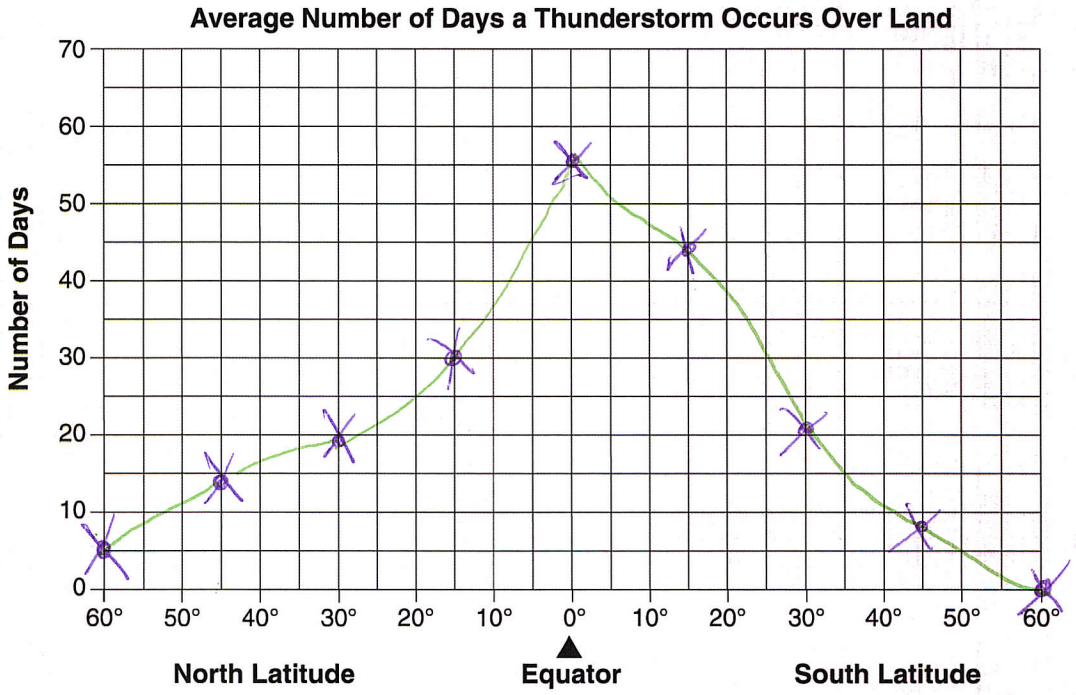
precipitation.

____ 35) Base your answer to the following question on On the weather station model below, using the proper format, record the *four* weather conditions shown below.

Dewpoint: 48°F
Air pressure: 998.3 mb
Wind: from the southeast
Wind speed: 10 knots



36) On the grid below,plot, with an **X**, the average number of days per year a thunderstorm occurs over a land area for each latitude shown on the data table.Connect the centers of the **X**s with a line.



Base your answers to questions **37** and **38** on data table below, which shows the average number of days with thunderstorms that occur over land areas at different latitudes each year.

Data Table

Latitude	Average Number of Days a Thunderstorm Occurs Over Land
60° N	5
45° N	14
30° N	19
15° N	30
0° (equator)	56
15° S	44
30° S	21
45° S	8
60° S	0

37) State the relationship between latitude and the average number of days each year that thunderstorms occur over a land area.

The average # of days a thundestorm occurs over land increases as the Latitude decreases

Answer Key
weather review for exam2

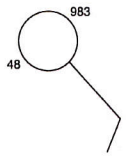
1) **2**
2) **4**
3) **3** → 4
4) **3**
5) **2**
6) **2**
7) **1**
8) **4**
9) **3**
10) **2**
11) **2**
12) **2**
13) **2**
14) **4**
15) **3**
16) **4**
17) **2**
18) **3**
19) **4**
20) **3**
21) **3**
22) **3**
23) **3**
24) **3**
25) **3**
26) **1**
27) **1**
28) **3**
29) **2**
30) **3**
31) 100%
32)

Time and Day	Actual Barometric Pressure (mb)	Cloud Cover (%)	Wind Direction From the
12 noon Thursday	1001.2	100	SW or SSW

33) 4520 J

34) –precipitation
–raining –snowing
–sleeting –hailing

35)



36) The centers of eight or nine Xs are within the circles shown on the graph and are correctly connected with a line that passes through the circles.

37) *Examples*: — As latitude increases, the number of days with thunderstorms decreases. — Lower latitudes have more thunderstorms. — an inverse relationship between latitude and number of days with thunderstorms