

Station Models

BEGIN

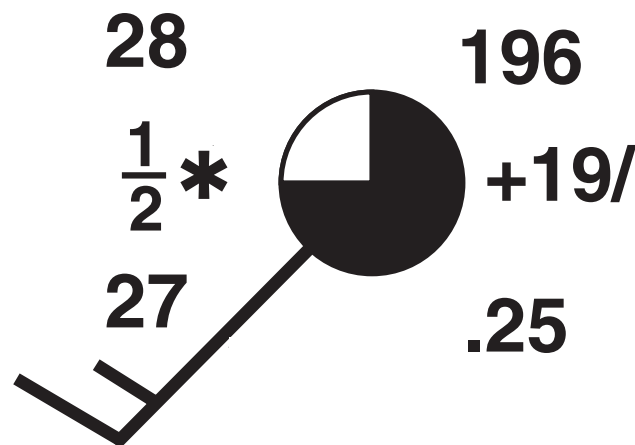
In trying to understand and predict the weather, meteorologists constantly monitor a number of variables. These include (but are not limited to) the following:

- Temperature
- Relative Humidity
- Dew Point
- Wind Speed
- Wind Direction
- Air Pressure
- Pressure Trend
- Cloud Cover
- Visibility
- Precipitation Type
- Precipitation Amount
- Present Conditions

As you can imagine, it's extremely challenging to express and communicate this quantity of data, especially when these variables are constantly changing.

To deal with this, meteorologists have devised a system of symbols and numbers to communicate weather data quickly and easily.

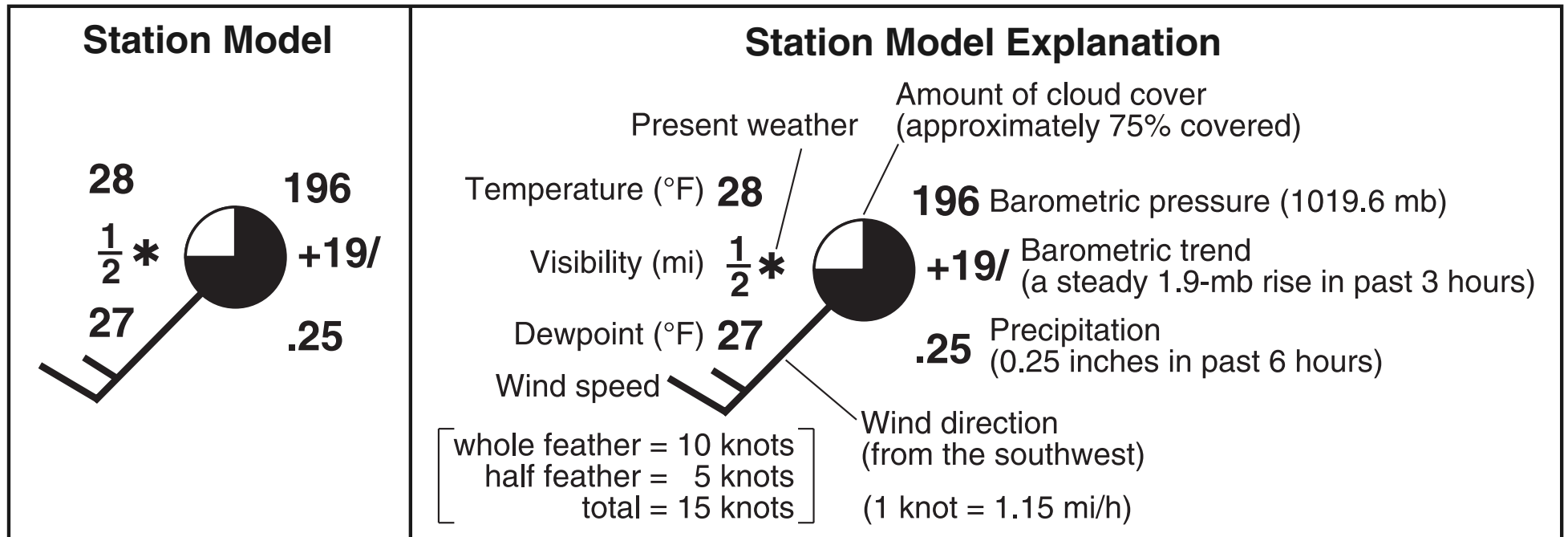
This system is called a [station model](#).



This is an
example of a
[station model](#).

Let's see what each number means.

This is in your ESRT on page 13.



Pretty straightforward, but there are a few tricky things...

Coding Air Pressure

Air pressure is a very important weather variable. High air pressure means clear, dry weather while low air pressure means cloudy, humid weather.

Air pressure is measured with a barometer. It is generally measured in millibars (mb).



The normal range of air pressures on Earth is shown below.



◀ LAST

HOME

NEXT ▶

But we don't want to waste space writing these long numbers on our nice, simple station models.



◀ LAST

HOME

NEXT ▶

So, we shorten (or “code”) the pressure numbers.



◀ LAST

HOME

NEXT ▶

For example, say our air pressure is 989.6 mb.

Here's how we shorten it...

989.6 mb

DROP THE UNITS

For example, say our air pressure is 989.6 mb.

Here's how we shorten it...

989.6 mb

DROP THE DECIMAL POINT

For example, say our air pressure is 989.6 mb.

Here's how we shorten it...

~~989.6 mb~~

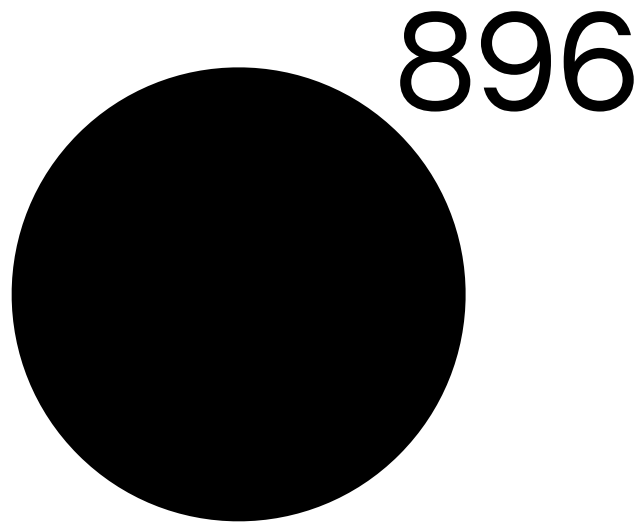
DROP THE FIRST "9" OR "10,"
WHATEVER IT STARTS WITH

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HOME

NEXT ▶

So a pressure of 989.6 mb is written on a station model as...



Here's another example,
say our air pressure is
1007.3 mb...

~~1007.3 mb~~

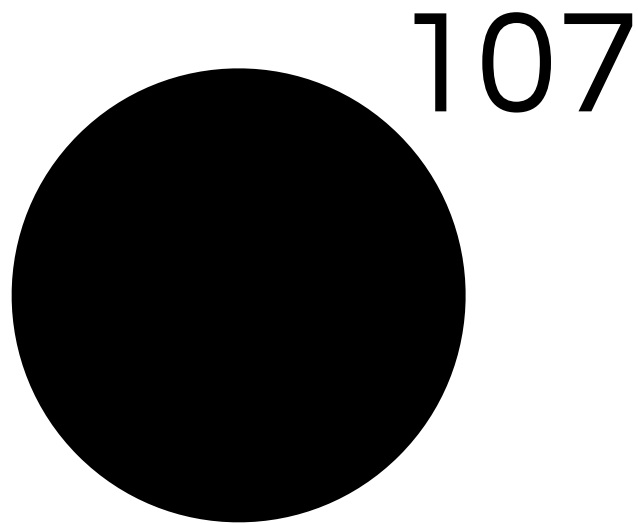
So here are the rules for shortening air pressures.

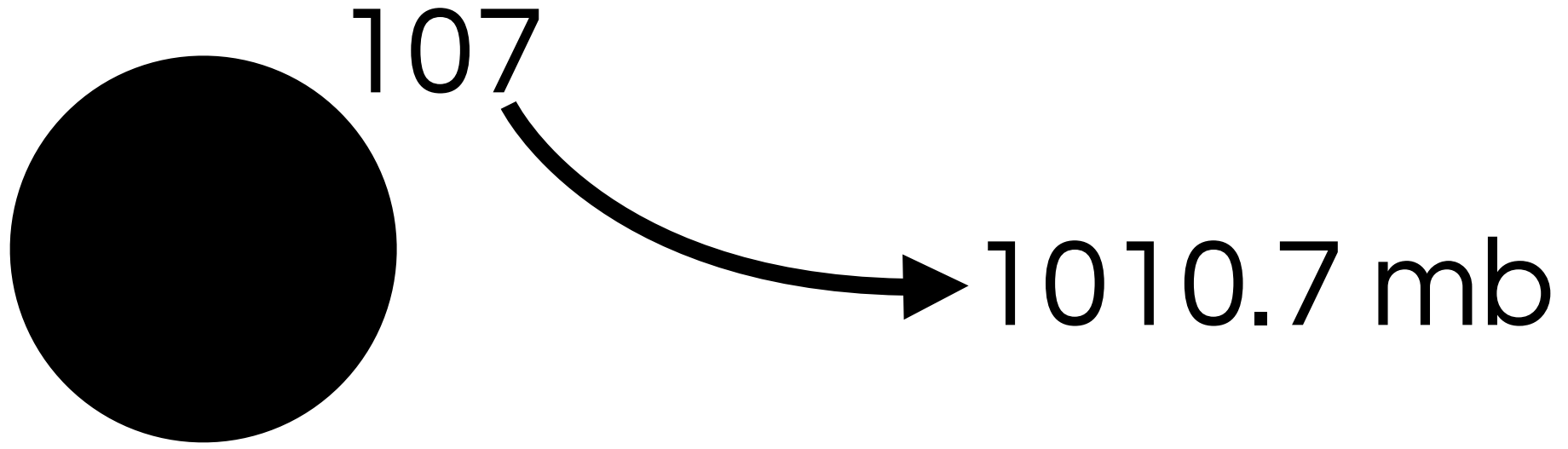
1. Drop the "9" or the "10"
2. Drop the decimal point
3. Drop the "mb"

RECORD THESE RULES FOR QUESTION #4 ON YOUR LAB SHEET, THEN COMPLETE THE CONVERSION FOR #5.

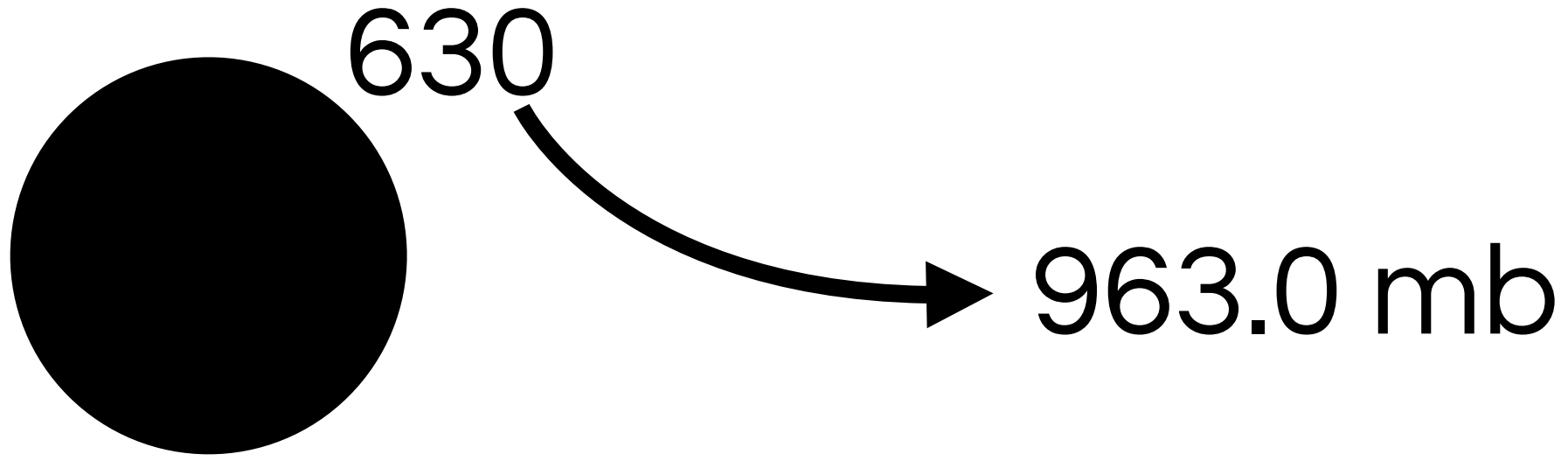
But what if we have a station model and need to know what the pressure is?

For example, what if we wanted to know what the air pressure at this location actually is?





- 1.If the number on the station model is greater than 500, add a "9" before it. If it's less than 500, add a "10" before it.
- 2.Add a decimal point before the last digit.
- 3.Add units (mb).

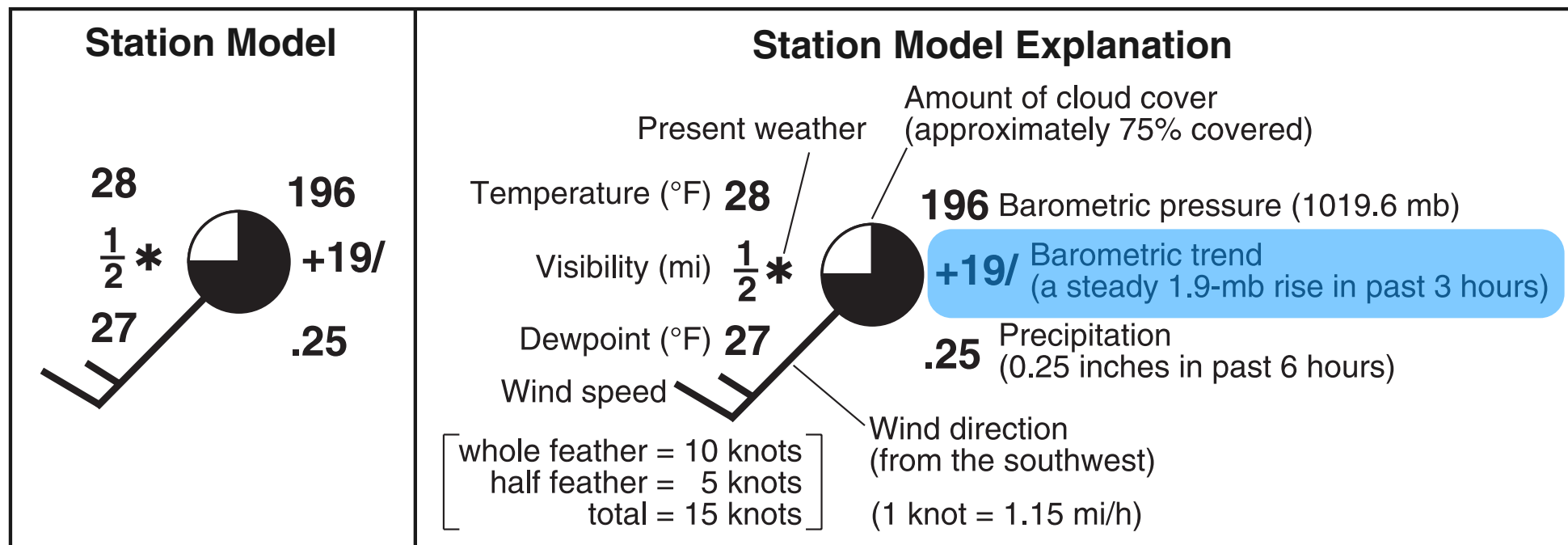


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- 2.Add a decimal point before the last digit.
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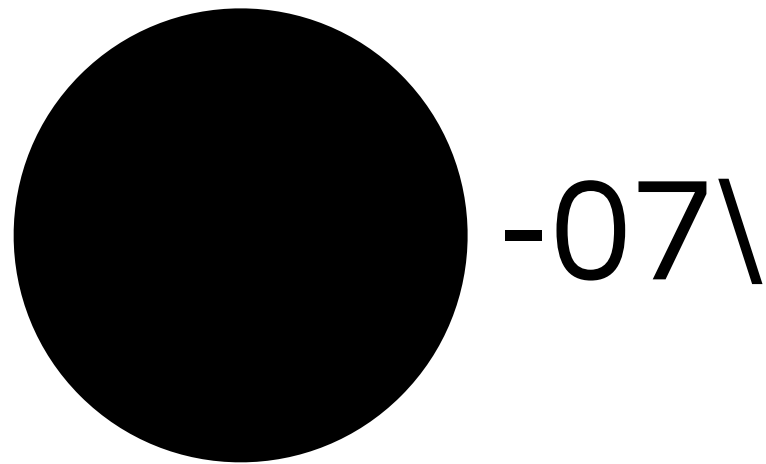
RECORD THESE RULES FOR QUESTION #6 ON YOUR LAB SHEET, THEN COMPLETE THE CONVERSION FOR #7.

The other thing that's tricky is the barometric trend.



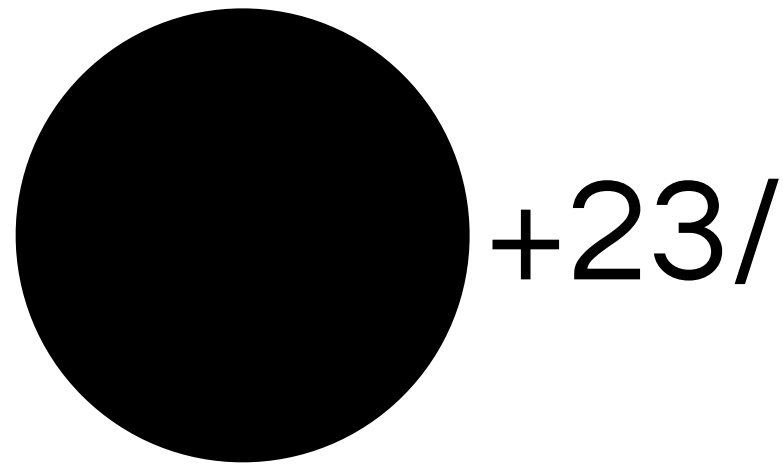
The barometric trend tells you how the air pressure has changed over the past 3 hours.

Here are some examples:



This means the air pressure
has decreased by 0.7 mb
during the past 3 hours.

Here are some examples:

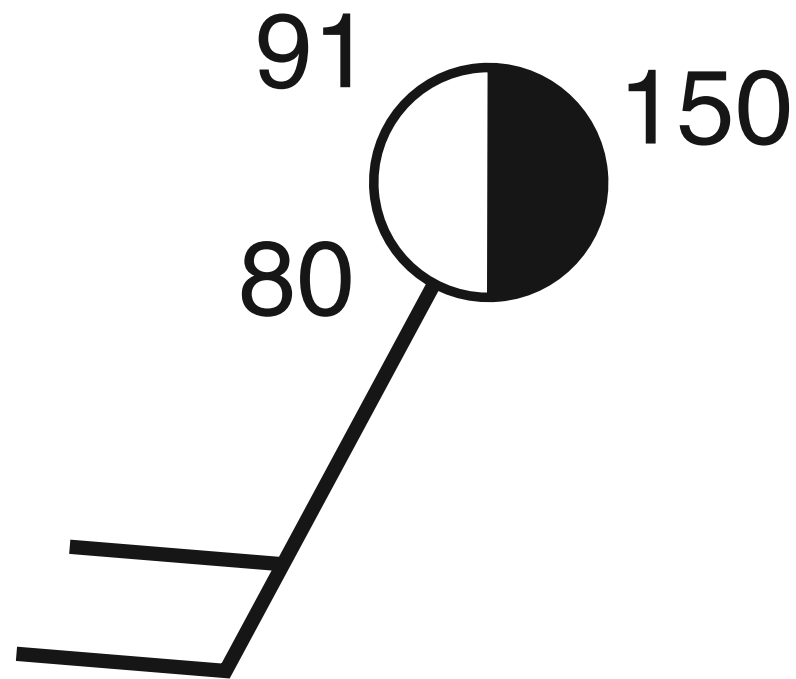


This means the air pressure
has increased by 2.3 mb
during the past 3 hours.

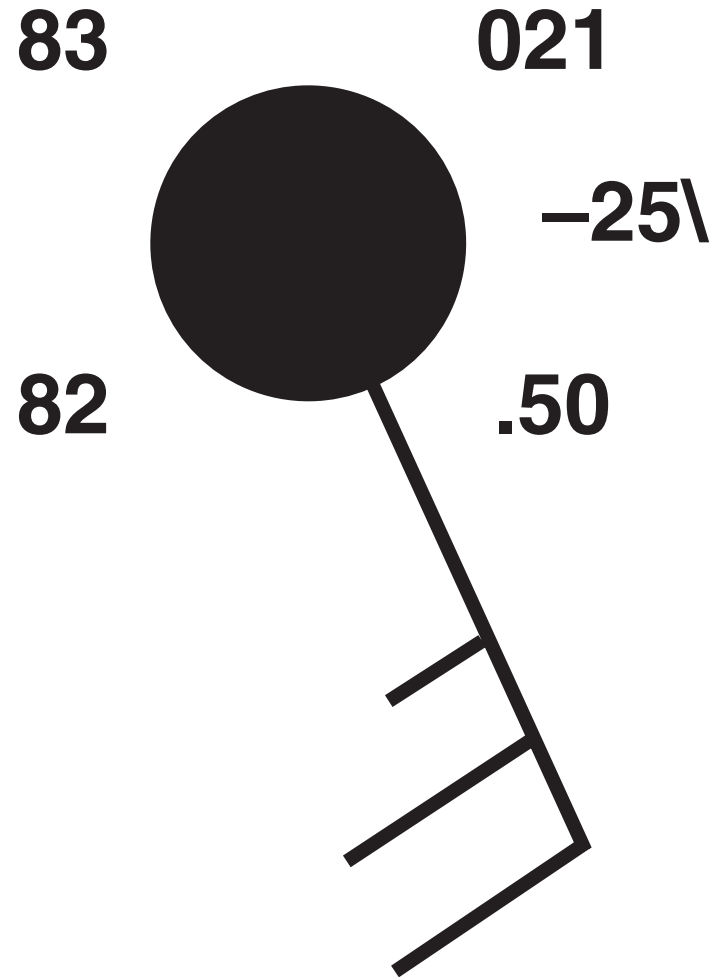
OK, now for some practice.

On the next 8 slides, you will be given actual station models from past Regents exams. In the space provided in question #9 on your lab, please list all data that is represented on these station models.

STATION MODEL #1



STATION MODEL #2

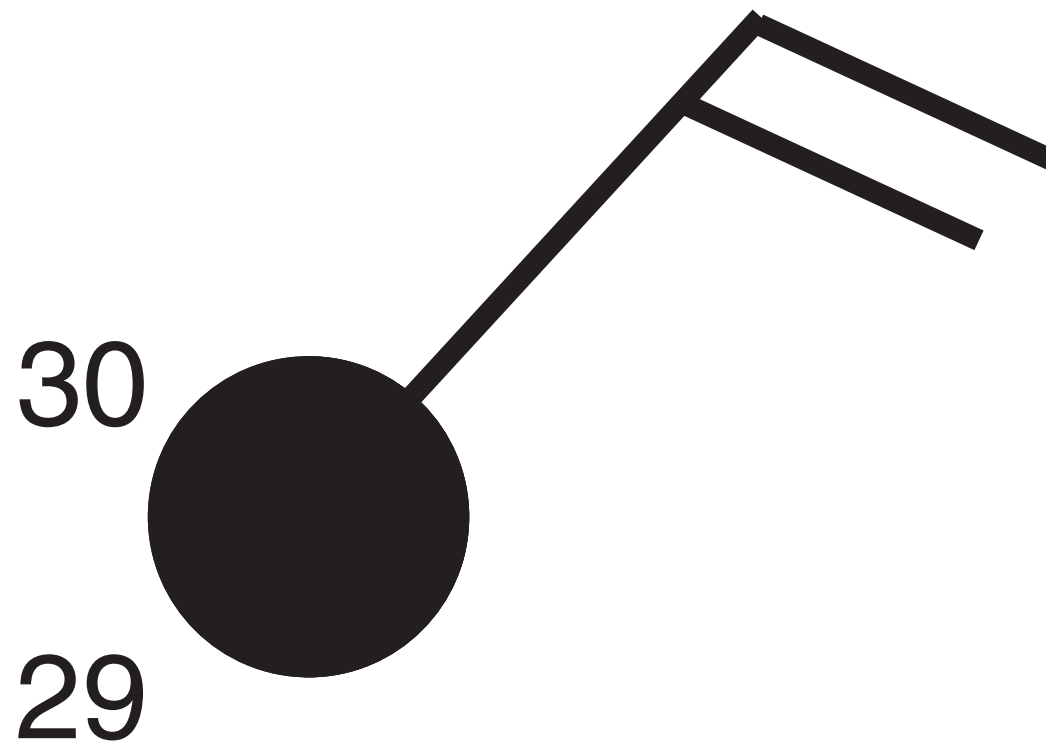


◀ LAST

HOME

NEXT ▶

STATION MODEL #3

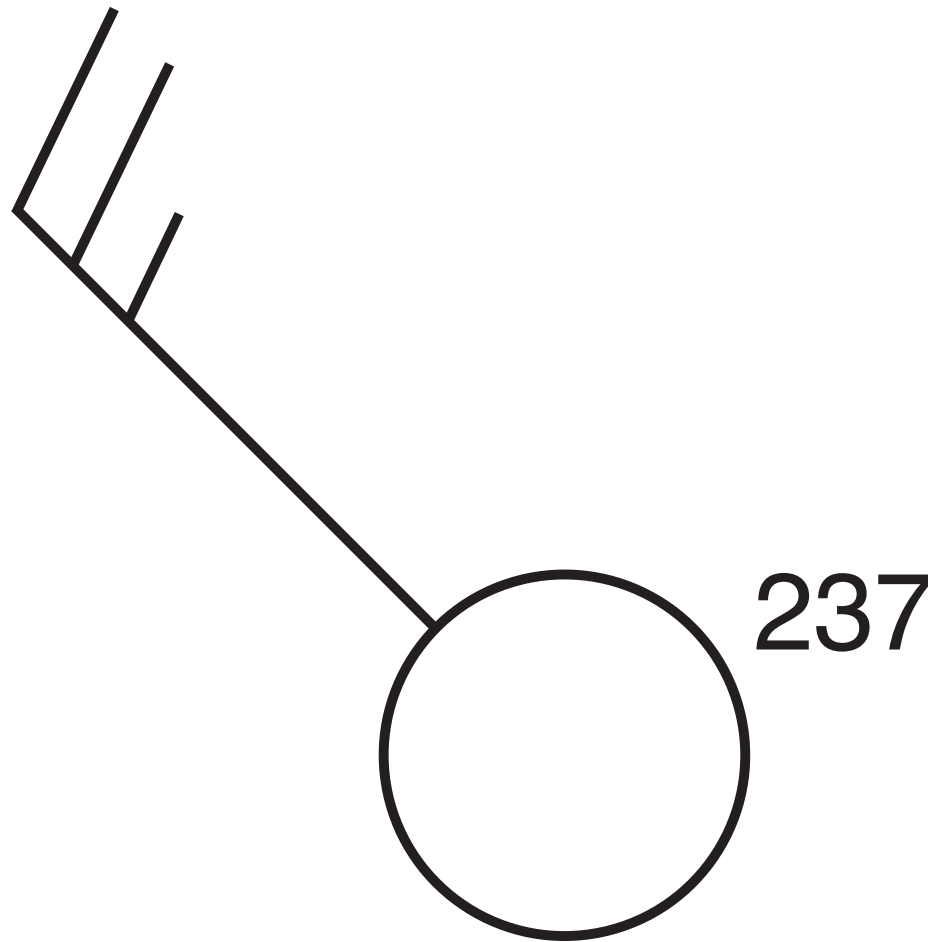


◀ LAST

HOME

NEXT ▶

STATION MODEL #4

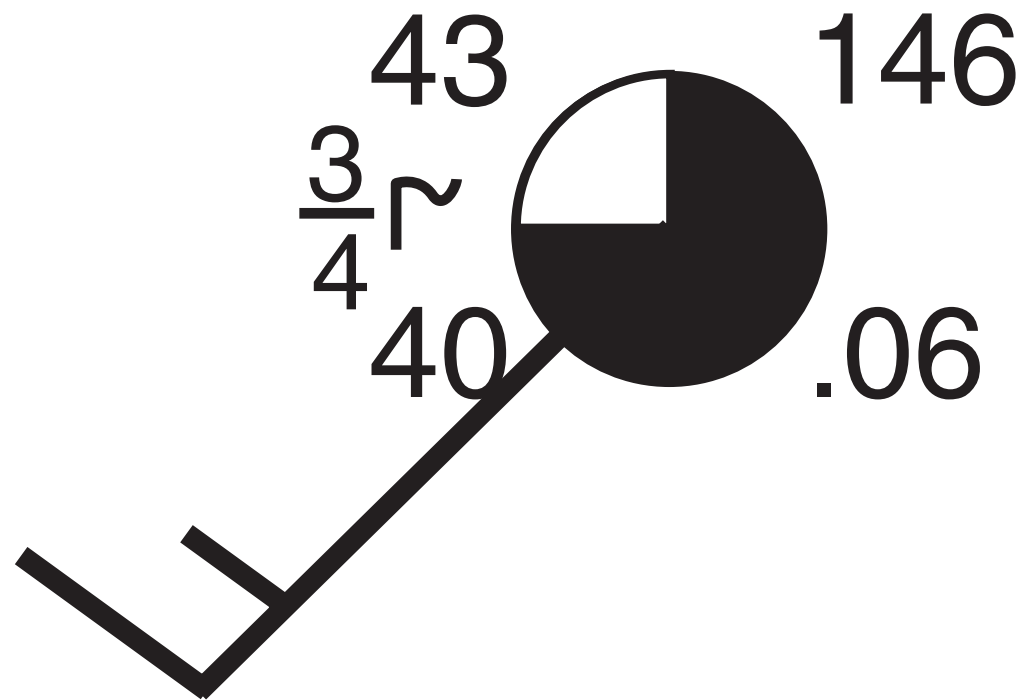


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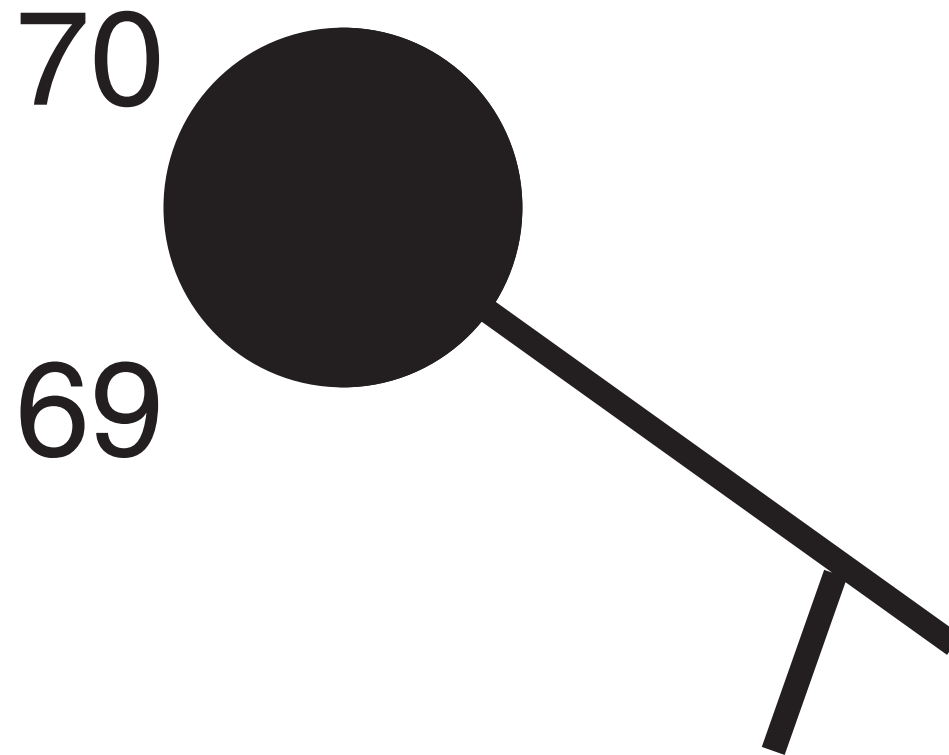
HOME

NEXT ▶

STATION MODEL #5



STATION MODEL #6

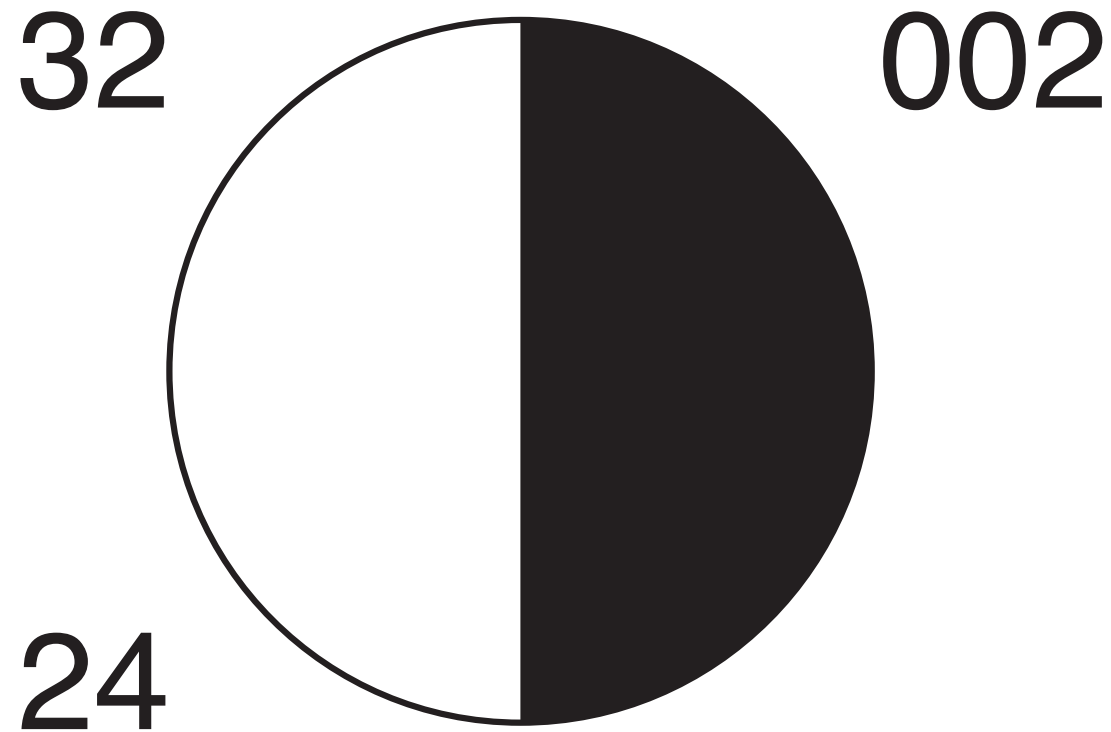


◀ LAST

HOME

NEXT ▶

STATION MODEL #7

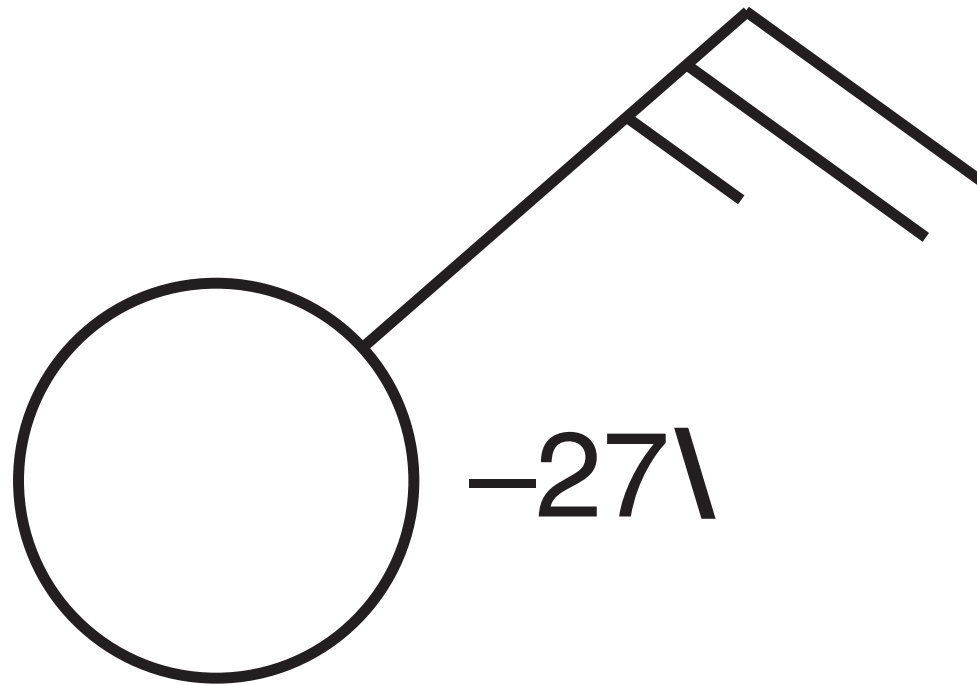


◀ LAST

HOME

NEXT ▶

STATION MODEL #8



Good job...

OK, now, on the next 4 slides, you will be given weather data for four different locations. In the space provided in question #10 on your lab, please draw complete station models to represent this data. Be sure to use the correct format as seen in your ESRT.

STATION MODEL A

Temperature: 74°F	Precipitation: 0.1 inches
Dew Point: 72°F	Cloud Cover: 100%
Visibility: ¼ mile	Wind Direction: Southwest
Present Weather: Drizzle	Wind Speed: 15 knots
Air Pressure: 987.4 mb	Barometric Trend: Dropped 2 mb

◀ LAST

HOME

NEXT ▶

STATION MODEL B

Temperature: 91°F	Precipitation: 1.5 inches
Dew Point: 84°F	Cloud Cover: 100%
Visibility: $\frac{3}{4}$ mile	Wind Direction: North
Present Weather: Thunderstorm	Wind Speed: 35 knots
Air Pressure: 979.1 mb	Barometric Trend: Dropped 4 mb

◀ LAST

HOME

NEXT ▶

STATION MODEL C

Temperature: 24°F	Precipitation: 0.3 inches
Dew Point: 22°F	Cloud Cover: 100%
Visibility: ¼ mile	Wind Direction: Northeast
Present Weather: Snow Showers	Wind Speed: 10 knots
Air Pressure: 989.9 mb	Barometric Trend: Rose 1 mb

◀ LAST

HOME

NEXT ▶

STATION MODEL D

Temperature: 57°F	Precipitation: 0 inches
Dew Point: 42°F	Cloud Cover: 25%
Visibility: 2 miles	Wind Direction: Southwest
Present Weather: None	Wind Speed: 5 knots
Air Pressure: 1011.1 mb	Barometric Trend: Rose 1.4 mb

◀ LAST

HOME

NEXT ▶

Nice job. You're done.

◀ LAST

HOME

NEXT ▶