Name_____

Period ____

Date _____

Regents Earth Science
Isolines (Isobars) and Gradient

Created by Z. Miller 2015

Attached is a map from October 9, 2015 showing atmospheric pressure conditions in the Northern Atlantic Ocean. Note the low-pressure system, former Hurricane Joaquin, in the upper right portion of the map (just west of Europe). Joaquin is a post-tropical storm losing intensity at this point in its lifespan. According to a weather expert, Dr. Jeff Masters, at wunderground.com, the outlook for the persistent Joaquin as of Wednesday, October 7 was:

"By Wednesday night [October 7], Joaquin will evolve into a powerful extratropical storm, and will steadily weaken as it heads towards Europe. By the time Joaquin reaches Portugal on Saturday [October 10], the ex-hurricane should have top winds of about 40 mph."
(This full blog post can be found here: http://www.wunderground.com/blog/JeffMasters/comment.html?entrynum=3149, and the complete tracking data for Joaquin can be found here: http://weather.unisys.com/hurricane/atlantic/2015/JOAQUIN/track.dat)

1. Draw an accurate pressure profile across the Northern Atlantic Ocean from point X to Point Y on the graph below. Be sure to label the y-axis of your graph appropriately.

2. What is the isobar/isoline interval? _____

3. What is the probable atmospheric air pressure at point B?_____

4. What is the probable atmospheric air pressure at point D? _____

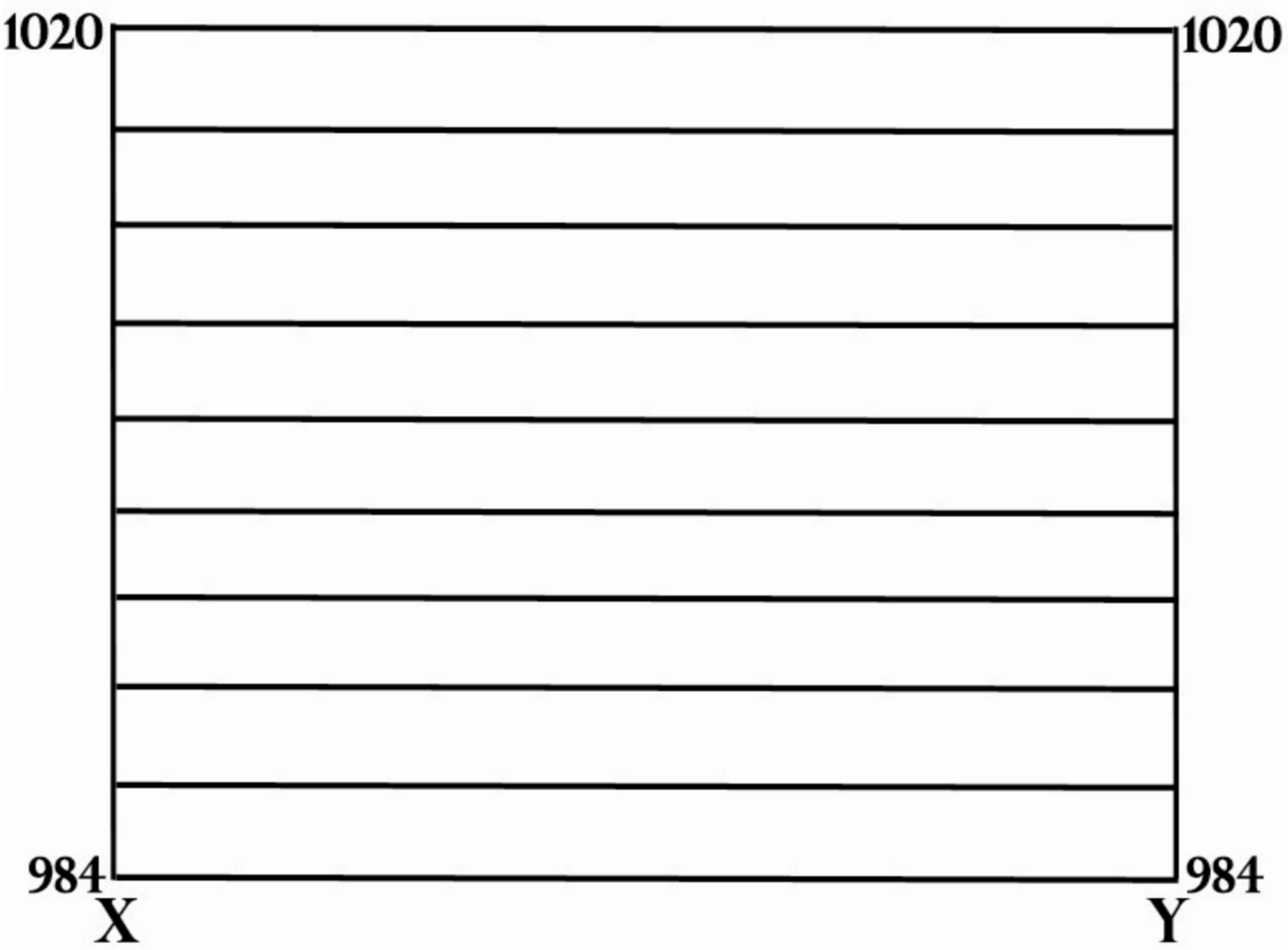
5. Which of the locations – A, B, or C – would likely have the highest wind speed (Hint: Remember the concept of gradient)? _____

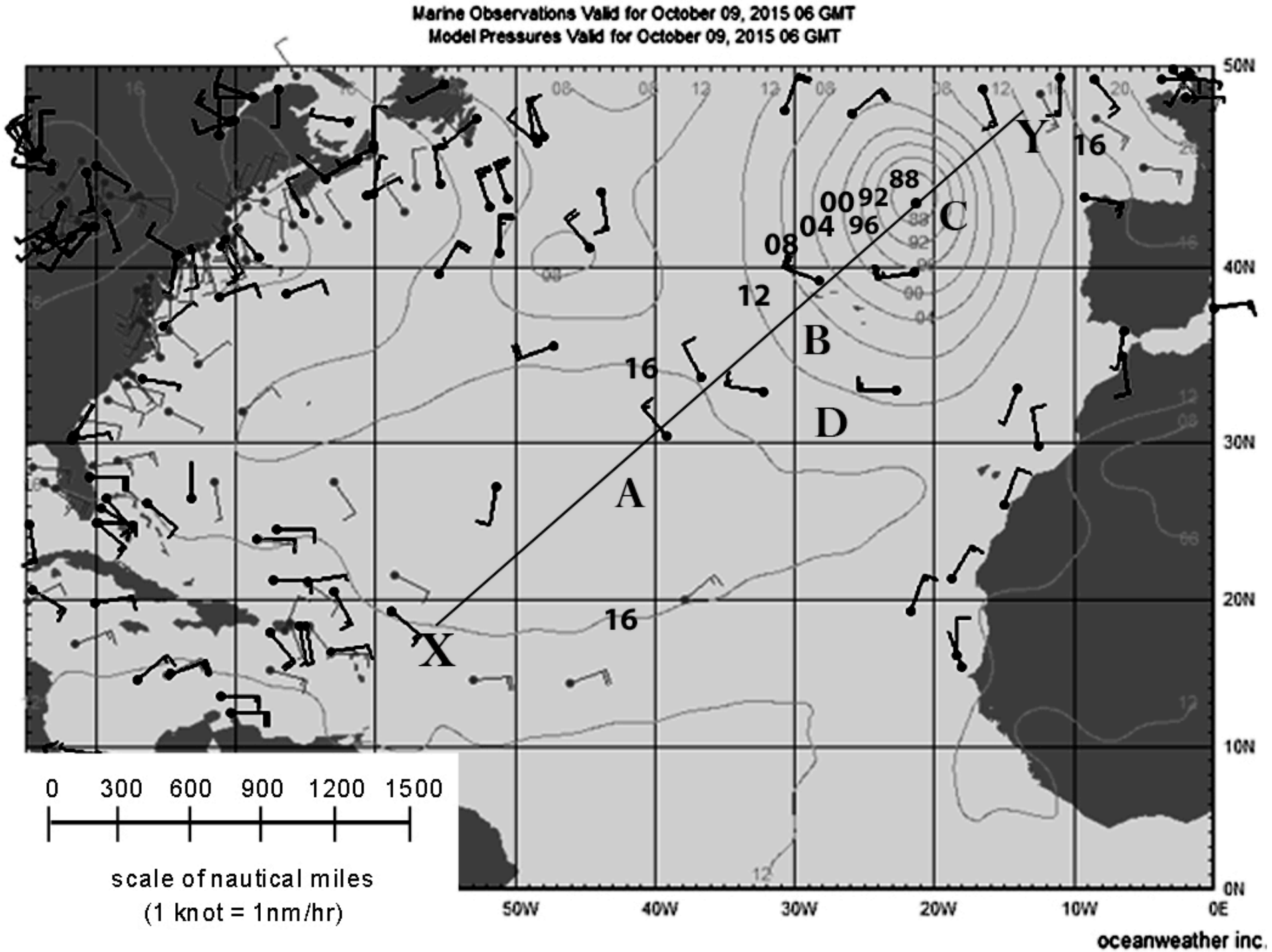
6. Explain your answer to Question #5 above:

_____

7. Calculate the gradient between the eye of the storm (see the dot (•) along the profile of the map) and point Y.
WORK SPACE:

Final Answer: _____




Marine Observations Valid for October 09, 2015 06 GMT
Model Pressures Valid for October 09, 2015 06 GMT
50N
40N
30N
20N
10N
0N
50W
40W
30W
20W
10W
0E
X
Y
A
B
C
D
16
12
08
04
00
96
92
88
0 300 600 900 1200 1500
scale of nautical miles
(1 knot = 1nm/hr)
oceanweather inc.