Name Period Date

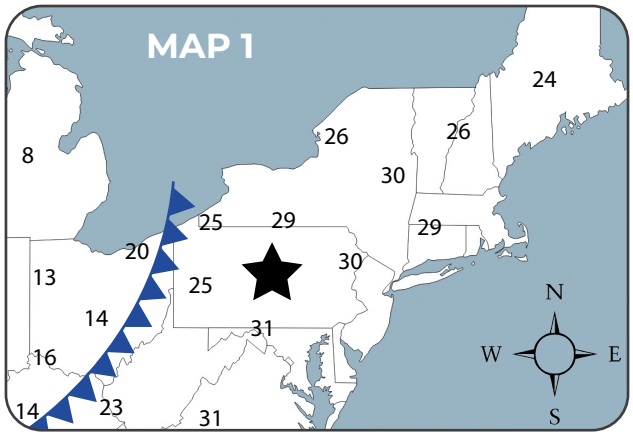
Learning Sequence 2 Assessment: A Front Headed Your Way

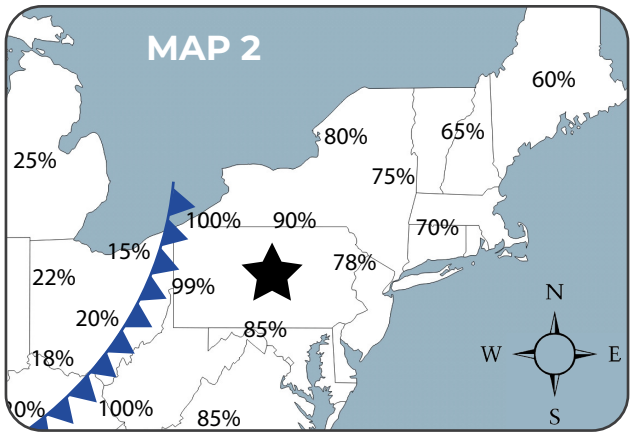
Map 1, to the right, shows maximum air temperatures (˚C) across the northeastern United States on June 28, and Map 2 shows humidity (%).

Weather forecasts **for the next day** (June 29) in central Pennsylvania (shown on the maps with a star ★) predict the following:

> Temperatures will drop to 15-20˚C, and storms are likely by the afternoon.

Answer the following questions to explain how weather forecasters used the data in these maps to decide that a storm is coming to central Pennsylvania.





1. The line with the triangles on each map shows the location of a cold front. Describe the temperature and humidity of the air on both sides of the front.

   East of the front (to the right of the front on the map):

   West of the front (to the left of the front on the map):

2. Using what you know about the air on both sides of the front, describe how air is moving at the front.

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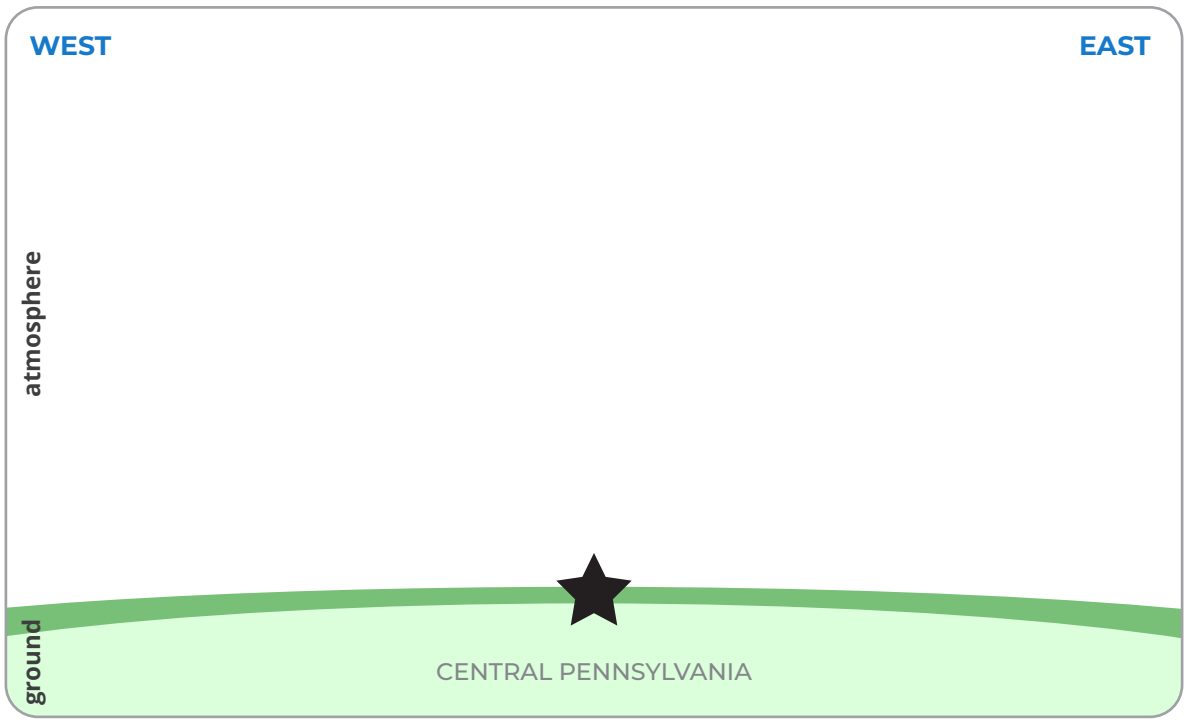
3. Draw an **L** to show where you would expect to find the lowest air pressure on a map on the previous page and an **H** to show where you would expect to find the highest air pressure. Explain why you put the H and the L where you put them.

4. Describe how you'd expect air pressure to change in central Pennsylvania (shown with a ★ on the maps on the previous page) from June 28 to June 29 as the cold front moves through. Explain your reasoning.

5. Draw a cross-sectional model below to show how the air masses will interact along the cold front as it moves through central Pennsylvania (shown with a ★) on June 29. Your model should:
   - show the location of the cold front.
   - show the location of air masses (and note the temperature, humidity, and air pressure).
   - use arrows to show how air is moving.
   - indicate where a storm is likely to form.



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6. How can the movement of the air shown in your cross-sectional model cause a storm? Explain your reasoning.

7. Add an **H** to your cross-sectional model to show where air pressure would be highest and an **L** where air pressure would be lowest. How do these differences in air pressure cause the air to move?

8. Use your model and the temperature and humidity data on the maps to explain why it will likely rain in central Pennsylvania (★).

9. In the table below, describe two similarities and two differences in how isolated storms and cold front storms form.

	SIMILARITIES	DIFFERENCES
1		
2		

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10. What are some reasons that could explain why one air mass would have a higher temperature than another air mass? Explain each reason.

11. Think about what you know about air temperature around the Earth. Some areas are usually warmer than others. What causes some areas to be warmer than others?

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