

Prior Knowledge Chart

Name(s) _____

	Cyclone	Typhoon	Hurricane
Definition			
Locations Regions			
Physical characteristics/ conditions of the region that lead to severe tropical storm formation			
Estimation of wind/travel speed of severe tropical storm			

Prior Knowledge Chart **Answer Key**

	Cyclone	Typhoon	Hurricane
Definition	A severe tropical storm occurring between June and October	A severe tropical storm occurring between July and October	A severe tropical storm occurring between June and November
Locations Regions	Indian Ocean, Arabian Sea, Bay of Bengal, Coral Sea	Western Pacific Basin	Atlantic Basin Caribbean Sea Eastern Pacific Basin
Physical characteristics/ conditions of the region that lead to severe tropical storm formation	Pre-existing weather disturbance, ocean temperature of 80 ⁰ F or more to a depth up to 150 feet, moisture in the air, and light winds	Pre-existing weather disturbance, ocean temperature of 80 ⁰ F or more to a depth up to 150 feet, moisture in the air, and light winds	Pre-existing weather disturbance, ocean temperature of 80 ⁰ F or more to a depth up to 150 feet deep, moisture in the air, and light winds
Estimation of wind/travel speed of severe tropical storm	Winds: at least 74 mph and over 155 mph Travel speed: 15-20 mph	Winds: at least 74 mph and over 155 mph Travel speed: 15-20 mph	Winds: at least 74 mph and over 155 mph Travel speed: 15-20 mph

Storm Trackers Information Sheet

Cyclone, hurricane, or typhoon?

Cyclones, hurricanes, and typhoons are all names given to the same type of severe tropical storm.

These severe tropical storms include strong thunderstorms with heavy rain, well-defined surface air circulation, violent winds of 74 miles per hour or greater, incredibly large ocean waves, and flooding. They can be rated from 1 - 5 based on the severity of their winds. Level 1 has winds of 74 - 95 mph and level 5 has winds of 155 or more mph. These severe tropical storms start forming off the coast in the ocean and travel in a West or Northwest direction.

Regions in which cyclones, hurricanes, and typhoons form

Cyclones, hurricanes, and typhoons are called severe tropical storms because they occur primarily in the area between the Tropic of Capricorn and Tropic of Cancer, the tropics. Where the storm occurs determines if it is referred to as a cyclone, hurricane, or typhoon. Cyclones occur in what is known as the Indian Basin, which includes the Indian Ocean, Arabian Sea, and Bay of Bengal. They also occur in the Coral Sea off the coast of Australia. Cyclones occur primarily between June and October. Hurricanes occur in the Eastern Pacific Basin, Atlantic Basin, and Caribbean Sea primarily between June and November. Typhoons occur in the Western Pacific Basin primarily between July and October. Interestingly enough, severe tropical storms never form on the equator or cross the equator.

The winds in the severe tropical storms in the Northern Hemisphere travel in a counterclockwise direction, while the winds in the severe tropical storms in the Southern Hemisphere travel in a clockwise direction.

Physical characteristics and conditions of the region

For a tropical storm to form, certain physical and atmospheric conditions must be present. Besides being a tropical region of the world, severe tropical cyclones occur along the coasts. The body of water along the coast must contain warm water of a temperature of at least 80° F to a depth of about 150 feet. This is why these storms mainly occur in the summer and fall. It takes time for the ocean water to heat up to at least 80° F to a depth of about 150 feet. Moisture must be present in the air and there must be light upper level winds in existence. There must also be some pre-existing weather disturbance such as the tail end of a cold front, an upper level low, or other unsettled weather disturbance.

Attributes of hurricanes, cyclones, and typhoons

The eye (center) of the severe tropical storm can be 20 - 40 miles across. Storm rain bands up to 100 miles wide and 50 - 300 miles long surround the eye. The winds in a severe tropical storm can also be up to 150 miles wide. A typical severe tropical storm is approximately 300 miles wide with its rain and wind. Severe tropical storms have an average forward speed of 15 - 20 mph and usually slow down when they hit land. These storms can last 10 days before they run out of energy.

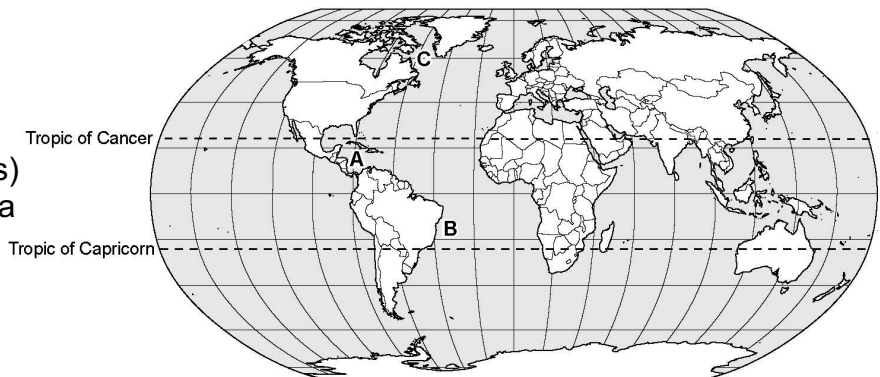
Name _____

Period _____

Geography Assessment

Read the *Storm Trackers Information Sheet*, then circle the best answer for the following questions.

1. A severe tropical storm occurring between the Tropic of Cancer and Tropic of Capricorn can be called
 - a. a hurricane
 - b. a cyclone
 - c. a typhoon
 - d. all of the above
2. A severe tropical storm would occur with which of the following physical features/conditions of the region present?
 - a. In the Northern Hemisphere, in the Rocky Mountains, where light winds are occurring.
 - b. In the Northern Hemisphere, in water temperature of 70⁰ F, where light winds are occurring.
 - c. In the Northern Hemisphere, in water temperature of 80⁰ F, where light winds are occurring.
 - d. In the Northern Hemisphere, in water temperature of 90⁰ F, where no winds are occurring.
3. A severe tropical storm would **not** occur with which of the following physical features/conditions of the region present?
 - a. In the Southern Hemisphere, in the desert of Africa, where there is no moisture in the air.
 - b. In the Southern Hemisphere, off the East coast of Australia, where there is moisture in the air.
 - c. In the Southern Hemisphere, off the coast of Madagascar, where there is moisture in the air.
 - d. In the Southern Hemisphere, in water temperature of 80⁰ F, where there is moisture in the air.
4. Using the map, which region(s) would be most likely to have a severe tropical storm occur
 - a. A
 - b. B
 - c. C
 - d. A and B



5. Using the map, which region(s) would be most likely **not** to have a severe tropical storm occur
 - a. A
 - b. B
 - c. C
 - d. B and C

Math Assessment

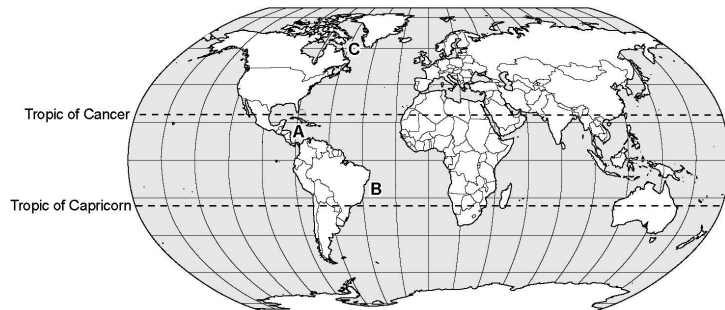
Using the data from *Storm Trackers Information Sheet*, solve the following math proportion problems.

- Given a severe tropical storm that is traveling at 17 miles per hour, how many hours would it take the storm to reach a landmark 408 miles away?
 - 20 hours
 - 24 hours
 - 26 hours
 - 35 hours
- Given a severe tropical storm that is traveling at 15 miles per hour, how long would it take the storm to reach a landmark 588 miles away?
 - 39 hours
 - 39.2 hours
 - 39.6 hours
 - 40 hours
- A severe tropical storm is traveling 18 miles per hour. Shoe Shack is 621 miles away, Donut Holes is 441 miles away, Clara's Boutique is 585 miles away, and Rick's Records is 495 miles away. Which location will the tropical storm most likely hit in about 28 hours?
 - Shoe Shack
 - Donut Hole
 - Clara's Boutique
 - Rick's Records
- A severe tropical storm has traveled 980 miles over a time period of 48.5 hours. What is the storm's rate of travel?
 - 20.2 miles per hour
 - 20 miles per hour
 - 20.3 miles per hour
 - 20.4 miles per hour
- A severe tropical storm has traveled 567 miles over a time period of 33 hours. About what is the storm's rate of travel?
 - 15 miles per hour
 - 17 miles per hour
 - 20 miles per hour
 - 25 miles per hour

Geography Assessment **Answer Key**

Read the *Storm Trackers Information Sheet*, then circle the best answer for the following questions.

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 - c. In the Southern Hemisphere, off the coast of Madagascar, where there is moisture in the air.
 - d. In the Southern Hemisphere, in water temperature of 80 F, where there is moisture in the air.
4. Using the map, which region(s) would be most likely to have a severe tropical storm occur?
 - a. A
 - b. B
 - c. C
 - d. A and B**
5. Using the map, which region(s) would be most likely **not** to have a severe tropical storm occur?
 - a. A
 - b. B
 - c. C**
 - d. B and C



Math Assessment **Answer Key**

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