ESS 100 (Stapleton)
The Coriolis Effect

Name: Answers

Part I: Background Skills and Information

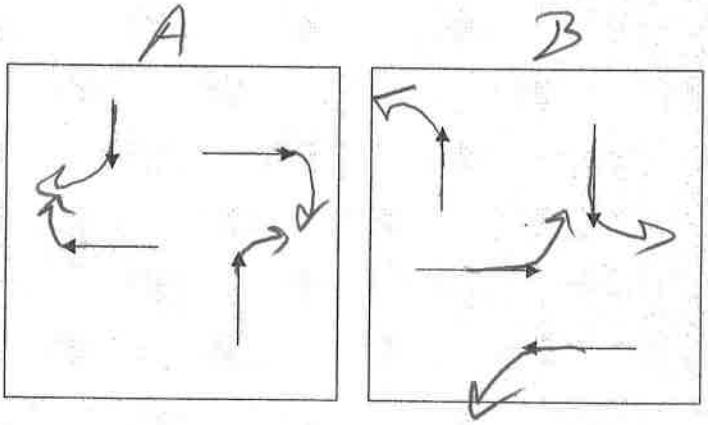
1. a) In the space to the right, draw a curved arrow tracing out a clockwise circle.

b) Draw another curved arrow making a counter-clockwise circle.

2. Now imagine that the arrows above are the paths of cars. Which sort of rotation (CW or CCW) is the same as a continuous right turn?

3. Add a new segment to the front of each arrow in Box A, so that all of the arrows are curving clockwise.

Are these arrows making right turns, left turns, or both?



4. Add a new segment to the front of each arrow in Box B, so that all of the arrows are arrows making counter-clockwise turns.

5. Does the Earth rotate toward the East or toward the West? [Hint: think about how the sun *appears* to move through the sky. Where does it rise and set?]

Eastward

6. If you could look down on the Earth from above the North Pole, which way would it appear to rotate? (CW or CCW?)

7. Which part of the Earth is moving the fastest due to the Earth's rotation? What part is moving the slowest? [Hint: think of the earth as a merry-go-round]

Equator

Part II: Experiencing The Coriolis Effect

8. If you hold one arm straight out in front of you and turn around, you're sort of like the earth. The fastest part of your body is your _____ (head or outstretched hand), and the slowest part of your body is your _____ (head or outstretched hand). If you hold a paper wad by your face and then toss it at your hand, it's like throwing the paper from one of the Earth's Pole toward the Earth's equator.

9. Now simulate a missile launch in the Northern Hemisphere. Wad up a piece of paper to serve as a missile. Get your body spinning with your hand outstretched. Do this so that your head represents the North Pole and your hand represents the equator. In order to do this right, you will have to be spinning _____(CW or CCW) when viewed from above. Another way to say this is that you will need to spin to your _____(left or right).

Hold the paper wad near your eye, as if you're throwing a dart at a dart board. Tilt up your outstretched hand to make it a target. Begin spinning. While you're spinning – WITHOUT STOPPING, and without taking your eyes off of your hand – toss the paper wad at your hand. The apparent curving that you see is called the Coriolis Effect.

10. According to your simulation, which way do objects appear to curve in the Northern Hemisphere, due to the Coriolis Effect? Circle the two correct answers: **CW** **CCW** **Right** **Left**

11. a) Does the paper wad really curve? No.

b) What really happens? Your arm is moving to the left.

12. Now do the same thing, but simulate a missile launch from the south pole toward the equator. To do this, you'll have to spin the other way. Which way do flying objects appear to curve in the Southern Hemisphere? Left or CCW

13. The arrows on the right represent missiles that have been fired in the directions shown below. Add a new segment on to each of the arrows to show how the apparent paths of the missiles will curve. Check the previous page to see which way flying objects should curve in each hemisphere.