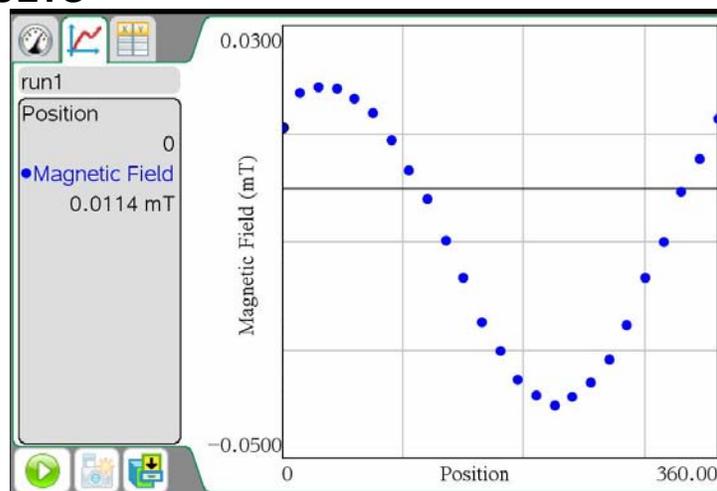


## TEACHER INFORMATION

## Where IS North?

1. Editable Microsoft Word versions of the student pages and pre-configured TI-Nspire files can be found on the CD that accompanies this book. See *Appendix A* for more information.
2. Make one copy of the degree wheel and pointer for each student group. Tape the circle to each group's work space with  $0^\circ$  aligned with true north. True north can be located using a GPS or blue prints for your school. If these are not available, you can determine true north by using a compass to find magnetic north, then correct for the magnetic declination. If you don't know the magnetic declination at your location, it can be calculated at several locations on the Internet, including [www.ngdc.noaa.gov/geomag/](http://www.ngdc.noaa.gov/geomag/).
3. The Magnetic Field Sensor needs to remain vertical the entire time during Part I. Students should be careful to keep the sensor centered on the dot.
4. Readings may fluctuate due to deviation, the influence of the immediate environment upon your sensor, caused by things such as electrical currents, computer monitors, or metal brackets. Try to avoid these influences.
5. A paper protractor cut in half makes it easy to measure the magnetic inclination.
6. The magnetic inclination can also be calculated using the length of the Magnetic Field Sensor and the distance from the top of the sensor to the table instead of measuring the angle directly.
7. The Magnetic Field Sensor does not need to be zeroed at any time during this experiment since you are looking for a peak reading location rather than the actual magnetic field intensity.

## SAMPLE RESULTS



Magnetic north direction ( $^\circ$ )	$30^\circ$
Magnetic inclination ( $^\circ$ )	$67^\circ$

## ANSWERS TO QUESTIONS

1. Answers will vary. If the declination in your area is to the right of true north ( $0^\circ$  on the degree wheel) it is an east declination. Magnetic north is pulling the compass too far to the east. To stay on course you would need to subtract the declination from the magnetic reading. If the declination in your area is to the left of true north it is a west declination. To stay on course you need to add the declination to the magnetic reading.
2. Answers will vary.
3. Answers will vary but may include navigation systems not working properly and migrating animals straying off course, among others.

