

TEACHER INFORMATION

Introduction to Data Collection

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. This experiment is intended to be used at the beginning of the school year to introduce you and/or your students to data collection with TI-Nspire technology. It also works well as a review if they have not used the products recently. The procedures in this experiment are more detailed than in the rest of the book. For this reason, it should be done first.

Note: Hints on how to do each step are included in italics and appear in this lab only.

3. There are two versions of this activity. Experiment 1A is written for the TI-Nspire handheld. Experiment 1B is written for the TI-Nspire computer software.
4. Any of the following temperature probes can be used in this experiment:

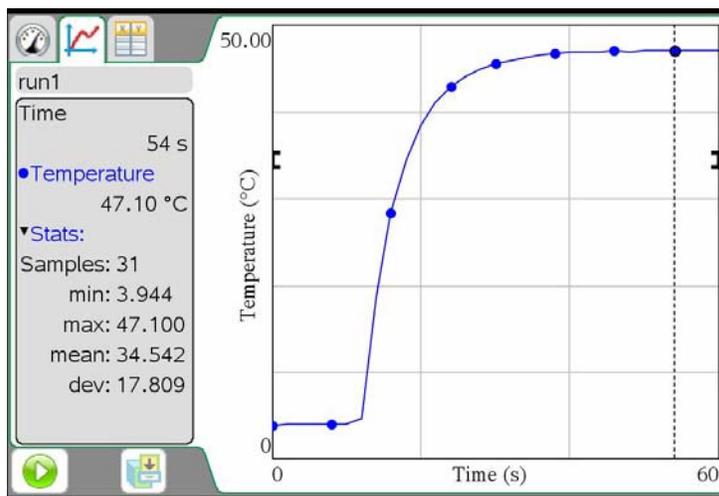
| Table 1: Temperature Probe Comparison |
|--|
| Stainless Steel Temperature Probe (order code TMP-BTA) <ul style="list-style-type: none"> • Range: -40°C to 135°C • Connects to TI-Nspire Lab Cradle, Go!Link, or EasyLink |
| Vernier Go!Temp (order code GO-TEMP) <ul style="list-style-type: none"> • Range: -20°C to 110°C • Connects directly to a computer USB port • Connects to a TI-Nspire handheld with a USB-MINI adapter |
| Vernier EasyTemp (order code EZ-TMP) <ul style="list-style-type: none"> • Range: -20°C to 110°C • Connects directly to a TI-Nspire handheld • Connects to a computer with a MINI-USB adapter |

5. If you do not have hot tap water available in your classroom for Part I, water can be heated on a hot plate. A temperature of about 60°C works well.
6. As it is written, this experiment gives the students the option to print graphs of their data. If you prefer to have your students graph “by hand,” instruct them to record data from the table at two-second intervals for this purpose.

Experiment 1

SAMPLE RESULTS

Part I Time Graph



| Maximum temperature (°C) | Elapsed time (s) |
|--------------------------|------------------|
| 47.1 | 54 |

Part II Events with Entry

| Group member number | Group member name | Maximum temperature (°C) |
|---------------------|-------------------|--------------------------|
| 1 | Starr C. | 35.0 |
| 2 | Kaden W. | 32.5 |
| 3 | Jeremy N. | 33.4 |
| 4 | Roberto G. | 33.7 |
| 5 | Patrice S. | 32.1 |
| 6 | Tonie L. | 31.9 |
| Group average | | 33.1 |

ANSWERS TO QUESTIONS**Part I Time Graph**

1. The curve is flat until the 12 second point, then it curves up rapidly. It slowly levels off at the maximum temperature.
2. Time is the independent variable in this experiment. The independent variable is plotted on the horizontal axis.
3. Temperature is the dependent variable in this experiment. The dependent variable is plotted on the vertical axis.
4. Answers will vary. In the example above, the response time is 42 seconds.
5. The response time was calculated by taking the time elapsed when the probe first reached the maximum temperature and subtracting the time the probe was first put into the hot water (12 seconds for this example).

Part II Events with Entry

6. Answers will vary.
7. Answers will vary.