

Pond Tool Detectives

Choose tools that match the evidence a question needs.

7.1.D "use appropriate tools such as graduated cylinders, metric rulers, periodic tables, balances, scales, thermometers, temperature probes, laboratory ware, timing devices, pH indicators, hot plates, models, microscopes, slides..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each tool or piece of laboratory ware named in the passage. Next to each underlined item, write what it measures or does in one or two words.

Testing Pond Water

- ① At a school pond, a science team asks whether water beside a shady willow is cooler than water in open sun. They choose two sampling spots that are the same distance from shore and collect water at the same time. To make each sample the same size, they use a graduated cylinder to measure 100 milliliters before pouring it into labeled laboratory cups. They write the spot, time, and sample volume in a lab notebook. Keeping these conditions alike makes the temperature comparison fair.
- ② At each spot, a temperature probe is placed in the water, with its sensing tip below the surface and away from the pond bottom. The team waits until the displayed reading is steady, then records the temperature in degrees Celsius. They use the same probe and the same method at both spots. A pH indicator strip tests whether the samples differ in acidity. The strip color is matched to its chart, and the pH result is recorded. The probe measures temperature, while the indicator gives an approximate pH value.
- ③ Before starting, the team checks that the graduated cylinder markings can be read and that the temperature probe is working. They repeat the temperature measurement three times at each spot and record every reading, rather than relying on one result. A balance would be useful if the question involved sample mass, but it is not needed for this comparison. A microscope could help examine tiny organisms in pond water, yet it cannot measure water temperature. Choosing a tool depends on the question and the kind of evidence needed.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Why was a graduated cylinder an appropriate tool for preparing the pond-water samples?

2 What evidence does the temperature probe provide, and what evidence does the pH indicator strip provide?

3 What two conditions did the team keep the same when collecting water so the temperature comparison would be fair?

4 Which tool would be appropriate for finding the mass of a water sample? Why would a microscope not be the right tool for that job?

3 YOUR TURN _____ Your own words

A class wants to test how ramp height affects the time a toy car takes to travel to the finish line. Complete the table with three investigation steps, an appropriate tool for each step, and how the tool will be used.

INVESTIGATION STEP	APPROPRIATE TOOL	HOW THE TOOL WILL BE USED

PART 1 • READ AND MARK

Underline each tool or piece of laboratory ware named in the passage. Next to each underlined item, write what it measures or does in one or two words. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Why was a graduated cylinder an appropriate tool for preparing the pond-water samples?	It measured 100 milliliters so each water sample had the same volume.
2	What evidence does the temperature probe provide, and what evidence does the pH indicator strip provide?	The probe provides a temperature reading in degrees Celsius. The pH indicator strip provides an approximate pH value related to acidity.
3	What two conditions did the team keep the same when collecting water so the temperature comparison would be fair?	They used spots the same distance from shore and collected the water at the same time.
4	Which tool would be appropriate for finding the mass of a water sample? Why would a microscope not be the right tool for that job?	A balance would measure the sample's mass. A microscope is used to examine tiny organisms or objects, not to measure mass.

PART 3 • YOUR TURN (SAMPLE ANSWER)

INVESTIGATION STEP	APPROPRIATE TOOL	HOW THE TOOL WILL BE USED
Set each ramp height	Metric ruler	Measure the height of the ramp in centimeters.
Time each car run	Timing device	Measure seconds from release to the finish line.
Record repeated trials	Lab notebook	Write each ramp height and the time from three trials.

Accept equivalent tool choices when they match the evidence needed. For the open task, students should select tools that measure ramp height and travel time, plus a reasonable way to record repeated trial data.