TEACHER'S GUIDE

SCIENCE LAB
2nd Grade
Diagnostic

(Criterion-Referenced, Objective-Based Exam)

Objective	# Out of:
Nature of Science	7
Life Science	6
Physical Science	6
Earth Science	6
TOTAL	25

Use of Diagnostics

- **Diagnose student academic level at the beginning of the year.**
- **Track student progress for each objective covered and unit taught.**
- **Measure end of year gains through final mastery exam.**

Diagnostic Administration

- **The diagnostic should take about 40 minutes to administer.**
- **It should be administered orally (and if applicable the Spanish translations should be read with it as well).**
- **Make sure that the students completely bubble in their answer choice on their own student guide.**
- **Each group of questions for the 4 objectives can be used separately to measure student success at the end of the unit.**

Texas Essential Knowledge & Skills
2nd Grade Science

(1) Scientific processes. The student conducts classroom and field investigations following home and school safety procedures. The student is expected to:

(A) demonstrate safe practices during classroom and field investigations; and

(B) learn how to use and conserve resources and dispose of materials.

(2) Scientific processes. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to:

(A) ask questions about organisms, objects, and events;

(B) plan and conduct simple descriptive investigations;

(C) compare results of investigations with what students and scientists know about the world;

(D) gather information using simple equipment and tools to extend the senses;

(E) construct reasonable explanations and draw conclusions using information and prior knowledge; and

(F) communicate explanations about investigations.

(3) Scientific processes. The student knows that information and critical thinking are used in making decisions. The student is expected to:

(A) make decisions using information;

(B) discuss and justify the merits of decisions; and

(C) explain a problem in his/her own words and identify a task and solution related to the problem.

(4) Scientific processes. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to:

(A) collect information using tools including rulers, meter sticks, measuring cups, clocks, hand lenses, computers, thermometers, and balances; and

(B) measure and compare organisms and objects and parts of organisms and objects, using standard and non-standard units.

(5) Science concepts. The student knows that organisms, objects, and events have properties and patterns. The student is expected to:

(A) classify and sequence organisms, objects, and events based on properties and patterns; and

(B) identify, predict, replicate, and create patterns including those seen in charts, graphs, and numbers.

(6) Science concepts. The student knows that systems have parts and are composed of organisms and objects. The student is expected to:

(A) manipulate, predict, and identify parts that, when separated from the whole, may result in the part or the whole not working, such as flashlights without batteries and plants without leaves;

(B) manipulate, predict, and identify parts that, when put together, can do things they cannot do by themselves, such as a guitar and guitar strings;

(C) observe and record the functions of plant parts; and

(D) observe and record the functions of animal parts.

(7) Science concepts. The student knows that many types of change occur. The student is expected to:

(A) observe, measure, record, analyze, predict, and illustrate changes in size, mass, temperature, color, position, quantity, sound, and movement;

(B) identify, predict, and test uses of heat to cause change such as melting and evaporation;

(C) demonstrate a change in the motion of an object by giving the object a push or a pull; and

(D) observe, measure, and record changes in weather, the night sky, and seasons.

(8) Science concepts. The student distinguishes between living organisms and nonliving objects. The student is expected to:

(A) identify characteristics of living organisms; and

(B) identify characteristics of nonliving objects.

(9) Science concepts. The student knows that living organisms have basic needs. The student is expected to:

(A) identify the external characteristics of different kinds of plants and animals that allow their needs to be met; and

(B) compare and give examples of the ways living organisms depend on each other and on their environments.

(10) Science concepts. The student knows that the natural world includes rocks, soil, water, and gases of the atmosphere. The student is expected to:

(A) describe and illustrate the water cycle; and

(B) identify uses of natural resources.

Diagnostic Questions

Objective 1: Nature of Science *(7 Questions)*

1. Here you see a ruler, a thermometer, and a measuring cup. Which would you use to find the measure ¼ cup of flour to bake a cake?
2. The worm you see in the picture is about how many paper clips long (the size of the paper clip is under the picture of the worm)?
3. Which color M&M do you think will come next in the pattern? Blue, green, or red?
4. Here is a picture of a newspaper, plastic bottle, and glass bottle. All of these items can classified as having which symbol? A poison sign, stop sign, or recycle sign?
5. Look at the pictures. Which of these safety materials would be used to put out a fire?
6. If you are conducting an experiment to see which type of soil plants like to live in, what would you have different types of in the experiment? The plant, the soil, or the sunlight?
7. Here is a picture of a flashlight and batteries, a plant and roots, and a magnet and magnet case. Which object will be able to work without the piece next to it? The flashlight (without the batteries), the plant (without the roots), or the magnet (without the magnet case).

Objective 2: Life Science *(6 Questions)*

1. Here you see roots, leaves, and branches. Mark the part of the tree that takes in sunlight.
2. Here is a picture of an eye, wing, and beak of a bird. Which object is used for the bird to move its whole body?
3. Look at the pictures. Which item is something that living things do NOT need to live?

4. Which animal is most likely to survive the rest?
5. Look at the different pictures. What part of the polar bear allows it to survive in the artic with very cold temperatures? The polar bear's fur, claws, or teeth?
6. Of the following pictures, which organism would receive energy from the sun but give energy to a goat?

Objective 3: Physical Science *(6 Questions)*

1. Here you see a candle, an ice cube, and a book. Which of these cannot become a liquid?
2. Which of these will sink in water?
3. Mark the one that is both light and soft?
4. Which of these objects cannot move on its own?
5. Which picture shows something that is whole?
6. Which picture shows something that rolls? Is it the sneaker, the box, or the wheel?

Objective 4: Earth Science *(6 Questions)*

1. Look at the pictures. Which picture shows what the weather might look like in the fall?
2. Look at the pictures. If you were hot, which picture shows a place where you can cool off?
3. Which picture shows a full moon?
4. Look at the pictures. Which pictures shows that it rained earlier in the day?
5. Which picture shows what a tree looks like during the winter?
6. Look at the pictures. Which picture shows the natural resources that beavers use to build a home?

TEKS Correlation

Objective 1: Nature of Science

Test Question	*TEKS Objective*
1. Here you see a ruler, a scale, and a thermometer. Which would you use to measure the weight of an object?	1.2C 1.4A
2. Here you see an elephant, a tall building, and a rowboat. Mark under the one that is taking up the most amount of space.	1.7A
3. If you used a hand lens to observe this spider, how would it appear through the lens?	1.2C 1.4A
4. Which one of these tools would you use to find the temperature?	1.2C 1.4A
5. Look at the pictures. Which picture shows the student breaking a science rule if the student is in the science lab?	1.1A
6. If you want to figure out whether a plant will grow better in sand or soil, what is the best way to do it?	1.1A 1.2A,B,C,D,E 1.3 A,B,C
7. Which safety tool should you use to protect your eyes?	1.1A

Objective 2: Life Science

Test Question	*TEKS Objective*
1. Here you see roots, leaves, and branches. Mark the part of the tree that takes in water.	1.6A
2. Here is a toy truck, a plant, and a rabbit. Which one is not a living thing?	1.8A,B
3. Look at the pictures. Which picture shows something that needs light and heat to grow?	1.9A
4. Here you see wings, feet, and a beak. Mark under the body part that a bird uses to walk.	1.6A
5. Which picture shows the right order of how a frog grows?	1.7D
6. Look at the animals. Which one has scaly or smooth skin?	1.6B

Objective 3: Physical Science

Test Question	*TEKS Objective*
1. Here you see a candle, an ice cube, and a book. Which of these cannot become a liquid?	1.7A,B
2. Which of these will sink in water?	1.5A 1.7A
3. Mark the one that is both light and soft?	1.5A 1.6A 1.7A
4. Which of these objects cannot move on its own?	1.6A 1.7A
5. Which picture shows something that is whole?	1.7D
6. Which picture shows something that rolls? Is it the sneaker, the box, or the wheel?	1.6C,D

Objective 4: Earth Science

Test Question	*TEKS Objective*
1. Look at the pictures. Which picture shows what the weather might look like in the fall?	1.7C
2. Look at the pictures. If you were hot, which picture shows a place where you can cool off?	1.7B
3. Which picture shows a full moon?	1.7C
4. Look at the pictures. Which pictures shows that it rained earlier in the day?	1.7C 1.10A
5. Which picture shows what a tree looks like during the winter?	1.7C
6. Look at the pictures. Which picture shows the natural resources that beavers use to build a home?	1.9B, 1.10C