

EARTH SYSTEMS SCIENCE PREREQUISITE KNOWLEDGE TEST INSTRUCTIONS FOR ADMINISTERING TEST

Instructions to Teacher

Dear Earth Systems Teacher,

This test is written to help you know about your students' prior knowledge so that you may help them learn earth systems. Research indicates that teachers who use data from pre-tests to modify their instruction significantly improve their students' learning.

The test items measure information and skills that students should have acquired before they begin earth systems. The earth systems core curriculum was written assuming that students would know this material. If a student knows the material tested with these items, he or she is more likely ready to learn the earth systems core curriculum. If a student does not know the material measured in this test, he or she may have trouble understanding some earth systems lessons.

There is no content in the core of the lower grades prerequisite to some of the earth systems standards and objectives. Therefore this test will not tell you what your students know about those objectives. These objectives are noted on the Pretest Diagnostic that follows.

The complete test should take most students approximately 35 minutes.

Help your students understand that they won't be penalized if they do poorly on the test, but encourage them to do their best work. Tell students to do their own work. If students cannot read an item, read it to them.

The test may be given online using UTIPS, or you may print the test and give it hard copy. If you give the test online, check that your students log into the test correctly. If you give the test hard copy, each student will need a copy of the test, an answer sheet (preferably scanner) and a pencil. Be prepared with something for students to do if they finish early. Instructions for the administration of both formats follow.

Hard Copy Test Instructions to Students

Please read to the students:

This test is a pre-test. It measures some science material you have learned before, and it may measure some science material you have not studied yet. Don't worry if you don't know all the material—just do your best.

Please write your name on the answer sheet (bubble sheet).

There are 45 questions on this test. Please read each question carefully. Choose the **best** answer from the four choices. After you choose an answer, fill in the circle that matches your choice for that question on your answer sheet.

Mark only one answer for each question. If you wish to change an answer, erase the old mark completely before making a new one. Do not make any stray marks on your answer sheet.

If you do not know the answer to a question, continue on to the next question. Please try to answer all of the questions on this test. If you skip a question, make sure that you leave the answer circle for that question blank on your answer sheet.

Do not talk to other students. Raise your hand and ask the teacher if you do not know a word.

If you finish early you may go back and try to answer questions that you skipped or check your work. When you are done with the test, turn the test over on your desk and follow your teacher's instructions.

UTIPS Online Test Instructions to Students

Please read to the students:

This test is a pre-test. It measures some science material you have learned before, and it may measure some science material you have not studied yet. Don't worry if you don't know all the material—just do your best.

There are 45 questions on this test. Please read each question carefully. Choose the **best** answer from the four choices. After you choose an answer, click the circle next to that answer.

Mark only one answer for each question. If you wish to change an answer, click on the circle next to your new answer.

If you do not know the answer to a question, continue on to the next question. Please try to answer all of the questions on this test.

Do not talk to other students. Raise your hand and ask the teacher if you have a question.

If you finish early you may go back and try to answer questions that you skipped or check your work.

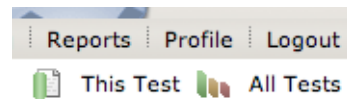
When you complete the test, **scroll to the top of the test and click the submit button**. Once you click submit, you will NOT be able to change any answers. Do not click on any other buttons on your screen at any time during the test or your test could be ruined. Once you are finished with the test, follow your teacher's instructions.

EARTH SYSTEMS PREREQUISITE KNOWLEDGE TEST INSTRUCTIONS FOR INTERPRETING AND USING TEST SCORES

When your students have finished taking the pre-test, print the **Earth Systems Test of Prerequisite Knowledge—Test Diagnostic** page that follows. The instructions below will help you know how your class did on each objective and ILO in the science curriculum prerequisite to the earth systems course.

1. Once your students have finished taking the test, be sure they have clicked the “**submit**” button. Then go to your UTIPS site. Click on the “**Reports**” menu.

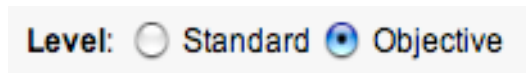
2. On the Reports menu, select “**All Tests**”. Then select the Earth Systems Prerequisite Knowledge from the list.



3. On the far right near the top of the screen, choose the **apple icon**.



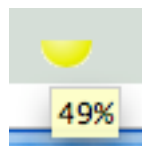
4. In the title box, click the **Objective button**. This will display your students’ results by objective and ILO.



5. Scroll to the bottom of the screen and note the **Average row**.

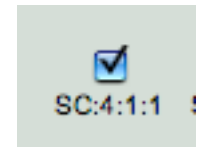


As you roll over each pie chart and pause, the **percent** of items correct for that objective will pop up. You will use this percent in instruction #6.



6. Write the average percent for the corresponding **objective** in the far right column on the **Earth systems Test of Prerequisite Knowledge—Test Diagnostic** page you printed. Write the average percent for the corresponding **ILO** in the row at the bottom of the table. Note that two cells in the table are shaded grey. You will probably ignore the percentages in the shaded cells because there are not enough items to give you a safe inference of what your students know about that objective.

(If you are unsure which objective or ILO each column in UTIPS corresponds to, go to the top of the column and click on the box. The standard and objective for that column will appear at the top of the screen.)



7. You have now recorded all the data from the test that will help you to make decisions about how to plan your science instruction. If students did well on certain objectives, then they are likely ready to study the earth systems Core.

EARTH SYSTEMS TEST OF PREREQUISITE KNOWLEDGE

Test Diagnostic

Standard	Objective	ILO 1	ILO 3	ILO 4	ILO 5	ILO 6	Class Percent
1 Theories of universe development							
	1 Describe big bang theory	7	8		6, 2		
	2 Relate composition of solar system to universe processes	1		3, 4		5	
2 Earth's unique environment							
	1 Describe physical features of Earth that make life possible	17	18	16		19	
	2 Analyze how ecosystems differ	12	13		14	11	
	3 Examine Earth's diversity of life as it changes over time		9, 20	10	15		
3 Plate tectonics							
	1 Explain evidence for plate tectonics		22		21	24	
	2 Describe processes that result in plate motion	26	23	25			
4 Water cycles							
	1 Explain water cycles in terms of water movement		27, 28, 29, 30				
	2 Analyze physical and biological dynamics of oceans	32, 34	31, 33				
5 Earth's atmosphere							
	1 Describe how matter in the atmosphere cycles	43	36	35		38, 40	
	2 Trace ways the atmosphere has been altered by living systems						*
6 Energy							
	1 Describe the transformation of solar energy	42, 44	37, 39, 41	45			
	2 Relate energy sources to their effect on Earth systems						*
ILO Percent							

* There is no content in the core of the lower grades that is prerequisite to this earth systems objective. From this test you do NOT know what your students may know about this objective.

EARTH SYSTEMS TEST OF PREREQUISITE KNOWLEDGE INSTRUCTIONS FOR INTERPRETING AND USING TEST SCORES WHEN YOU ADMINISTER A HARD COPY OF THE TEST

As you prepare copies of the test for your students, make a copy of the “Earth Systems Test of Prerequisite Knowledge—Test Diagnostic” that follows on the next page.

Your students should have used scan-tron answer sheets to record their answers to the test. If they did not, find the paragraph in these directions entitled “Scoring the test without scan-tron answer sheets.”

Scoring the test if students recorded their answers on scan-tron answer sheets

Prepare a scan-tron item analysis sheet, which summarizes the performance of all of the students in your class. It will list how many of your students missed, or answered correctly, each question.

Referring to the diagnostic sheet, find the row for Standard 1, Objective 1. (Note that Objective 1 is measured by test items 7, 8, 6 and 2.) Find how many of your students missed these four test items on your scan-tron item analysis sheet, add the numbers together and record the sum in the Objective 1 box named “Class Percent.” This number represents the number of students who missed Objective 1.

Next, find the row for Standard 1, Objective 2 on the diagnostic sheet. Find the number of students who missed questions 1, 3, 4 and 5 and record this sum in the class percent box. (You are not calculating percents but by recording the number of students who missed the items for an objective you will be able to determine where your students need the most help or conversely, on which objectives your students know the most.)

Continue to record total number of students who missed each *objective*.

Now determine the number of students who missed ILO 1 by adding the number of students who missed items 7, 1, 17, 12, 26, 32, 34, 43, 42 and 44 (in the column labeled ILO 1). Record this total in the “ILO Percent” box at the bottom of column ILO 1. Do the same for ILOs 3, 4, 5 and 6.

You can now look at the numbers and determine on which Core objectives and ILOs your students are more likely ready to study. If you recorded the number of students who missed an item, then the **higher** numbers indicate Core objectives on which your students are least ready.

Note that the test did not contain enough items to measure Standard 5, Objective 2 and Standard 6, Objective 2 as prerequisite knowledge for these objectives is not in the Core for the lower grades.

Scoring the test without scan-tron answer sheets

Without scan-tron answer sheets you will first need to score your students' tests. Next, count the number of students who missed questions 7, 8, 6 and 2. Record this number on your diagnostic sheet at the right hand end of the row "Standard 1, Objective 1." Now count the number of students who missed Standard 1, Objective 2 (The total students missing questions 1, 3, 4 and 5). Record this total at the end of the row. Continue recording the total number of students missing the items for each objective in the appropriate boxes named "Class Percent." (You are not calculating percents but by recording the number of students who missed the items for an objective you will be able to determine where your students need the most help or conversely where, on which objectives, your students are most prepared.)

Now determine the number of students who missed ILO 1 by adding the number of students who missed items 7, 1, 17, 12, 26, 32, 34, 43, 42 and 44 (in the column labeled ILO 1). Record this total in the "ILO Percent" box at the bottom of column ILO 1. Do the same for ILOs 3, 4, 5 and 6.

You can now look at the numbers and determine on which Core objectives and ILOs your students are more likely ready to study. If you recorded the number of students who missed an item, then the **higher** numbers indicate Core objectives on which your students are least ready.

Note that the test did not contain enough items to measure Standard 5, Objective 2 and Standard 2, Objective 2 as prerequisite knowledge for these objectives is not in the Core for the lower grades.

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	1 Describe physical features of Earth that make life possible	17	18	16		19	
	2 Analyze how ecosystems differ	12	13		14	11	
	3 Examine Earth's diversity of life as it changes over time		9, 20	10	15		
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