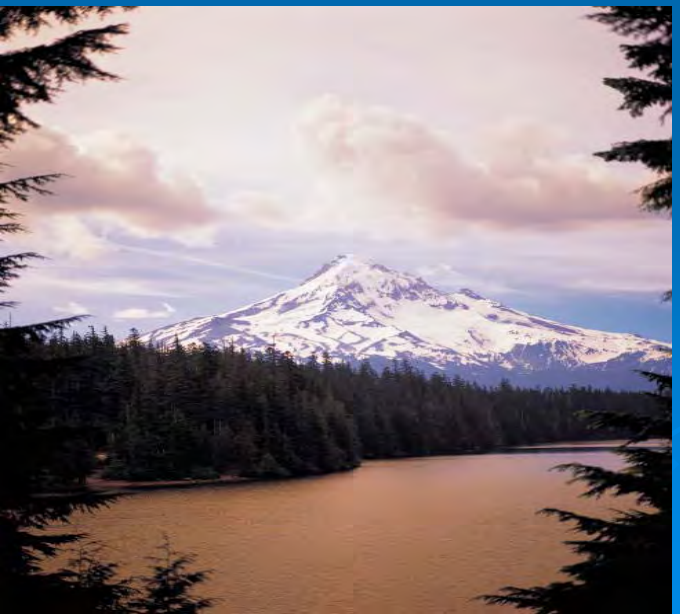
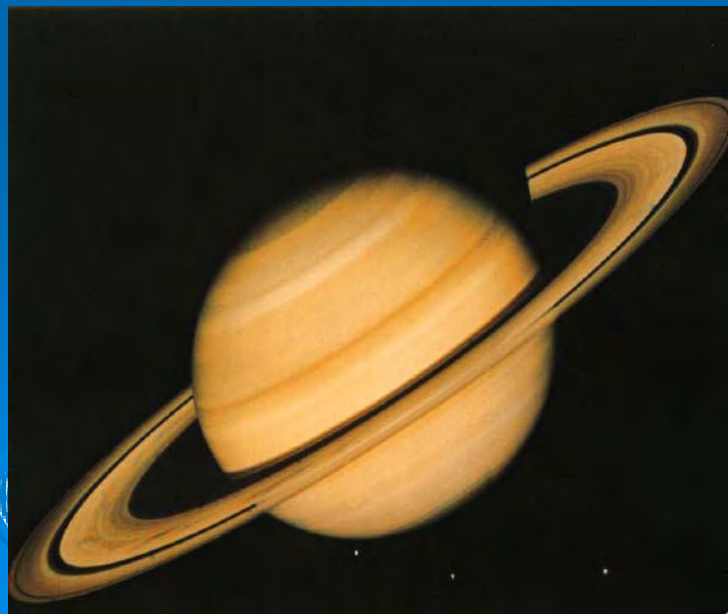
2011 Science ISAT

Grades 4 and 7





Science ISAT

- Aligned to the Illinois Assessment Framework
- All multiple-choice items
- 2, 45 minute sessions
- Up to 10 extra min.
- 82 items

Science ISAT

- All science standards assessed—approx. 10% of test devoted to each standard:
- 11A Science Inquiry, 11B Technological Design, 12A Life Science, 12B Environmental Science, 12C Chemistry, 12D Force and Motion, 12E Earth Science, 12F Astronomy, 13A Safety, Ethics, 13B History of Science, Technology in Science

Science Content Category Table

Grade	4	7
State Goal 11	**20%**	**20%**
Standard 11A – Scientific Inquiry	10%	10%
Standard 11B – Technological Design	10%	10%
State Goal 12	**60%**	**60%**
Standard 12A – Living Things[3]	10%	10%
Standard 12B – Environment and Interaction of Living Things	10%	10%
Standard 12C – Matter and Energy[4]	10%	10%
Standard 12D – Force and Motion	10%	10%
Standard 12E – Earth Science[5]	10%	10%
Standard 12F – Astronomy	10%	10%
State Goal 13	**20%**	**20%**
Standard 13A – Safety and Practices of Science	10%	10%
Standard 13B – Science, Technology, Society[6]	10%	10%
Total	**100%**	**100%**

Test Item Development

- Illinois teachers write and review test items
- Items written in March 10, reviewed in June 10, pilot-tested in March 2011
- Item data analyzed
- Some selected for 2012 ISAT

Item Writing

- Align to the Assessment Framework
- One correct answer
- Avoid cultural bias
- Avoid stereotypes
- Language appropriate for targeted grade
- Responses all about the same length or two long, two short
- Graphics only if needed
- Use cognitive levels of thinking
- No “All of the above” or “None of the above”

Items selected for ISAT

- Align to the Framework objectives
- Have no racial or gender bias
- Have one correct answer
- Some easy, some hard, some in the middle (p-value 30% to 85%)
- Cognitive level varies

ISAT and IAF

- All test items on the 2011 ISAT align to the Framework
  - **30-Norm referenced Standard 10 items**
    - Same items taken in other states for national comparison
  - **52-Criterion referenced items**
    - Illinois-developed and only used in Illinois
    - Some are pilot items, which do not count towards students' scores.
  - Both contribute to the ISAT score

Linguistically Modified (LM) ISAT in Math and Science for LEP Students

- LM ISAT form will be available for 2011 as an ISAT accommodation
  - Only for LEP students who qualify
- Text modified for LEP students
  - Simplified English text
  - Extended and Short Response math items presented in both Spanish and English
  - How was this form developed? Regular ed and ELL specialists reviewed and modified the math and science ISAT items to create this LM ISAT form

IMPORTANT

- LEP students taking the LM form will receive ISAT scores for math and science but **not** SAT 10 scores
  - Reason: If SAT 10 items are altered, a norm-referenced score cannot be given
  - LEP students using the LM form will still receive SAT 10 scores for reading since the reading test is the same in both the LM ISAT and ISAT.

Science and NCLB

- All states were mandated to assess science by 2008
- IL already had science assessments at grades 4, 7 and 11
- Science is **not** used for AYP
- Science will **not** be tested in every grade between 3 and 8 and will **not** be counted towards AYP unless NCLB changes to include science

2010 Reports

Illinois Standards Achievement Test

Item Analysis Summary - SAMPLE SCHOOL

DISTRICT: SAMPLE DISTRICT
RCDTS CODE: 12345678901234S

GRADE: 04
TEST DATE: 03/09

SCIENCE

Results from Multiple-Choice Items	# of Items	Assessment Objective*	RESPONSE ANALYSIS (% CORRECT) SCHOOL	DISTRICT	STATE
State Goal 11: Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.	**15**				
Standards 11A, 11B: Scientific Inquiry and Technological Design	15				
	1	11.A.01			
	6	11.A.02			
	2	11.A.03			
	2	11.A.05			
	4	11.A.06			
State Goal 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.	**45**				
	15				
Standards 12A, 12B: Life and Environmental Sciences	1	12.A.01			
	1	12.A.02			
	2	12.A.03			
	1	12.A.04			
	2	12.A.05			
	1	12.A.07			
	1	12.A.08			
	4	12.A.09			
	2	12.A.13			
Standards 12C, 12D: Matter, Energy, and Forces	15				
	2	12.A.14			
	2	12.A.15			
	1	12.A.16			
	2	12.A.21			
	1	12.A.22			
	1	12.A.24			
	1	12.A.25			
	2	12.A.26			
	1	12.A.27			
	2	12.A.28			

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*Assessment Objective descriptions are online at http://www.isbe.net/assessment/IAFinder.htm

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Illinois Standards Achievement Test

Item Analysis Summary - SAMPLE SCHOOL

DISTRICT: SAMPLE DISTRICT
RCDTS CODE: 12345678901234S

GRADE: 04
TEST DATE: 03/09

SCIENCE			RESPONSE ANALYSIS (% CORRECT)		
Results from Multiple-Choice Items (cont.)	# of Items	Assessment Objective*	SCHOOL	DISTRICT	STATE
State Goal 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences. (cont.)					
Standards 12E, 12F: Earth and Space Sciences	15				
	1	12.4.29			
	1	12.4.31			
	1	12.4.33			
	1	12.4.34			
	1	12.4.38			
	2	12.4.40			
	1	12.4.41			
	1	12.4.45			
	1	12.4.46			
	2	12.4.47			
	2	12.4.48			
	1	12.4.50			
State Goal 13: Understand the relationships among science, technology and society in historical and contemporary contexts.	15				
Standards 13A, 13B: Safety, Practices, Science/Technology/Society, and Measurement	15				
	1	13.4.02			
	2	13.4.03			
	1	13.4.04			
	2	13.4.06			
	2	13.4.07			
	1	13.4.09			
	1	13.4.10			
	1	13.4.11			
	1	13.4.14			
	3	13.4.15			

*Assessment Objective descriptions are online at http://www.isbe.net/assessment/IAFindex.htm

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Illinois Standards Achievement Test

Item Analysis Summary - SAMPLE SCHOOL

DISTRICT: SAMPLE DISTRICT
RCDTS CODE: 12345678901234S

GRADE: 07
TEST DATE: 03/09

SCIENCE			RESPONSE ANALYSIS (% CORRECT)		
Results from Multiple-Choice Items	**# of Items**	**Assessment Objective***	**SCHOOL**	**DISTRICT**	**STATE**
State Goal 11: Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.	15				
Standards 11A, 11B: Scientific Inquiry and Technological Design	15				
	4	11.7.02			
	1	11.7.03			
	3	11.7.06			
	3	11.7.07			
	2	11.7.08			
	2	11.7.10			
State Goal 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.	48				
Standards 12A, 12B: Life and Environmental Sciences	16				
	2	12.4.07			
	1	12.4.09			
	1	12.4.12			
	1	12.7.02			
	1	12.7.06			
	1	12.7.09			
	1	12.7.12			
	1	12.7.15			
	1	12.7.16			
	1	12.7.23			
	2	12.7.26			
	1	12.7.27			
	1	12.7.28			
	1	12.7.31			
Standards 12C, 12D: Matter, Energy, and Forces	16				
	1	12.4.21			
	1	12.7.35			
	1	12.7.36			
	1	12.7.41			
	1	12.7.43			
	1	12.7.49			
	1	12.7.51			
	1	12.7.56			

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*Assessment Objective descriptions are online at http://www.isbe.net/assessment/IAFinder.htm

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Illinois Standards Achievement Test

Item Analysis Summary - SAMPLE SCHOOL

DISTRICT: SAMPLE DISTRICT
RCDTS CODE: 123456789012345

GRADE: 07
TEST DATE: 0309

SCIENCE			RESPONSE ANALYSIS (% CORRECT)		
Results from Multiple-Choice Items (cont.)	# of Items	Assessment Objective*	SCHOOL	DISTRICT	STATE
State Goal 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences. (cont.)					
Standards 12C, 12D: Matter, Energy, and Forces (cont.)	1	12.7.57			
	1	12.7.64			
	2	12.7.65			
	1	12.7.66			
	2	12.7.68			
	1	12.7.69			
Standards 12E, 12F: Earth and Space Sciences	14				
	1	12.4.34			
	1	12.7.77			
	1	12.7.78			
	1	12.7.80			
	1	12.7.82			
	1	12.7.87			
	1	12.7.88			
	2	12.7.91			
	1	12.7.93			
	1	12.7.96			
	2	12.7.98			
	1	12.7.100			
State Goal 13: Understand the relationships among science, technology and society in historical and contemporary contexts.	14				
Standards 13A, 13B: Safety, Practices, Science/Technology/Society, and Measurement	14				
	1	13.4.02			
	1	13.4.08			
	1	13.4.15			
	1	13.7.01			
	2	13.7.02			
	1	13.7.03			
	1	13.7.04			
	1	13.7.06			
	2	13.7.10			
	1	13.7.11			

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*Assessment Objective descriptions are online at http://www.isbe.net/assessment/IAFinder.htm

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More about the Science score for [FirstName] [LastName]

The student scored overall at the **Exceeds Standards** level in Science.

Multiple-Choice Results for Science

The table below shows how the student performed (number correct) on the multiple-choice items for standards assessed in science. The total number of items and the average number correct for the school, district, and state are also displayed.

Science Standards Assessed	Number Correct	Number of Items	Average Number Correct		
			School	District	State
11A, 11B: Scientific Inquiry and Technological Design					
12A, 12B: Life Science and Environmental Sciences					
12C, 12D: Matter, Energy, and Forces					
12E, 12F: Earth and Space Sciences					
13A, 13B: Safety, Practices of Science, Science/Technology/Society, and Measurement					

	2010 ISAT Science Multiple-Choice Item Counts (Shaded)	
	Grade 4	Grade 7
Goal 11: Standards 11A, 11B	**14**	**15**
Goal 12: Standards 12A, 12B	**16**	**15**
Goal 12: Standards 12C, 12D	**15**	**16**
Goal 12: Standards 12E, 12F	**15**	**15**
Goal 13: Standards 13A, 13B	**15**	**14**
Total Multiple Choice	**75**	**75**

See www.isbe.net/assessment/IAFIndex.htm for Assessment Objective descriptions.

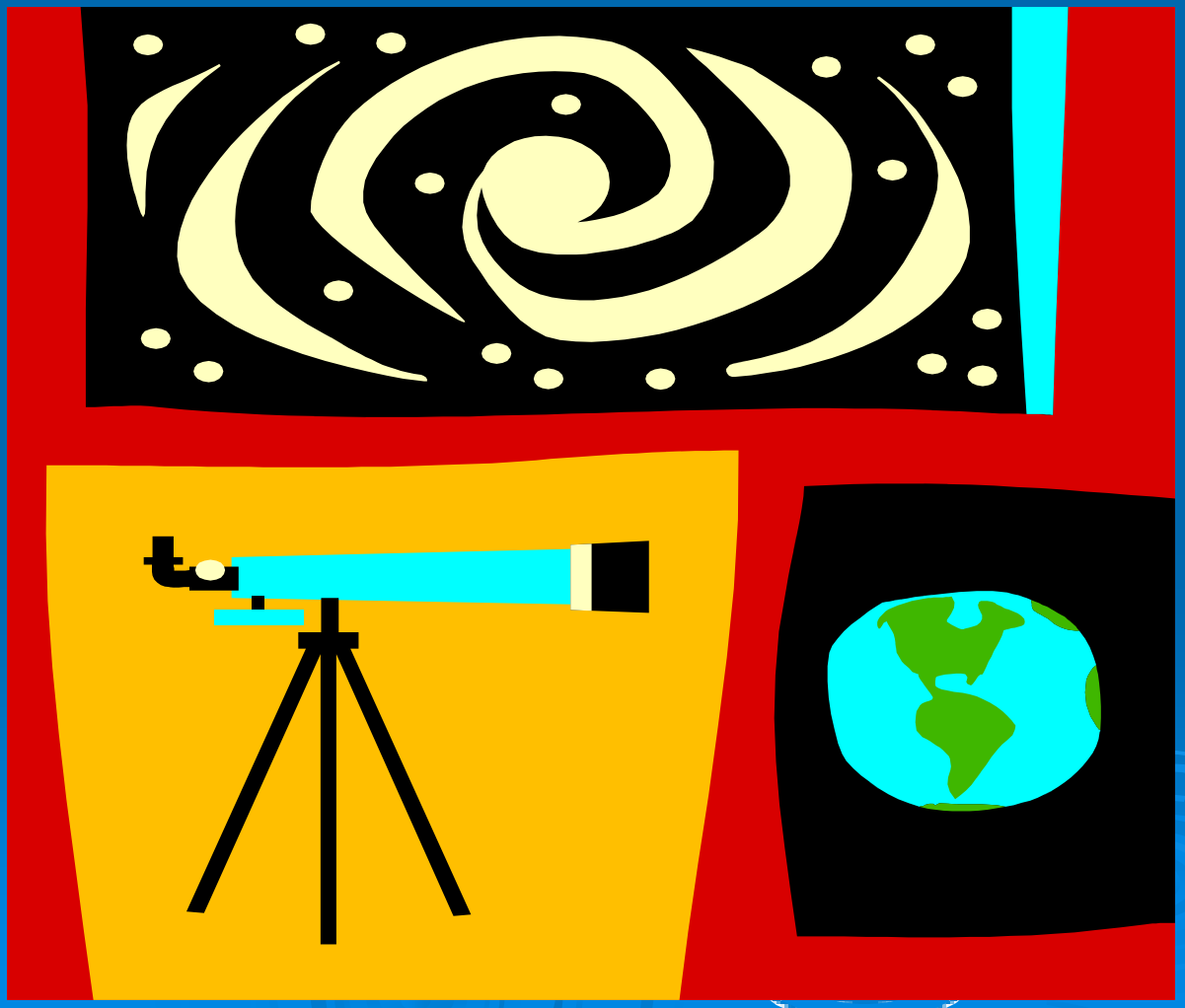
Test Preparation for Students

- Illinois Learning Standards used throughout the year
- Integrate test-taking skills into regular classroom instruction
- Students should be familiar with testing formats and taking timed tests

Testing Policies and Prohibitions

- Must be administered uniformly across the state
- Read and use Test Administration Manual
- Read the Professional Testing Practices for Educators
- Supervise students during testing
- Do not help students with test items
- Do not read any part of the science test to students unless it is in their IEP. If it's in the IEP—test separately.

Grade 4, New Sample Items



Four groups of students were trying to find out how to make a car roll the farthest distance after going down a ramp. The table below contains the results of each group's experiment.

Distance Car Traveled (in meters)

	Trial 1	Trial 2	Trial 3
Plain Wheels	3m	4m	3m
Oiled Wheels	6m	7m	7m
Wheels Wrapped In Sandpaper	2m	2m	1m
Ramp Raised 30 cm	5m	7m	6m

Based upon this information, which would be the best for a new group to do to make a car roll the farthest?

A Raise the ramp and wrap sandpaper around the wheels.
B Oil the wheels and wrap sandpaper around the wheels.
C Lower the ramp and oil the wheels.
D Raise the ramp and oil the wheels.

56

Jess and Chandra asked students to taste four different juice drinks to find the one they liked the best. Their results are in the table below.

Juice Drinks Fourth-Grade Students Liked

Juice Drink	Number of students
W	2
X	6
Y	1
Z	2

Which statement best describes how the students can improve on their experimental methods?

A They should have tested more students.
B They should have tested fewer students.
C They should have tested fewer juice drinks.
D They should have tested more boys than girls.

Carlos and Rowanda were writing a report on rabbits. They learned that rabbits blend in with their environment, are fast runners, and reproduce quickly. Which best describes the students' discoveries?

A Rabbits adapt to their surroundings for survival.

B Rabbits are more intelligent than their predators.

C Rabbits do things to make it easier for people to hunt them.

D Rabbits are less interesting than their predators.

58

Sara drew groups of stars she saw during different times of the year. Her drawings are shown below.

Summer

Winter

Which best explains why Sara saw different groups of stars in the two seasons?

A Earth rotates on its axis.
B Earth revolves around the sun.
C The constellations spin around Earth.
D The constellations orbit around the sun.

59

Joyce and Bill want to find out if tomato plants grow better in sunlight or in the shade. Which should they change in their experiment?

A The type of soil
B The type of plant
C The amount of water
D The location of the plant

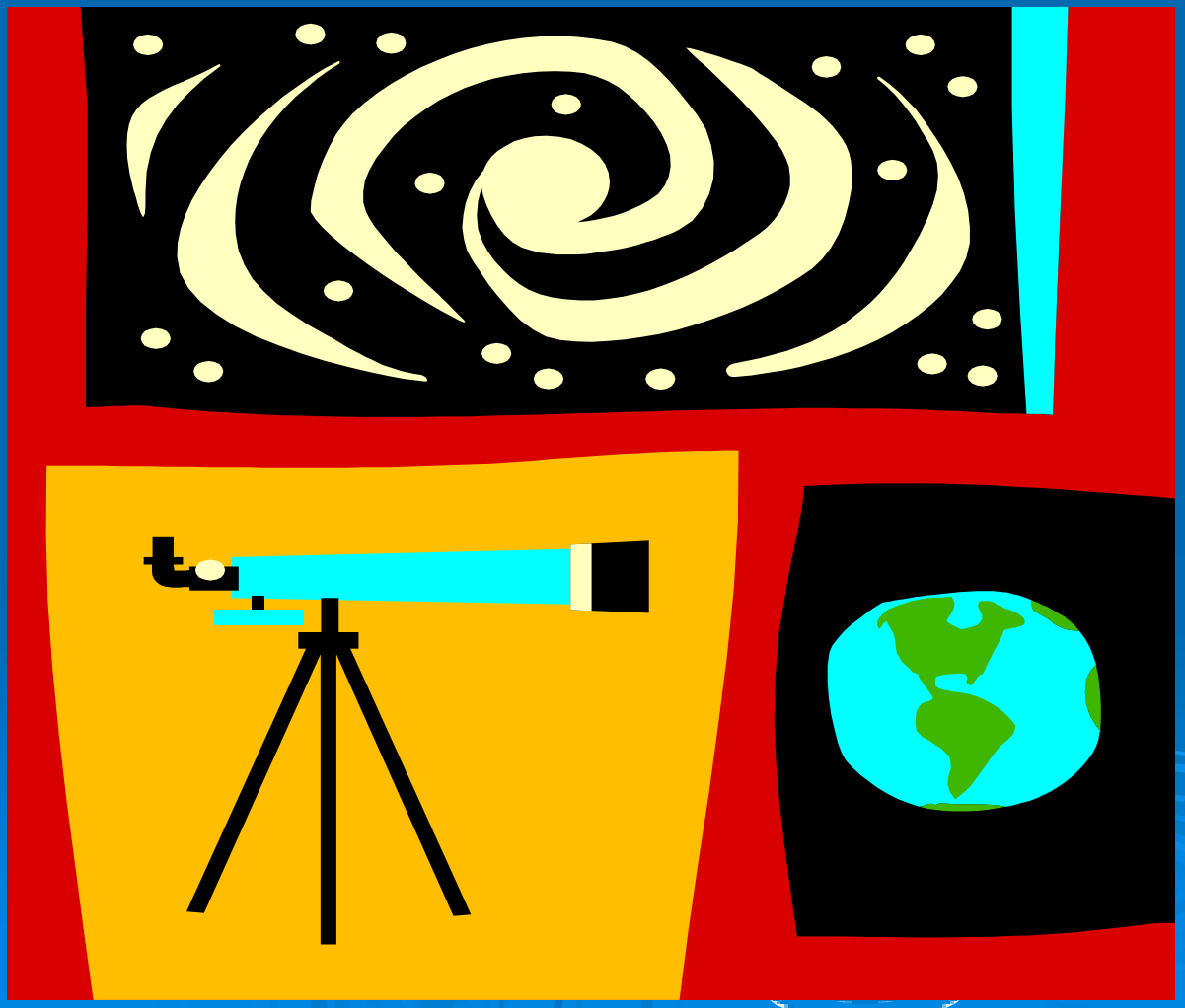
50

The clouds shown in the picture below look like gray sheets that spread across the sky. They form at 1500 meters and may bring heavy mist, snow, or drizzle.

What type of clouds are these?

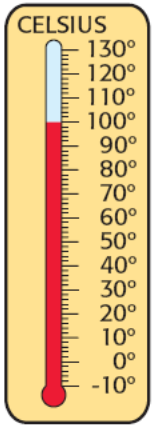
A Cirrus
B Cumulus
C Cumulonimbus
D Stratus

Grade 7, New Sample Items

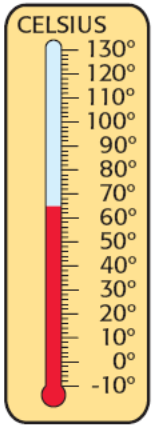


52

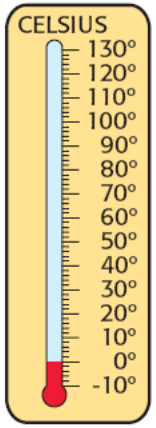
Ryan and Kim-Lee boiled some water in a beaker. Then they turned off the heat source and added five ice cubes to the water. Which of these thermometers shows what most likely happened to the temperature of the water after ten minutes?



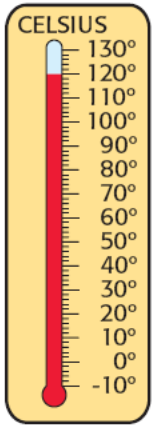
A



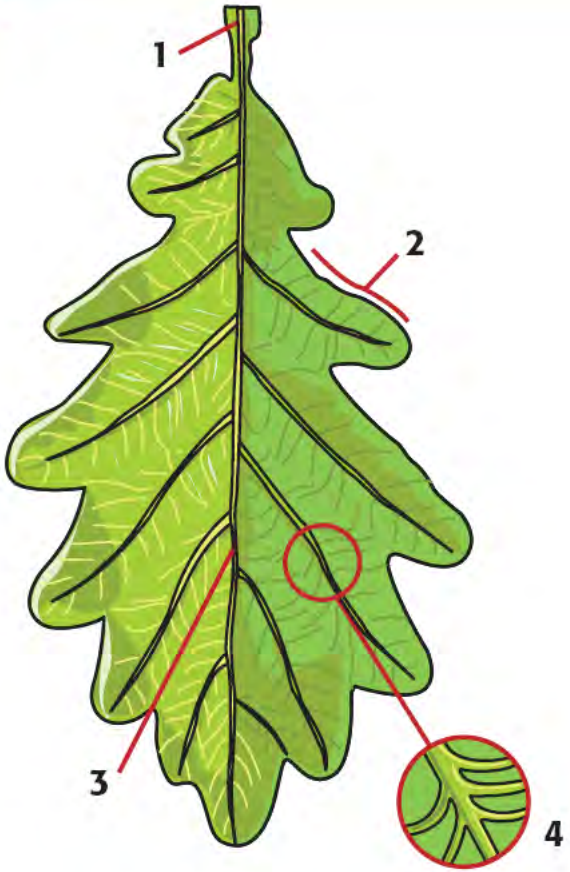
B



C



D

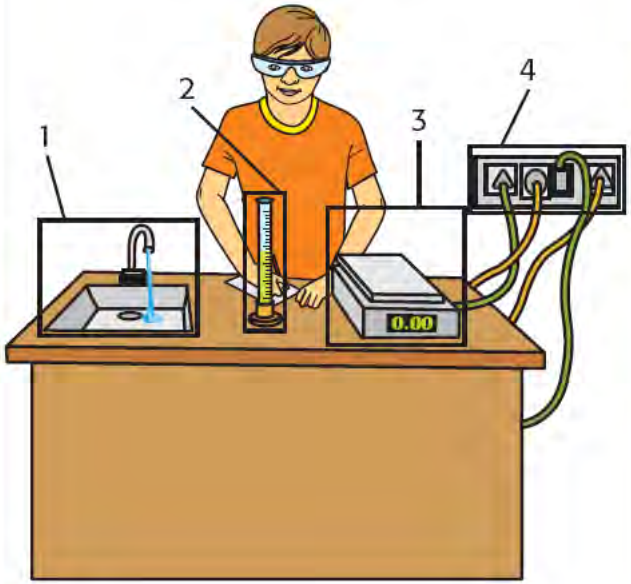


In the diagram, which feature is most useful in classifying this leaf as a dicot?

A 1
B 2
C 3
D 4

6

Which label represents the greatest potential hazard in the lab setup shown?



A 1
B 2
C 3
D 4

57

Will and Adelle are making a slide show presentation. The topic of the presentation is, "The Effects of Movement in the Lithosphere." Which of these slides would most likely be included in their presentation?

A

Volcano

B

Hurricane

C

Tornado

D

Sunspots

3461802_1

3

Dave read that on January 1, Earth is slightly closer to the sun than on July 1. Why, then, is it colder in Illinois in January than in July?

A The Northern Hemisphere is tilted away from the sun in January.
B The greenhouse effect is stronger in the Northern Hemisphere in July.
C The snow on the ground lowers the air temperature in January.
D The moon pulls the heat away from Earth in January.

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54

Jenna flips a coin ten times. It lands on heads seven times and on tails three times. She concludes that a coin lands on heads more often than on tails. Why is her conclusion possibly invalid, even though it agrees with her results?

A Her results would probably differ if she collected more data.
B Newton's third law of motion contradicts her conclusion.
C She should have flipped the coin only twice.
D She did not state a hypothesis.

2011 Sample Books and Interactive ISAT items

- The 2011 Interactive ISAT items will be posted online Fall, 2010 at www.isbe.net/assessment/htmls/sample_books.htm
- The 2011 Sample Books will be posted in Fall, 2010. No hard copies will be mailed to schools this year.

Improving Science Scores

- Teach science—use inquiry, use the ILS and fit the Framework objectives into the curriculum
- Spread the Framework objectives across grades—not just for 4 and 7
- Use Item Analysis Summary and School Performance Profile to find strengths and weaknesses

Questions?
Contact

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