2010 MATHEMATICS ISAT

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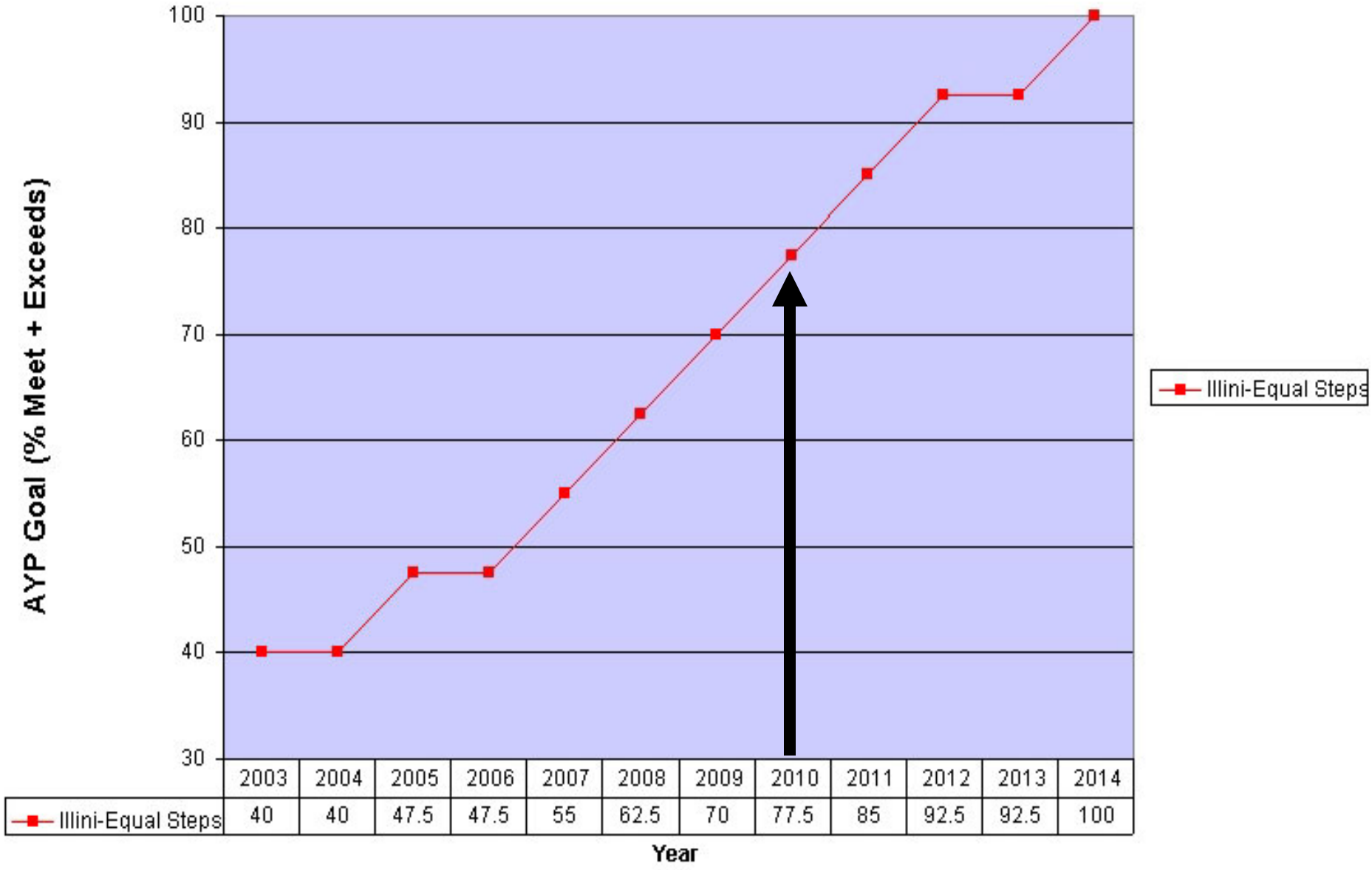
NCLB and State Assessment

- All states must assess Mathematics and Reading in grades 3 through 8
- Only Mathematics and Reading are used for Adequate Yearly Progress (AYP) calculations
- Annual Targets for Performance and Participation

Equal Steps 7.5% Model



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Illini-Equal Steps	40	40	47.5	47.5	55	62.5	70	77.5	85	92.5	92.5	100

ISAT

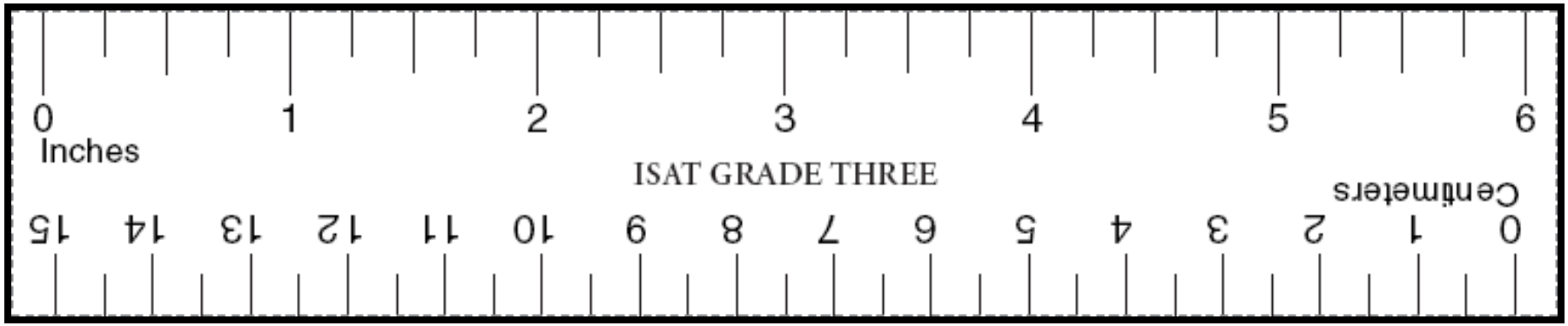
- All items align to the Illinois Assessment Frameworks
- Norm-referenced and criterion-referenced items
- Stanford 10 format with **color**
- 10 additional minutes for all students still working at the end of the 45 minutes testing session

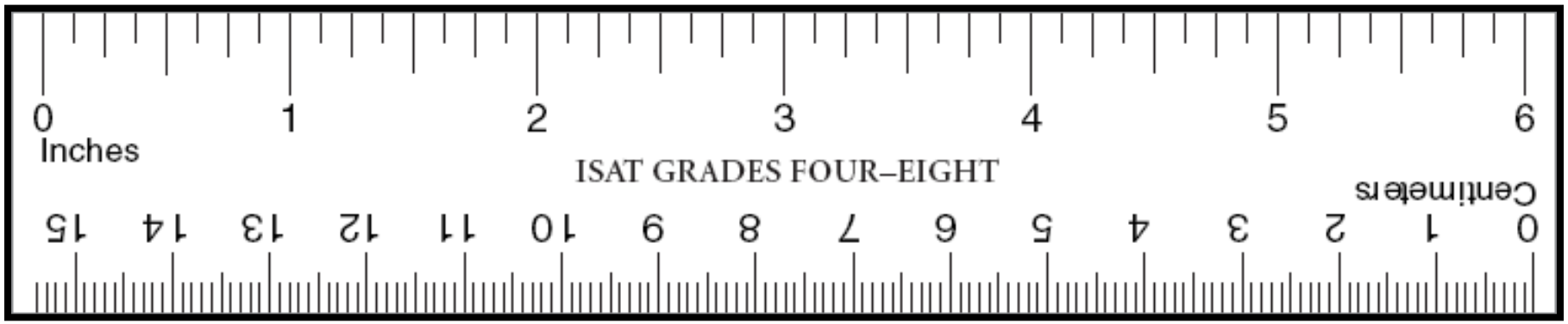
2010 Mathematics ISAT

- Item formats: Multiple Choice (MC), Short Response (SR), Extended Response (ER)
- Field-test items within the test
- Four answer choices for MC at all grades
- Three 45-minute* sessions
- Paper rulers for all grades (provided with test materials)
- Reference sheet for grades 7-8 (provided with test materials)
- Calculator use is *allowed* in grades 4-8

* Plus up to 10 additional minutes for all students

Rulers (Grades 3-8)





Calculator Prohibitions

- The following calculators and features are **prohibited**:
  - pocket organizers, handheld or laptop computers, electronic writing pads
  - calculators built into cellular/mobile phones or other wireless communication devices
  - calculators with a QWERTY keyboard (like a typewriter)
  - calculators that make noise, such as a calculator with a paper tape or a talking calculator, or calculators that have power cords/USB cables
  - calculators with CAS (computer algebra systems) technology
  - any electronic device that has scanning or camera functions

✓ Please refer to the Test Administration Manual or District and School Coordination Manual for exceptions to these prohibitions for students with IEP's or Section 504 Plans.

Revised for 2010

Reference Sheet

(Grades 7-8)

ISAT MATHEMATICS REFERENCE SHEET
Grades 7 and 8

FORMULAS FOR PLANE FIGURES

Parallelogram: $A = bh$

Trapezoid: $A = \frac{1}{2}(b_1 + b_2)h$

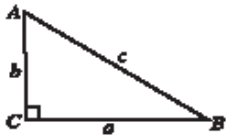
Triangle: $A = \frac{1}{2}bh$

Circle: $C = 2\pi r$ or $C = \pi d$

$A = \pi r^2$

Right Triangle:

The Pythagorean Theorem
$c^2 = a^2 + b^2$



FORMULAS FOR SOLID FIGURES

Prism: $V = Bh$ (B is the area of the base.)

Right Cylinder: $V = \pi r^2 h$

Regular Pyramid: $V = \frac{1}{3}Bh$ (B is the area of the base.)

PEARSON

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ISAT Mathematics Sessions Grades 3-8

Test Window: March 1-12, 2010*

Session 1	40* Multiple-Choice Items {The first 30 items are an abbreviated form of the Stanford 10. These 30 items are used to calculate the National Percentile Rankings.}
Session 2	30 Multiple-Choice Items (5 are field-test items) 3 Short-Response Items (1 is a field-test item)
Session 3	2 Extended-Response Items (1 is a field-test item)

*Check the following link for more details about how to modify the test window dates:
http://www.isbe.net/assessment/pdfs/2009/modified_test_window.pdf

ISAT Item Development

- With the exception of Stanford 10 test items, Illinois educators write and review all items
- Field-test items are written by Illinois educators, reviewed by Illinois educators, and field-tested on the ISAT test
- Item data analyzed by ISBE and educators
- Some field-test items were selected for the 2010 ISAT

ISBE Needs Educators!

Building state assessments requires the assistance of expert educators to do the following:

- Write items
- Review items
- Assist in applying rubrics to items for the scoring of short- and extended-response items
- Review field-test data

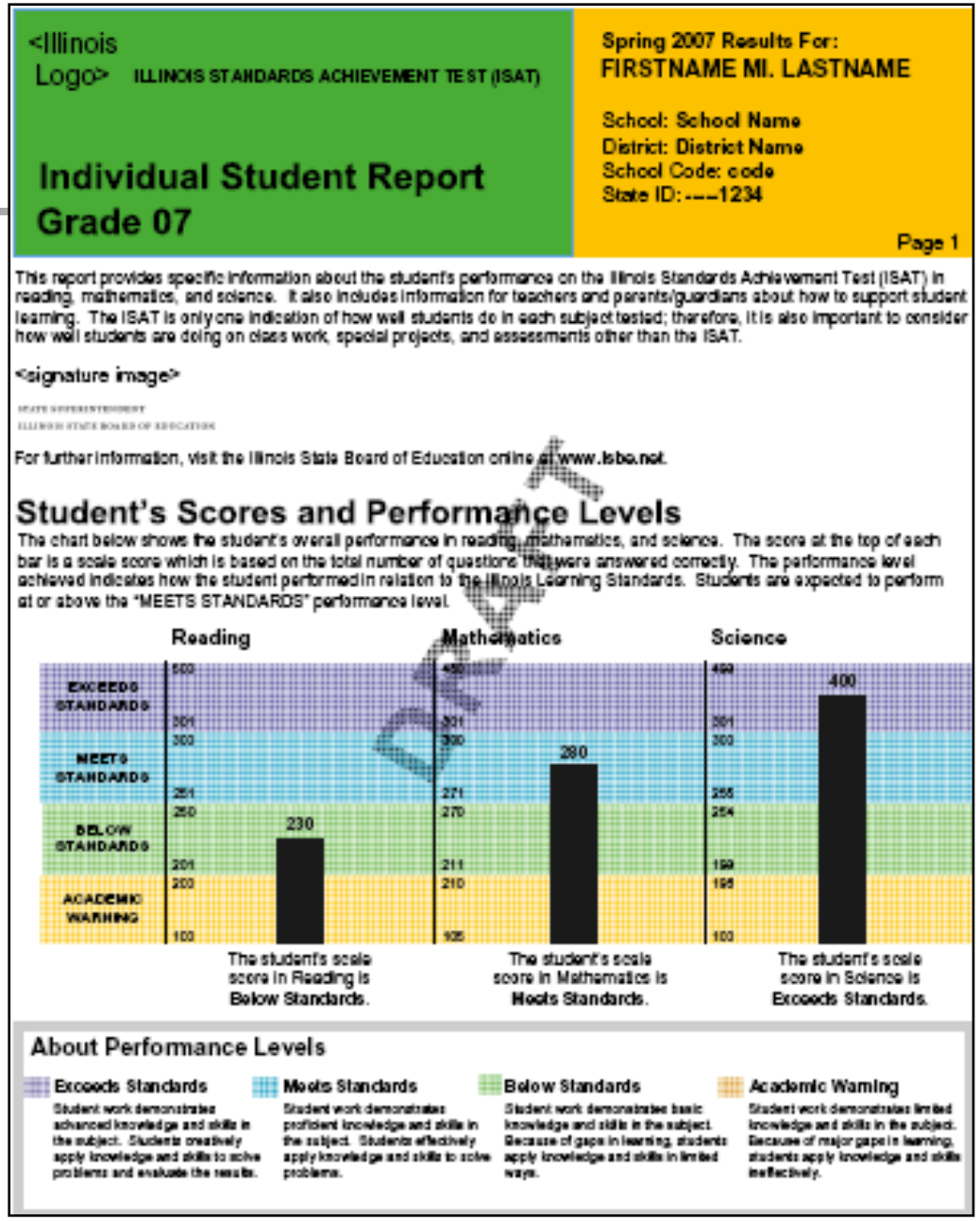
Test Preparation

- Be familiar with the Illinois Learning Standards and the Assessment Frameworks.
- Integrate test-taking skills into regular classroom instruction.
- Be familiar with and practice different test item formats with students.
- Be familiar with the short and extended response rubrics and sample problems with annotated scoring (found in the sample books).
- Create a positive atmosphere for testing.

ISAT Reporting

Illinois Student Report Summary

(Page 1)



<Illinois Logo> ILLINOIS STANDARDS ACHIEVEMENT TEST (ISAT)

Spring 2007 Results For:
FIRSTNAME MI. LASTNAME

School: School Name
District: District Name
School Code: code
State ID: ---1234

Individual Student Report
Grade 07

Page 1

This report provides specific information about the student's performance on the Illinois Standards Achievement Test (ISAT) in reading, mathematics, and science. It also includes information for teachers and parents/guardians about how to support student learning. The ISAT is only one indication of how well students do in each subject tested; therefore, it is also important to consider how well students are doing on class work, special projects, and assessments other than the ISAT.

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For further information, visit the Illinois State Board of Education online at www.isbe.net.

Student's Scores and Performance Levels

The chart below shows the student's overall performance in reading, mathematics, and science. The score at the top of each bar is a scale score which is based on the total number of questions that were answered correctly. The performance level achieved indicates how the student performed in relation to the Illinois Learning Standards. Students are expected to perform at or above the "MEETS STANDARDS" performance level.

Reading | Mathematics | Science

EXCEEDS STANDARDS
MEETS STANDARDS
BELOW STANDARDS
ACADEMIC WARNING

230 | 280 | 400

The student's scale score in Reading is Below Standards.

The student's scale score in Mathematics is Meets Standards.

The student's scale score in Science is Exceeds Standards.

About Performance Levels

Exceeds Standards
Student work demonstrates advanced knowledge and skills in the subject. Students creatively apply knowledge and skills to solve problems and evaluate the results.

Meets Standards
Student work demonstrates proficient knowledge and skills in the subject. Students effectively apply knowledge and skills to solve problems.

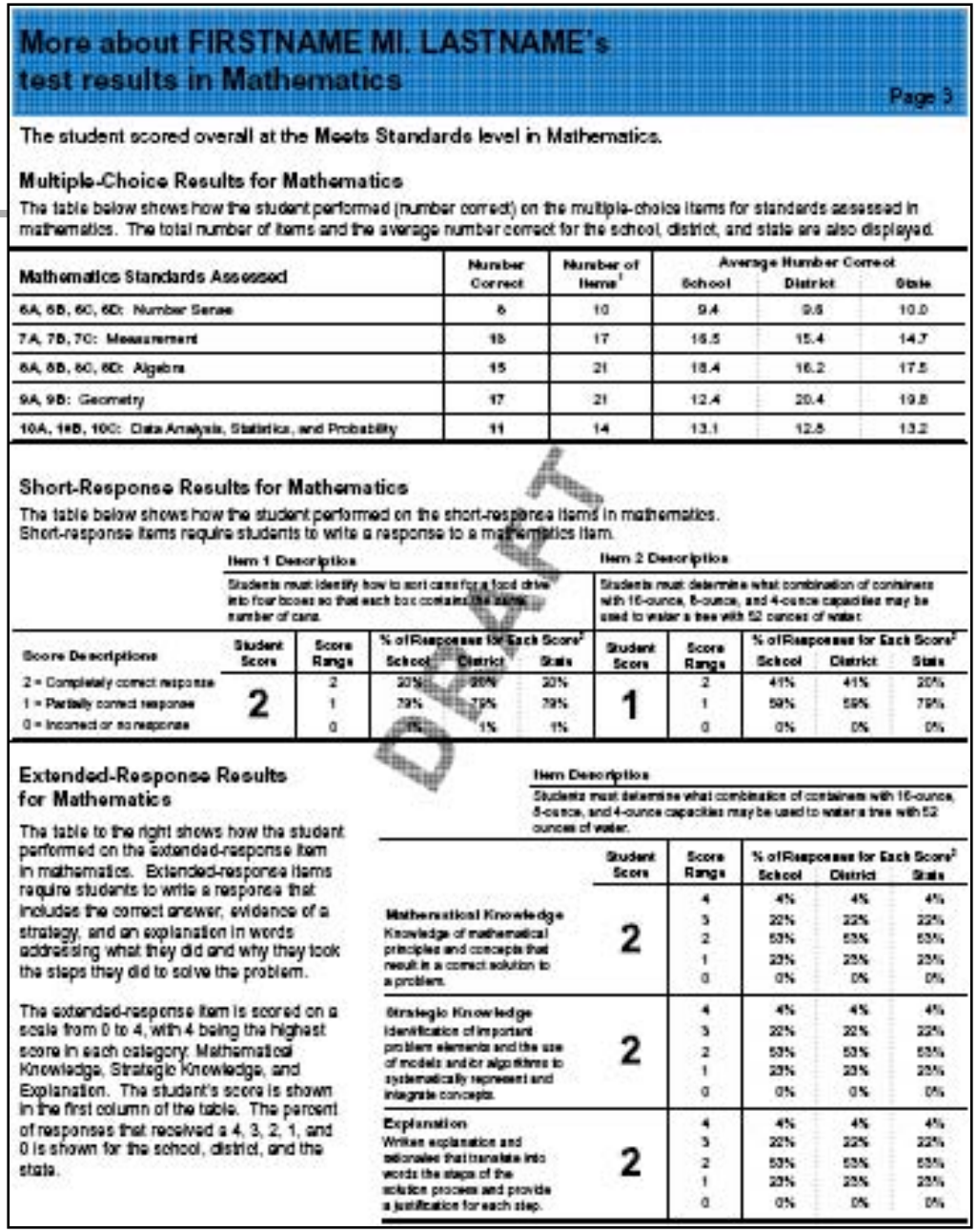
Below Standards
Student work demonstrates basic knowledge and skills in the subject. Because of gaps in learning, students apply knowledge and skills in limited ways.

Academic Warning
Student work demonstrates limited knowledge and skills in the subject. Because of major gaps in learning, students apply knowledge and skills ineffectively.

ISAT Reporting

Illinois Student Report Mathematics Results

(Page 3)



More about FIRSTNAME MI. LASTNAME's test results in Mathematics

Page 3

The student scored overall at the **Meets Standards** level in Mathematics.

Multiple-Choice Results for Mathematics

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

Mathematics Standards Assessed	Number Correct	Number of Items[1]	Average Number Correct		
			School	District	State
6A, 6B, 6C, 6D: Number Sense	8	10	9.4	9.6	10.0
7A, 7B, 7C: Measurement	18	17	16.5	15.4	14.7
8A, 8B, 8C, 8D: Algebra	15	21	18.4	16.2	17.5
9A, 9B: Geometry	17	21	12.4	20.4	19.8
10A, 10B, 10C: Data Analysis, Statistics, and Probability	11	14	13.1	12.8	13.2

Short-Response Results for Mathematics

The table below shows how the student performed on the short-response items in mathematics. Short-response items require students to write a response to a mathematics item.

Score Descriptions	Item 1 Description: Students must identify how to sort cans for a food drive into four boxes so that each box contains the same number of cans.					Item 2 Description: Students must determine what combination of containers with 16-ounce, 8-ounce, and 4-ounce capacities may be used to water a tree with 52 ounces of water.				
	Student Score	Score Range	% of Responses for Each Score[2] School	District	State	Student Score	Score Range	% of Responses for Each Score[2] School	District	State
2 = Completely correct response	2	2	20%	20%	20%	1	2	41%	41%	20%
1 = Partially correct response		1	79%	79%	79%		1	59%	59%	79%
0 = Incorrect or no response		0	1%	1%	1%		0	0%	0%	0%

Extended-Response Results for Mathematics

The table to the right shows how the student performed on the extended-response item in mathematics. Extended-response items require students to write a response that includes the correct answer, evidence of a strategy, and an explanation in words addressing what they did and why they took the steps they did to solve the problem.

The extended-response item is scored on a scale from 0 to 4, with 4 being the highest score in each category: Mathematical Knowledge, Strategic Knowledge, and Explanation. The student's score is shown in the first column of the table. The percent of responses that received a 4, 3, 2, 1, and 0 is shown for the school, district, and the state.

Item Description: Students must determine what combination of containers with 16-ounce, 8-ounce, and 4-ounce capacities may be used to water a tree with 52 ounces of water.

	Student Score	Score Range	% of Responses for Each Score[2] School	District	State
Mathematical Knowledge Knowledge of mathematical principles and concepts that result in a correct solution to a problem.	2	4	4%	4%	4%
		3	22%	22%	22%
		2	53%	53%	53%
		1	23%	23%	23%
		0	0%	0%	0%
Strategic Knowledge Identification of important problem elements and the use of models and/or algorithms to systematically represent and integrate concepts.	2	4	4%	4%	4%
		3	22%	22%	22%
		2	53%	53%	53%
		1	23%	23%	23%
		0	0%	0%	0%
Explanation Written explanation and rationales that translate into words the steps of the solution process and provide a justification for each step.	2	4	4%	4%	4%
		3	22%	22%	22%
		2	53%	53%	53%
		1	23%	23%	23%
		0	0%	0%	0%

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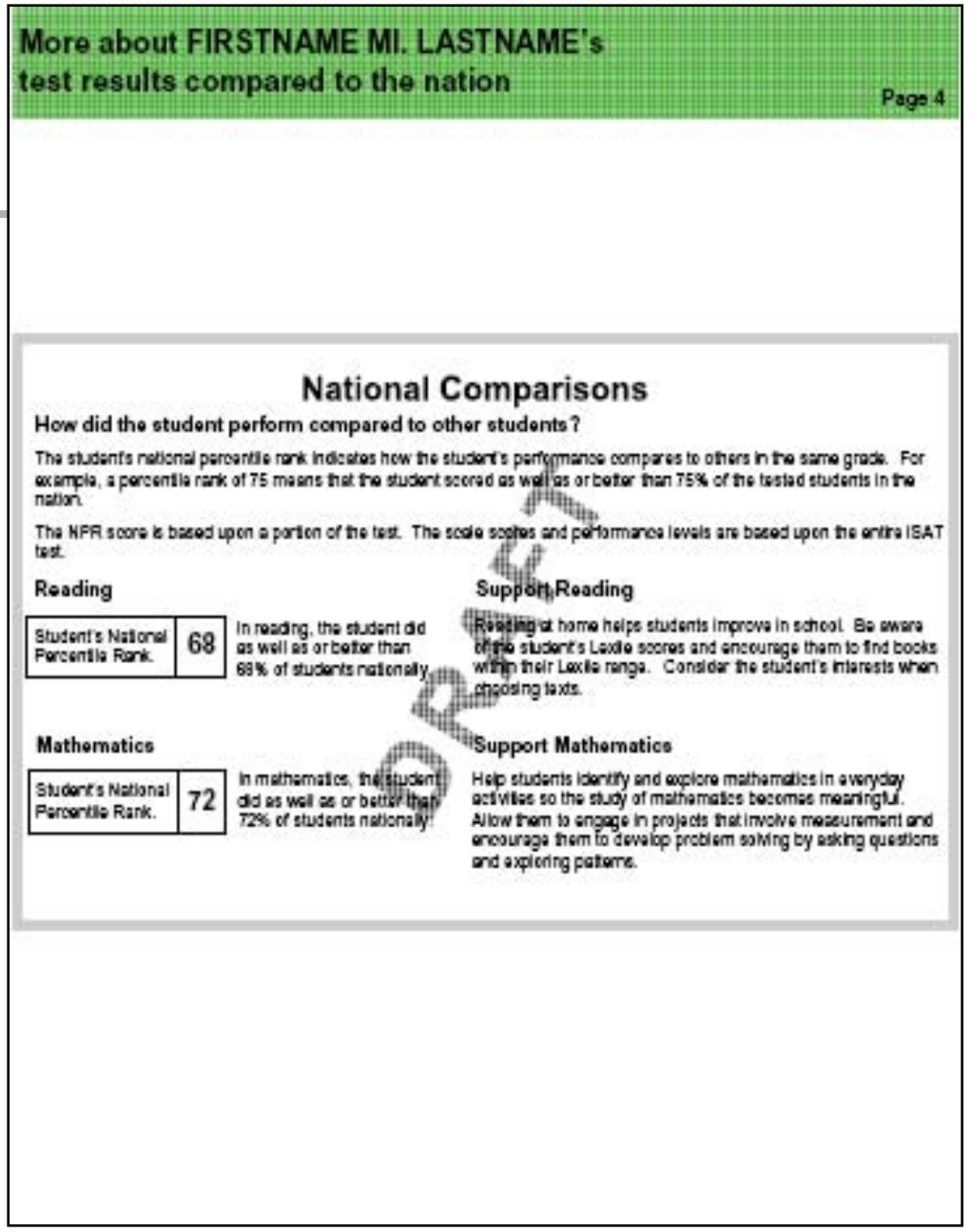
ISAT Reporting

Illinois Student Report
National Comparisons

(Page 4)

***Remember: NPR data are derived only from the thirty Stanford 10 items, which have been nationally normed.



More about FIRSTNAME MI. LASTNAME's test results compared to the nation

Page 4

National Comparisons

How did the student perform compared to other students?

The student's national percentile rank indicates how the student's performance compares to others in the same grade. For example, a percentile rank of 75 means that the student scored as well as or better than 75% of the tested students in the nation.

The NPR score is based upon a portion of the test. The scale scores and performance levels are based upon the entire ISAT test.

Reading

Student's National Percentile Rank.	68

In reading, the student did as well as or better than 68% of students nationally.

Support Reading

Reading at home helps students improve in school. Be aware of the student's Lexile scores and encourage them to find books within their Lexile range. Consider the student's interests when choosing texts.

Mathematics

Student's National Percentile Rank.	72

In mathematics, the student did as well as or better than 72% of students nationally.

Support Mathematics

Help students identify and explore mathematics in everyday activities so the study of mathematics becomes meaningful. Allow them to engage in projects that involve measurement and encourage them to develop problem solving by asking questions and exploring patterns.

NPR vs. Overall Scale Score
Example with *2007* ISAT Data

ISAT Scale Score Ranges - Grade 3			
120-162	163-183	184-223	224-341
Academic Warning	Below	Meets	Exceeds

Student A: NPR=94, Scale Score=233 Exceeds

Student B: NPR=55, Scale Score=233 Exceeds

How can this happen?

(Remember, NPR scores consider only the SAT-10 (first 30) items.)

NPR vs. Overall Scale Score Example with *2007* ISAT Data

Grade 3 Student Details:

Student A: NPR=94, Scale Score=233 Exceeds

Goal 6=22/23, Goal 7=8/12, Goal 8=7/7, Goal 9=10/14, Goal 10=6/9
Total Multiple-Choice=53/65

SR #1=2
SR #2=2
ER=4, 4, 3

Student B: NPR=55, Scale Score=233 Exceeds

Goal 6=19/23, Goal 7=7/12, Goal 8=7/7, Goal 9=11/14, Goal 10=9/9
Total Multiple-Choice=53/65

SR #1=2
SR #2=2
ER=3, 4, 4

NPR vs. Overall Scale Score Example with *2007* ISAT Data

Conclusion for Grade 3 Students...

- Student A and Student B answered the same number of multiple-choice items correctly (53/65), and earned exactly the same number of rubric points overall (4 for SR and 11 for ER), which causes the scale scores to be identical at 233, Exceeds.

- Student B missed more multiple-choice items from the SAT-10 (first 30) items than Student A, causing the NPR for Student B to be lower than the NPR for Student A.

NPR vs. Overall Scale Score
Example with *2007* ISAT Data

ISAT Scale Score Ranges - Grade 5			
120-179	180-213	214-270	271-369
Academic Warning	Below	Meets	Exceeds

Student A: NPR=99, Scale Score=285 Exceeds

Student B: NPR=99, Scale Score=277 Exceeds

How can this happen?

(Remember, NPR scores consider only the SAT-10 (first 30) items.)

NPR vs. Overall Scale Score Example with *2007* ISAT Data

Grade 5 Student Details:

Student A: NPR=99, Scale Score=285 Exceeds

Goal 6=19/19, Goal 7=11/11, Goal 8=10/13, Goal 9=12/13, Goal 10=8/9
Total Multiple-Choice=60/65

SR #1=2
SR #2=2
ER=4, 4, 2

Student B: NPR=99, Scale Score=277 Exceeds

Goal 6=18/19, Goal 7=11/11, Goal 8=10/13, Goal 9=11/13, Goal 10=8/9
Total Multiple-Choice=58/65

SR #1=2
SR #2=2
ER=4, 3, 3

NPR vs. Overall Scale Score Example with *2007* ISAT Data

Conclusion for Grade 5 Students...

- Student A and Student B answered all the SAT-10 (first 30) items correctly, which causes the NPR scores to be identical at 99.

- Both students earned exactly the same number of rubric points overall (4 for SR and 10 for ER).

- Student A answered 2 more (non-SAT 10) multiple-choice items correctly than Student B, which causes the scale score for Student A to be higher than the scale score for Student B.

Mathematics Content Category Table
Illinois Mathematics Assessment Framework (p.13)

Grade	3	4	5	6	7	8
	Calculators Not Allowed	Calculators Allowed	Calculators Allowed	Calculators Allowed	Calculators Allowed	Calculators Allowed
State Goal 6 – Number Sense	**35%**	**35%**	**30%**	**25%**	**25%**	**20%**
Standard 6A Representations and Ordering	15%	15%	10%	5%	5%	5%
Standards 6B, 6C Computation, Operations, Estimation, and Properties	20%	20%	15%	15%	15%	10%
Standard 6D Ratios, Proportions, and Percents	0%	0%	5%	5%	5%	5%
State Goal 7 – Measurement	**20%**	**20%**	**15%**	**15%**	**15%**	**15%**
Standards 7A, 7B, 7C Units, Tools, Estimation, and Applications	20%	20%	15%	15%	15%	15%
State Goal 8 – Algebra	**10%**	**10%**	**20%**	**25%**	**25%**	**30%**
Standard 8A Representations, Patterns, and Expressions	5%	5%	8%	10%	10%	10%
Standard 8B Connections Using Tables, Graphs, and Symbols	0%	2%	5%	7%	7%	10%
Standards 8C, 8D Writing, Interpreting, and Solving Equations	5%	3%	7%	8%	8%	10%
State Goal 9 – Geometry	**20%**	**20%**	**20%**	**20%**	**20%**	**20%**
Standard 9A Properties of Single Figures and Coordinate Geometry	15%	15%	10%	10%	10%	10%
Standard 9B Relationships Between and Among Multiple Figures	5%	5%	10%	10%	10%	10%
Standard 9C Justifications of Conjectures and Conclusions	*This standard is not assessed in isolation. Rather, its essence is assessed indirectly through problems that require this type of thinking.*					
Standard 9D Trigonometry	*This standard is not assessed on the state assessment until grade 11.*					
State Goal 10 – Data Analysis, Statistics, and Probability	**15%**	**15%**	**15%**	**15%**	**15%**	**15%**
Standards 10A, 10B Data Analysis and Statistics	10%	10%	10%	10%	8%	8%
Standard 10C Probability	5%	5%	5%	5%	7%	7%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Assessment Objectives
Excerpt from Goals 6 and 7

Mathematics – State Goal 6: Number Sense

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Standard 6A – Representations and Ordering					
Calculators Not Allowed	**Calculators Allowed**	**Calculators Allowed**	**Calculators Allowed**	**Calculators Allowed**	**Calculators Allowed**
6.3.01 Read, write, recognize, and model equivalent representations of whole numbers and their place values up to 100,000.	**6.4.01** Read, write, recognize, and model equivalent representations of whole numbers and their place values up to 1,000,000.	**6.5.01** Read, write, recognize, and model equivalent representations of whole numbers and their place values up to 100,000,000.	**6.6.01** Read, write, recognize, and model equivalent representations of whole numbers and their place values.	**6.7.01** Read, write, and recognize equivalent representations of positive powers of 10.	**6.8.01** Read, write, and recognize equivalent representations of integer powers of 10.

Mathematics – State Goal 7: Measurement

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Standards 7A, 7B, 7C – Units, Tools, Estimation, and Applications					
Calculators Not Allowed	**Calculators Allowed**	**Calculators Allowed**	**Calculators Allowed**	**Calculators Allowed**	**Calculators Allowed**
Elapsed Time					
7.3.01 Solve problems involving simple elapsed time in compound units (e.g., hours, minutes, days).	**7.4.01** Solve problems involving elapsed time in compound units (e.g., 1 hour and 40 minutes) that occur in the same half day (a.m. only or p.m. only).	**7.5.01** Solve problems involving elapsed time in compound units.			
Measurement Tools					
7.3.02 Select and use appropriate standard units and tools to measure length (to the nearest inch or cm), time (to the nearest minute), and temperature (to the nearest degree).	**7.4.02** Select and use appropriate standard units and tools to measure length (to the nearest ½ inch or ½ cm), time, and temperature.	**7.5.02** Select and use appropriate standard units and tools to measure length (to the nearest ¼ inch or mm), mass/weight, capacity, and angles.	**7.6.01** Select and use appropriate standard units and tools to measure length, mass/weight, capacity, and angles.	**7.7.01** Select and use appropriate standard units and tools to measure length, mass/weight, capacity, and angles. Sketch, with given specifications, line segments, angles, triangles, and quadrilaterals.	**7.8.01** Select and use appropriate standard units and tools to solve measurement problems, including measurements of polygons and circles.

Illinois Standards Achievement Test

Item Analysis Summary - NEWTOWN ELEMENTARY

DISTRICT: NEWTOWN
RCDTS CODE: 12345678901234S

GRADE: 03
TEST DATE: 03/07

MATHEMATICS			RESPONSE ANALYSIS (% CORRECT)		
Results from Multiple-Choice Items	# of Items	Assessment Objective	SCHOOL	DISTRICT	STATE
State Goal 6: Number Sense	23				
Standard 6A: Representations and Ordering	10				
	2	6.3.01			
	1	6.3.02			
	1	6.3.03			
	2	6.3.05			
	1	6.3.06			
	1	6.3.07			
	2	6.3.08			
Standards 6B, 6C: Computation, Operations, Estimation, and Properties	13				
	3	6.3.09			
	4	6.3.10			
	2	6.3.11			
	2	6.3.12			
	1	6.3.13			
	1	6.3.14			
Standard 6D: Ratios, Proportions, and Percents	0		N/A	N/A	N/A
State Goal 7: Measurement	12				
Standards 7A, 7B, 7C: Units, Tools, Estimation, and Applications	12				
	4	7.3.01			
	2	7.3.02			
	1	7.3.04			
	2	7.3.05			
	1	7.3.06			
	2	7.3.07			
State Goal 8: Algebra	7				
Standard 8A: Representations, Patterns, and Expressions	4				
	2	8.3.01			
	2	8.3.02			
Standard 8B: Connections Using Tables, Graphs, and Symbols	0		N/A	N/A	N/A
Standards 8C, 8D: Writing, Interpreting, and Solving Equations	3				
	1	8.3.03			
	2	8.3.05			

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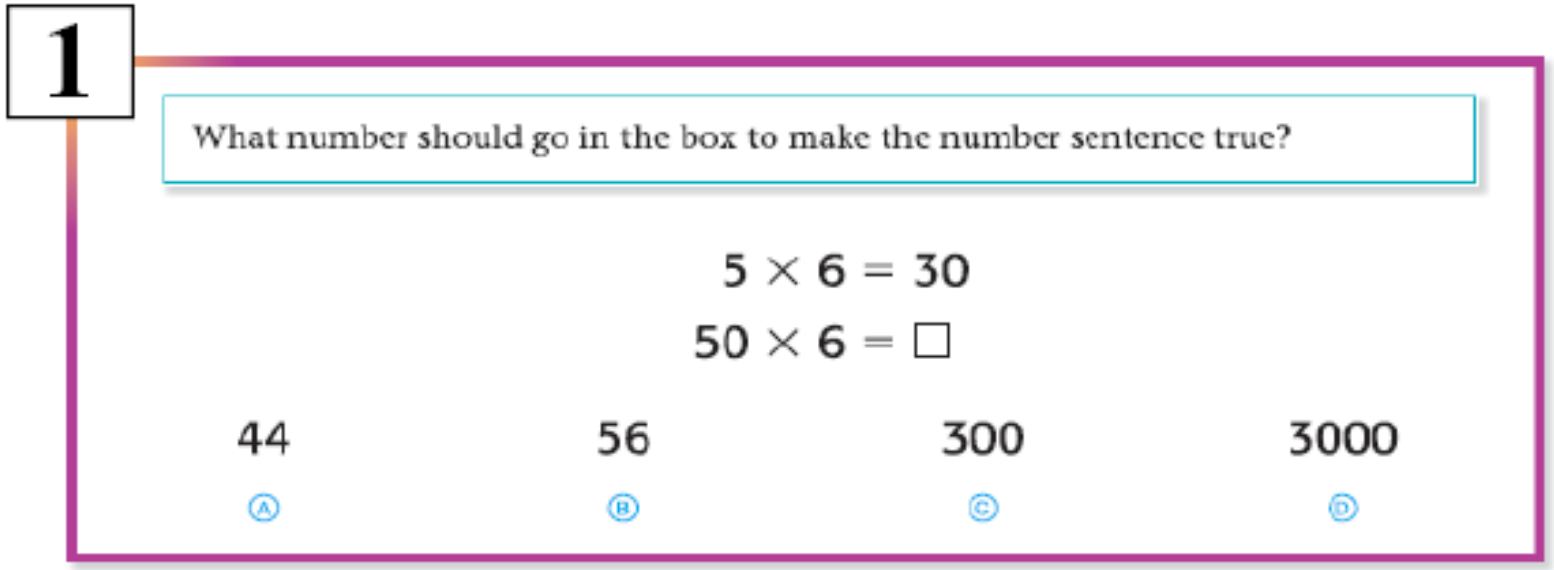
Grade 3 Mathematics Multiple-Choice Sample



Assessment Objective 6.3.11: Model and apply basic multiplication facts (up to 10×10), and apply them to related multiples of 10 (e.g., 3×4=12, 30×4=120).

Grade 4 Mathematics Multiple-Choice Sample

1

Ms. Fields wants to buy 30 cupcakes for her class. There are 4 cupcakes in each package.

What is the *least* number of packages she will have to buy?

6	7	8	9
A	**B**	**C**	**D**

Assessment Objective 6.4.16: Make estimates appropriate to a given situation with whole numbers.

Grade 5 Mathematics Multiple-Choice Sample

1

The scale on Todd's map is 1 inch = 200 miles. The distance from his house to his friend's house on the map is $5\frac{1}{4}$ inches.

What is the distance in miles from Todd's house to his friend's house?

A 1,000 miles
B 1,050 miles
C 1,500 miles
D 24,000 miles

Assessment Objective 7.5.07: Solve problems involving map interpretation (e.g., one inch represents five miles, so two inches represent ten miles).

Grade 6 Mathematics Multiple-Choice Sample

1

Ms. Simmons has a set of 10 tiles numbered from 0 to 9 in a bag. The tiles are the same size and shape.

What is the probability that the first tile Ms. Simmons randomly chooses will have an odd number on it?

A $\frac{4}{9}$

B $\frac{5}{9}$

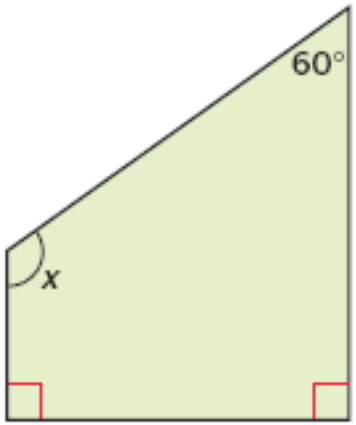
C $\frac{2}{5}$

D $\frac{1}{2}$

Assessment Objective 10.6.05: Solve problems involving the probability of a simple event, including representing the probability as a fraction, decimal, or percent.

Grade 7 Mathematics Multiple-Choice Sample

1



What is the value of x in this polygon?

120°	150°	240°	300°
A	**B**	**C**	**D**

Assessment Objective 9.7.03: Solve problems using properties of triangles and quadrilaterals (e.g., opposite sides of a parallelogram are congruent).

Grade 8 Mathematics
Multiple-Choice Sample

1

Which is equivalent to the expression below?

$$\frac{x}{2} - 1$$

A $\frac{x-1}{2}$

B $\frac{x-2}{2}$

C $x - 1$

D $x - 2$

Assessment Objective 8.8.04: Recognize and generate equivalent forms of algebraic expressions.

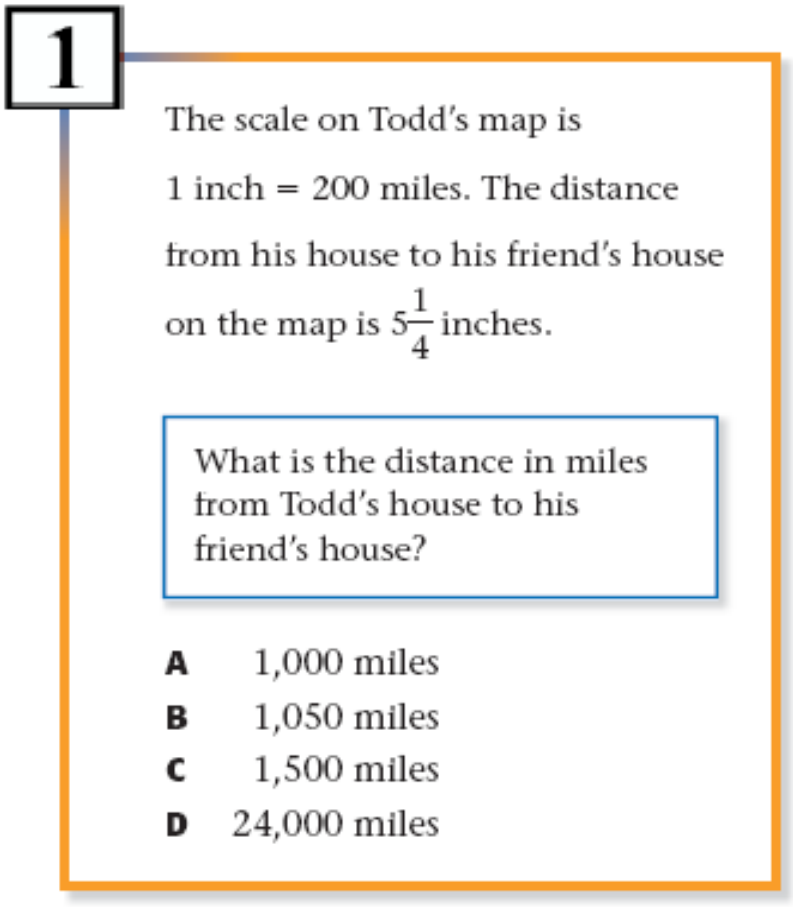
Reader Script

- Only students whose IEP or Section 504 Plan indicates that the assessment may be read to them may be read to during state assessments.

- Students must use a Form SF test booklet because the Reader Scripts are produced using Form SF.

- Scripts must be used so that every student in Illinois hears the item presented consistently.

Reader Script Example 1



Reader Script Text

Question number 1. The scale on Todd's map is one inch equals two hundred miles. The distance from his house to his friend's house on the map is five and one-fourth inches.

What is the distance in miles from Todd's house to his friend's house?

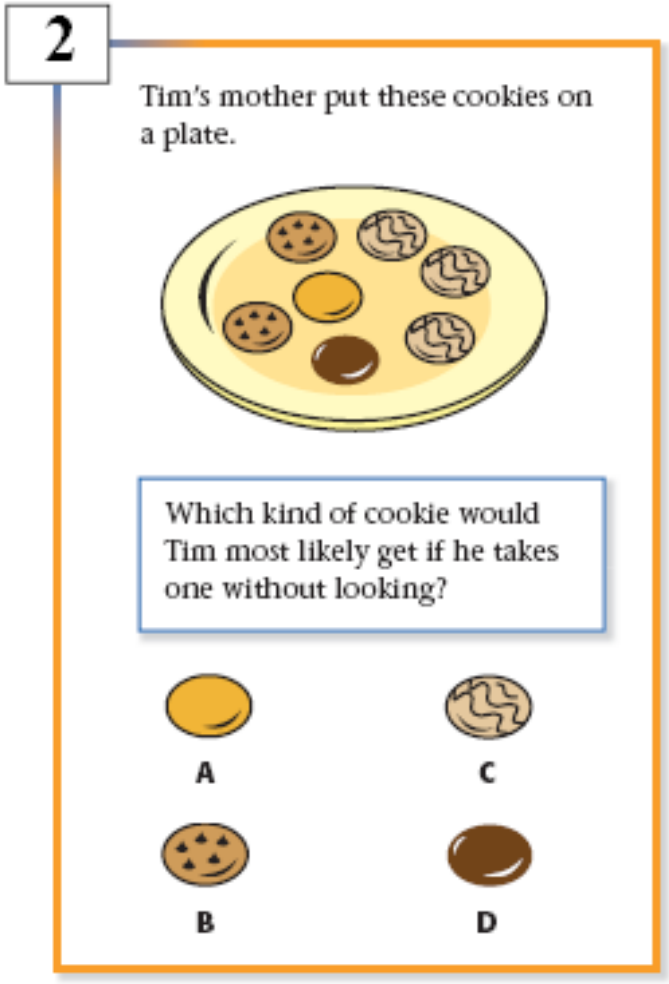
A. One thousand miles

B. One thousand fifty miles

C. One thousand five hundred miles

D. Twenty-four thousand miles

Reader Script Example 2



Reader Script Text

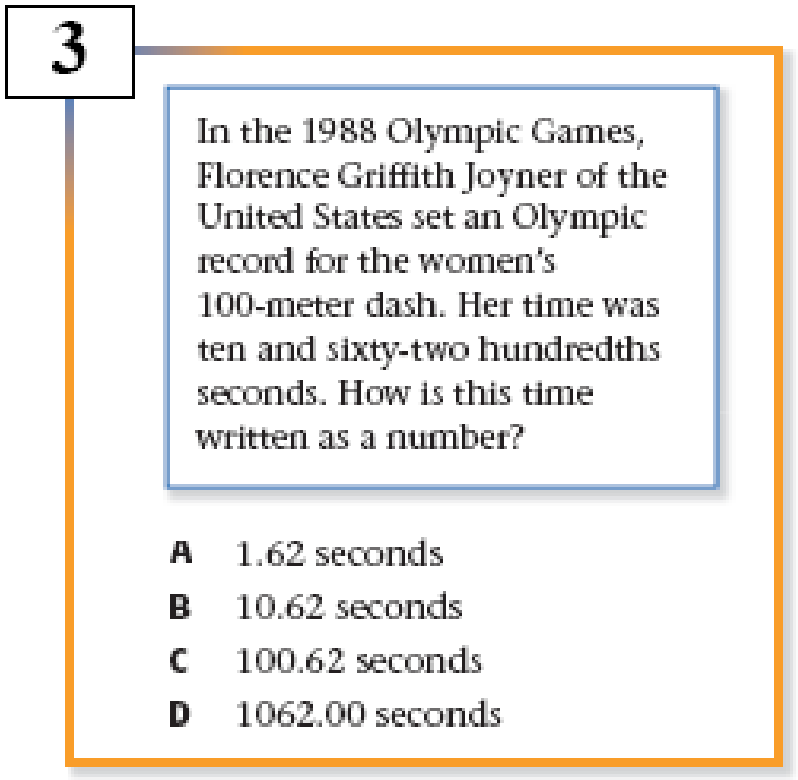
Question number 2. Tim's mother put these cookies on a plate.

The picture shows a plate with cookies.

Which kind of cookie would Tim most likely get if he takes one without looking?

Choose answer A, B, C, or D.

Reader Script Example 3



Reader Script Text

In the nineteen eighty-eight Olympic Games, Florence Griffith Joyner of the United States set an Olympic record for the women's one hundred-meter dash. Her time was ten and sixty-two hundredths seconds. How is this time written as a number?

Choose answer A, B, C, or D.

Note: Reading the choices here would give away the answer.

2010 Mathematics ISAT Changes from 2009

- Revised ISAT Mathematics Reference Sheet for Grades 7 and 8

- Rulers
  - Grade 3 – markings to ¼ inch and ½ centimeter
  - Grades 4-8 – markings to 1/8 inch and millimeter

Short-Response Sample

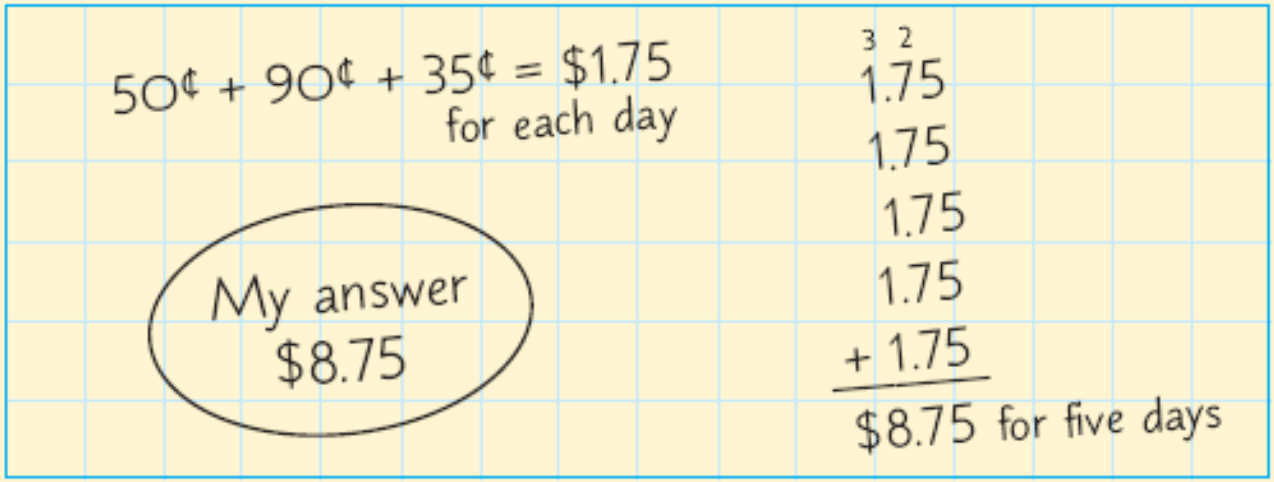
SAMPLE SHORT-RESPONSE QUESTION

Sam can buy his lunch at school. Each day, he wants to buy juice that costs 50¢, a sandwich that costs 90¢, and fruit that costs 35¢.

Exactly how much money does Sam need to buy lunch for 5 days?

Show your work and label your answer.

SAMPLE SHORT-RESPONSE ANSWER



Extended Response Sample

SAMPLE EXTENDED-RESPONSE PROBLEM

Mrs. Martin wants to put tiles on the floor by the front door of her house. She wants to use 3 different colors of tiles in her design.

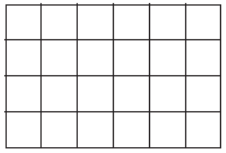
She also wants

$\frac{1}{2}$ of the tiles to be blue,

$\frac{1}{4}$ of the tiles to be gray, and

$\frac{1}{4}$ of the tiles to be red.

Use the grid below to design a floor for Mrs. Martin. Label each tile with the first letter of the color that should be placed there.



Show all your work. Explain in words how you found your answer. Tell why you took the steps you did to solve the problem.

SAMPLE EXTENDED-RESPONSE SOLUTION

B	B	B	B	B	B	> $\frac{1}{2}$ blue
B	B	B	B	B	B	
G	G	G	G	G	G	← $\frac{1}{4}$ gray
R	R	R	R	R	R	← $\frac{1}{4}$ red

First, I know that there are 4 equal rows, so 2 rows is half and 1 row is $\frac{1}{4}$. So I made 2 rows B for blue because she wants half the tiles blue. Then I made 1 row G for gray because she wants $\frac{1}{4}$ of the tiles to be gray. Since she wants gray and red to be the same amount of tiles, I made the last row R for red.

Short and Extended Response

- Short- and Extended-Response items are scored using a rubric. (www.isbe.net/assessment/math.htm)
  - Item-specific rubrics are developed for each item before scoring.
- The 2 short-response items contribute a total of 5% to the scale score.
- The 1 extended-response item contributes a total of 10% to the scale score.

MATHEMATICS SCORING RUBRIC: A GUIDE TO SCORING SHORT-RESPONSE ITEMS

Note: Item-specific rubrics are developed for each item before scoring.

Score Level	
2	• Completely correct response, including correct work shown and/or correct labels/units if called for in the item
1	• Partially correct response
0	• No response, or the response is incorrect

MATHEMATICS SCORING RUBRIC

The following rubric is used for the short-response items for grade levels 3 through 8.

MATHEMATICS SCORING RUBRIC: A GUIDE TO SCORING EXTENDED-RESPONSE ITEMS

Score Level	MATHEMATICAL KNOWLEDGE: Knowledge of mathematical principles and concepts which result in a correct solution to a problem.	STRATEGIC KNOWLEDGE: Identification and use of important elements of the problem that represent and integrate concepts which yield the solution (e.g., models, diagrams, symbols, algorithms).	EXPLANATION: Written explanation of the rationales and steps of the solution process. A justification of each step is provided. Though important, the length of the response, grammar, and syntax are not the critical elements of this dimension.
4	♦ shows complete understanding of the problem's mathematical concepts and principles ♦ uses appropriate mathematical terminology and notations including labeling answer if appropriate ♦ executes algorithms and computations completely and correctly	♦ identifies all important elements of the problem and shows complete understanding of the relationships among elements ♦ shows complete evidence of an appropriate strategy that would correctly solve the problem	♦ gives a complete written explanation of the solution process; clearly explains what was done and why it was done ♦ may include a diagram with a complete explanation of all its elements
3	♦ shows nearly complete understanding of the problem's mathematical concepts and principles ♦ uses mostly correct mathematical terminology and notations ♦ executes algorithms completely; computations are generally correct but may contain minor errors	♦ identifies most important elements of the problem and shows a general understanding of the relationships among them ♦ shows nearly complete evidence of an appropriate strategy for solving the problem	♦ gives a nearly complete written explanation of the solution process; clearly explains what was done and begins to address why it was done ♦ may include a diagram with most of its elements explained
2	♦ shows some understanding of the problem's mathematical concepts and principles ♦ uses some correct mathematical terminology and notations ♦ may contain major algorithmic or computational errors	♦ identifies some important elements of the problem but shows only limited understanding of the relationships among them ♦ shows some evidence of a strategy for solving the problem	♦ gives some written explanation of the solution process; either explains what was done or addresses why it was done ♦ explanation is vague, difficult to interpret, or does not completely match the solution process ♦ may include a diagram with some of its elements explained
1	♦ shows limited to no understanding of the problem's mathematical concepts and principles ♦ may misuse or fail to use mathematical terminology and notations ♦ attempts an answer	♦ fails to identify important elements or places too much emphasis on unrelated elements ♦ reflects an inappropriate strategy for solving the problem; strategy may be difficult to identify	♦ gives minimal written explanation of the solution process; may fail to explain what was done and why it was done ♦ explanation does not match presented solution process ♦ may include minimal discussion of the elements in a diagram; explanation of significant elements is unclear
0	♦ no answer attempted	♦ no apparent strategy	♦ no written explanation of the solution process is provided

The following rubric is used for the extended-response items for grade levels 3 through 8.

MATHEMATICS SCORING RUBRIC

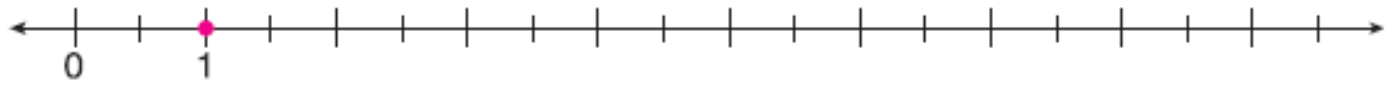
Short- and Extended-Response Items

- Short- and Extended-Response items are only different item formats, they do not define the content. The content is defined in the Illinois Mathematics Assessment Framework.
- Directions for how students are to respond are included in the items themselves (e.g., show your work, label your answer).
- Use released ISAT short- and extended-response sample items from the sample book (grades 3 through 8) to practice this format.

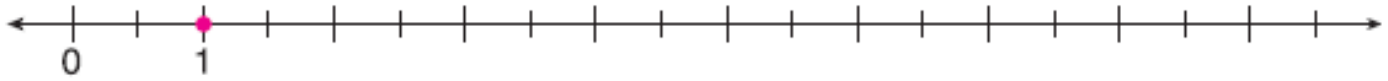
Grade 3 Mathematics
Short-Response Sample

1

There is a point at 1 on the number line below. Make another point at 9 on this number line.



There is a point at 1 on the number line below. Make another point at $4\frac{1}{2}$ on this number line.



Assessment Objective 6.3.07: Identify and locate whole numbers and halves on a number line.

Grade 4 Mathematics
Short-Response Sample

1

Ben and Sean shared a pizza that was cut into 16 equal slices. Ben ate 5 of the pizza slices. There were 2 pizza slices left after both boys finished eating their pizza.

How many pizza slices did Sean eat?

Show your work.

Assessment Objective 6.4.10: Solve problems and number sentences involving addition and subtraction with regrouping and multiplication (up to three–digit by one–digit).

Grade 5 Mathematics
Short-Response Sample

1

The volleyball team is selling gift sets that include 1 type of soap and 1 type of shampoo. The chart below lists the different types of soap and shampoo available.

Soap	Shampoo
• Bar • Liquid	• Rose • Lilac • Melon • Vanilla

How many different combinations of 1 type of soap and 1 type of shampoo are possible for each gift set?

Show your work.

Assessment Objective 10.5.05: Apply the fundamental counting principle in a simple problem (e.g., How many different combinations of one–scoop ice cream cones can be made with 3 flavors and 2 types of cones?).

Grade 6 Mathematics
Short-Response Sample

1

Use the expression below to determine a value when $x = 7$.

$$20 - 2x$$

Show your work.

Assessment Objective 8.6.03: Evaluate algebraic expressions with up to two whole number variable values (e.g., evaluate $3m + n + 3$ when $m = 4$ and $n = 2$).

Grade 7 Mathematics
Short-Response Sample

1

Draw one rectangle that has both a perimeter of 18 centimeters and an area of 18 square centimeters.

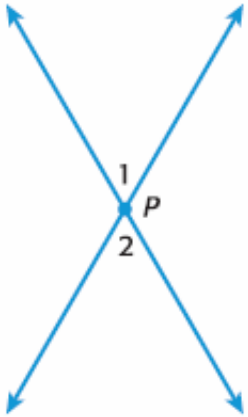
Label the length and width.

Assessment Objective 7.7.02: Solve problems involving the perimeter and area of polygons and composite figures using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description).

Grade 8 Mathematics
Short-Response Sample

1

The lines shown intersect at point *P*.



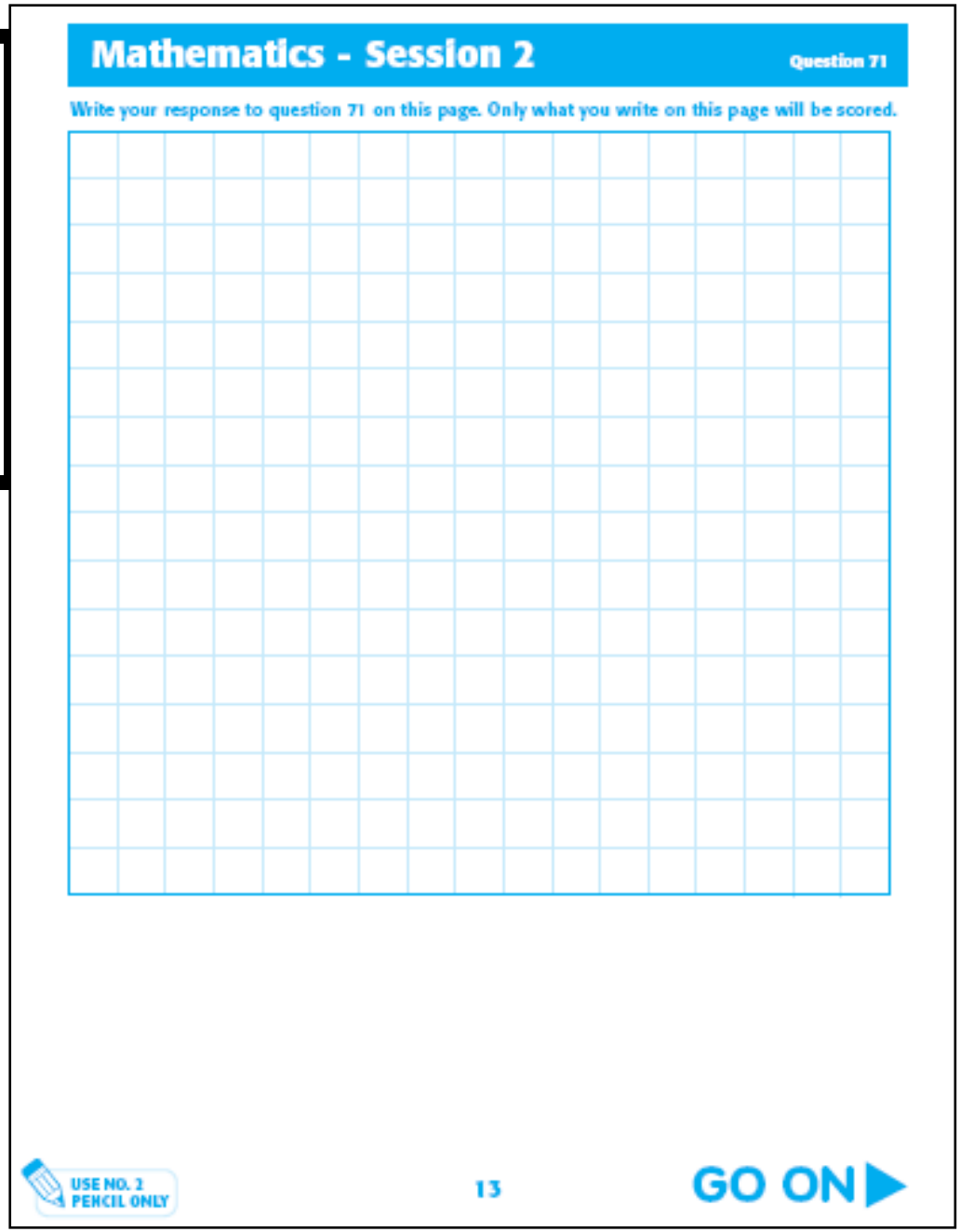
If the measure of $\angle 1 = 60°$ and the measure of $\angle 2 = (4x + 36)°$, what is the value of x?

Show your work.

Assessment Objective 9.8.09: Solve problems involving vertical, complementary, and supplementary angles.

The answer space for each short-response item is 1 page, and it has faint square cm grid lines.

These grid lines may help students if the item requires them to show work, draw a picture, make a chart, or graph an answer.



1

Tia asked her friends to name their favorite colors of fall leaves. The chart below shows the results.

Favorite Leaf Colors

Leaf Color	Number of Students
Red	15
Yellow	9
Orange	12

Complete the pictograph below so that it represents the data in the chart.

Favorite Leaf Colors

Leaf Color	Number of Students
Red	
Yellow	
Orange	

Each ☺ represents 3 students.

Show all your work on this page and on the next page. Explain in words how you found your answer. Write why you took the steps you did to solve the problem.

Grade 3 Mathematics Extended-Response Sample

Assessment Objective 10.3.02: Complete missing parts of a pictograph, bar graph, tally chart, or table for a given set of data.

Grade 4 Mathematics
Extended-Response Sample

1

Arnold wants to spend exactly $20.00 on sports cards. He wants to buy at least one of each sports card below.

Baseball card

$2.00 per card

Basketball card

$5.00 per card

Football card

$3.00 per card

Prices include tax

List one combination of sports cards Arnold can buy using exactly $20.00.

Show all your work. Explain in words how you found your answer. Tell why you took the steps you did to solve the problem.

Assessment Objective 6.4.11: Solve problems involving the value of a collection of bills and coins whose total value is $100.00 or less, and make change.

Grade 5 Mathematics
Extended-Response Sample

1

Five friends bought a total of 2 pizzas. Each pizza was cut into 12 equal slices. The amount of one whole pizza each person ate is shown below.

Joe: $\frac{1}{2}$ Mary: $\frac{1}{4}$ Kim: $\frac{1}{6}$ Bill: $\frac{1}{3}$ Sue: $\frac{1}{4}$

How many slices of pizza were *not* eaten by these 5 friends?

Show all your work. Explain in words how you found your answer. Tell why you took the steps you did to solve the problem.

Assessment Objective 6.5.14: Model situations involving addition and subtraction of fractions.

Grade 6 Mathematics
Extended-Response Sample

1

The table shows the number of points Carol has earned on each of 5 tests. The maximum score for each test is 100 points. She wants to have a mean (average) score of exactly 85 points for all six tests.

Test	Points
1	90
2	95
3	85
4	82
5	75
6	?

Exactly how many points must she earn on test 6 in order to have a mean (average) score of exactly 85 points for all six tests?

Show all your work. Explain in words how you found your answer. Tell why you took the steps you did to solve the problem.

Assessment Objective 10.6.04:
Determine the mode, range, median, and mean, given a set of data or a graph.

Grade 7 Mathematics
Extended-Response Sample

1

John has two rectangular mirrors that are similar. The length of the smaller mirror is 4 inches and the width is 6 inches. The width of the bigger mirror is 2 feet.

What is the length of the bigger mirror?

Show all your work. Explain in words how you found your answer. Tell why you took the steps you did to solve the problem.

Assessment Objective 9.7.14: Determine if figures are similar, and identify relationships between corresponding parts of similar figures.

Grade 8 Mathematics
Extended-Response Sample

1

In a recent survey, 72 people who like to bake were asked to choose their favorite item to bake. Of those people, $\frac{1}{4}$ chose cake, $\frac{1}{8}$ chose bread, $\frac{1}{2}$ chose cookies, and the rest chose pie as their favorite item to bake.

Create a graph to represent this information. Be sure to label all parts of your graph and include a title.

Show all your work. Explain in words how you created your graph. Tell why you took the steps you did to solve the problem.

Assessment Objective 10.8.03: Create a bar graph, chart/table, line graph, or circle graph and solve a problem using the data in the graph for a given set of data.

Mathematics - Session 3

Problem 74

DIRECTIONS Write your response to problem 74 on pages 16 and 17. Only what you write on these pages will be scored.

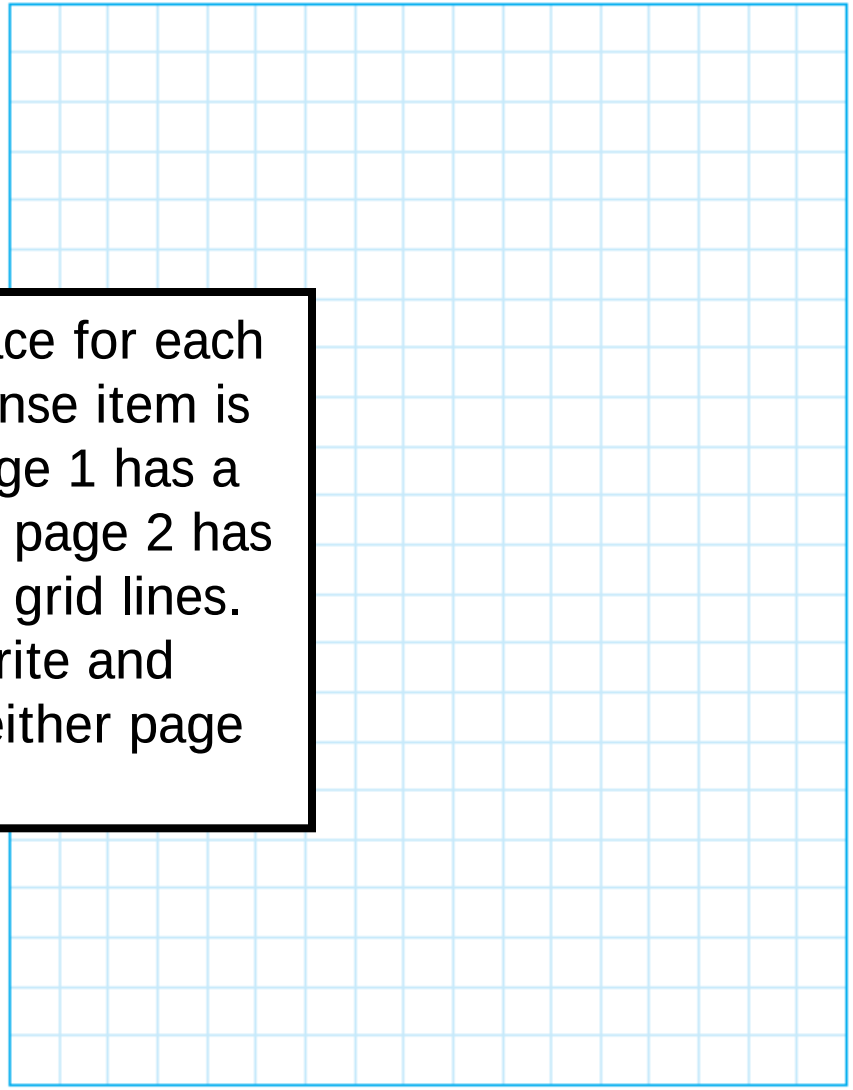
Make sure you
- show all your work in solving the problem,
- clearly label your answer,
- write in words how you solved the problem,
- write in words why you took the steps you did to solve the problem, and
- write as clearly as you can.

USE NO. 2 PENCIL ONLY

GO ON

Mathematics - Session 3

Problem 74 Continued



USE NO. 2 PENCIL ONLY

GO ON

The answer space for each extended-response item is 2 full pages. Page 1 has a blank area, and page 2 has faint square cm grid lines. Students can write and show work on either page or both pages.

Extended-Response in the Classroom: Ideas to Help Teachers Help Students

1) Explain and display the “student-friendly” version of the scoring rubric. Let students practice using it to score their work.

2) Discuss “what you did” and “why you did it” – for multiple-choice items, too! Then have students practice **writing** the “what” and the “why” for that problem.

3) Discuss and display a variety of student work in the classroom.

4) Aim for the 

in all 3 rubric dimensions!

5) Use a T-chart to help guide written explanations. This helps some students remember to explain what they did and why they did it. A T-chart is an acceptable format for the written explanation.

6) Use the annotated extended response scoring from the sample book to facilitate classroom discussions regarding what makes a “good” extended response answer.

Short- and Extended-Response Samples

- ✓ Each grade level Sample Book provides examples of short response and extended response items with annotated scoring.
- ✓ It may be helpful to show students the sample problem and have them attempt to solve it.
- ✓ Then show students the sample student papers and ask them to use the rubric to score the item in math knowledge, strategic knowledge and explanation.
- ✓ Compare students' scores to the actual scores from the annotations and discuss discrepancies. Once they understand how items are scored, students become more aware of their own solutions and explanations.

Older released items are available online at:
www.isbe.net/assessment/htmls/math_released_er.htm

Contact Information

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