2013 ISAT
Mathematics Assessment

December 5, 2012

Rachel Jachino
ISBE Mathematics Principal Consultant

100 North First Street, E-216
Springfield, Illinois 62777

1-866-317-6034

www.isbe.net/assessment

2013 ISAT Window

- Regular Test window:

  March 4 – March 15, 2013

- Early Test window (for *approved* districts only): February 25 – March 8, 2013
- Late Test window (for *approved* districts only): March 11 – March 22, 2013

***Requests to modify the ISAT Test window were due by December 1, 2012 through the Assessment Network. Please visit http://www.isbe.net/assessment/default.htm and look under the Announcements tab for more details.

2013 Mathematics ISAT Assessment

- 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 (Calculators are only allowed at Grade 3 for students with that accommodation written in the IEP.)

*View the "Calculator Use Policy" at
http://www.isbe.net/assessment/pdfs/calculator_ISAT.pdf

* Plus up to 10 additional minutes for all students

2013 Mathematics ISAT Sessions

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 field-test items) 3 Short-Response Items (1 field-test item)
Session 3	2 Extended-Response Items (1 field-test item)

Mathematics Assessment Content

NEW for 2013:

The 2013 Reading and Mathematics ISATs will contain items written to the Common Core Standards. Approximately twenty percent (20%) of the operational items on the Reading and Mathematics ISATs were written to Common Core Standards and will be included as part of students' scores/results for the 2013 ISAT.

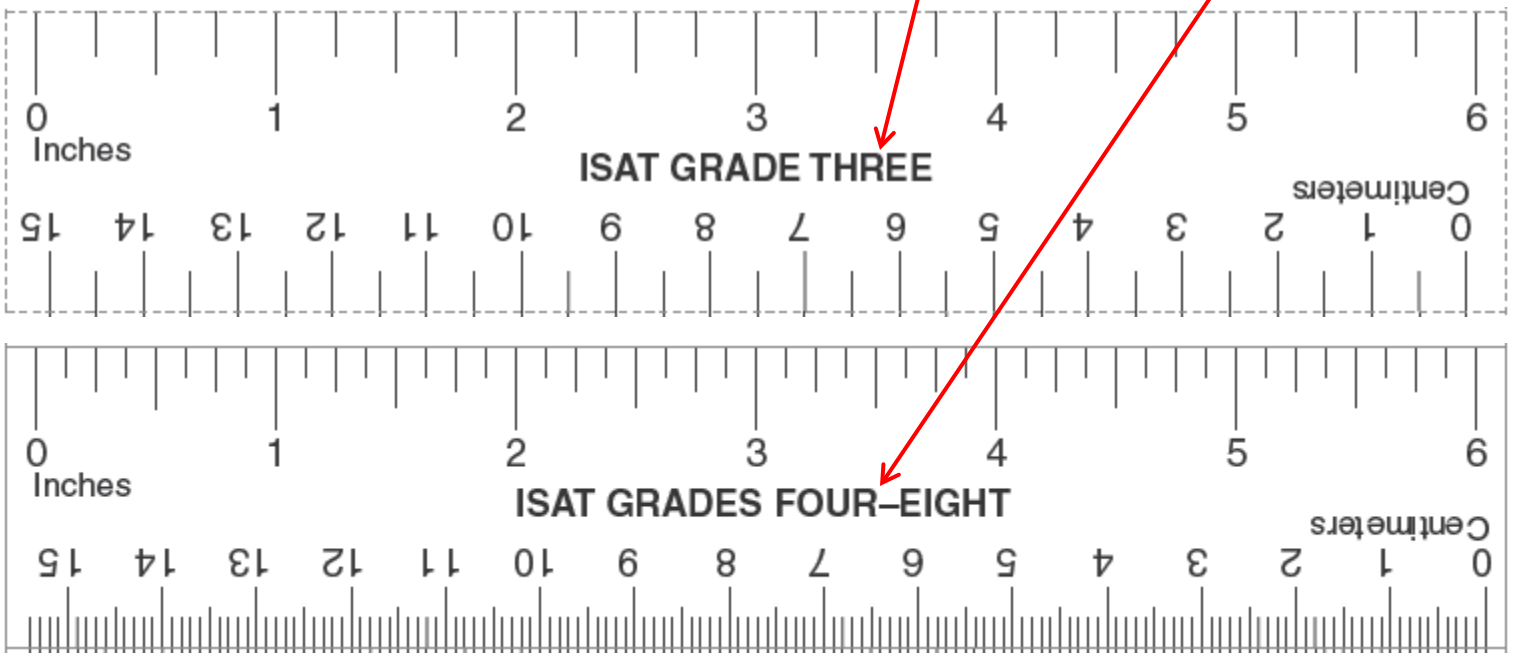
ISBE has developed Roadmaps to help districts and schools with this transition.

Roadmap for the 2013 ISAT – Mathematics (grades 3-8):

http://www.isbe.net/assessment/pdfs/2013/isat/roadmap-math-13.pdf

Please visit http://www.isbe.net/assessment/default.htm and click on the Announcements tab to access the Roadmap for ELA.

Rulers (Grades 3 and 4-8)



For illustrative purposes only.

PLEASE DO NOT PRINT.

See http://www.isbe.net/assessment/math.htm for printable rulers.

Calculator Prohibitions

The following calculators and features are prohibited:

- calculators built into cellular/mobile phones
- handheld, laptop, or tablet-style computers
- calculators built in to devices that have wireless communication capability
- calculators with USB ports or cables
- calculators with a QWERTY keyboard (like a typewriter)
- calculators with CAS (computer algebra systems) technology
- pocket organizers, electronic writing pads/tablets, and pen-input devices
- calculators that make noise, such as a calculator with a paper tape or a talking calculator
- calculators with power cords
- any electronic device that has scanning or camera functions

- ✓ http://www.isbe.net/assessment/pdfs/calculator_ISAT.pdf
- ✓ 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.

Reference Sheet

(Grades 7-8)

http://www.isbe.net/assessment/pdfs/isat_ref_sheet.pdf

ISAT MATHEMATICS REFERENCE SHEET
Grades 7 and 8

FORMULAS FOR PLANE FIGURES

Parallelogram: $A = bh$

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

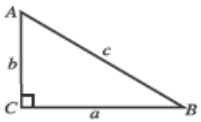
Triangle: $A = \frac{1}{2}bh$

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

IL00003618
516704 1 2 3 4 5 A B C D E Printed in the USA ISD8570

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

- LM ISAT form will be available for 2013
  - Only for ISAT math and science
  - 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
  - LM form developed by IL educators and ELL specialists who reviewed and modified the math and science ISAT items

Linguistically Modified ISAT Form LM for LEP Students

- LEP students taking Form LM will receive ISAT scores for reading, math and science.
- LEP students taking Form LM will **not** receive SAT 10 scores (NPR) for math and science.
  - Reason: When SAT 10 items are modified, a norm-referenced score (NPR) cannot be given.
  - LEP students using Form LM will still receive SAT 10 scores (NPR) for reading – the reading test *is not* modified.

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 math or science test to students unless it is a written accommodation in the student's IEP.* Students with an IEP may need to test separately with the appropriate accommodations and test form.
- *Do not read any portion of the reading test, even to students with an IEP who have this accommodation in the classroom.* This is considered a testing irregularity and the student will not receive a reading test score.

Test Preparation Suggestions

- Be familiar with the Illinois Learning Standards and the Assessment Frameworks; Be familiar with the Common Core State Standards.
- Integrate test-taking skills into regular classroom instruction.
- Be familiar with and practice different test item formats with students (MC, SR, and ER).
- Be familiar with the short and extended response rubrics and sample problems (found in the sample books).
- Create a positive atmosphere for testing and adopt a “do your best” attitude with students.

ISAT Report Templates

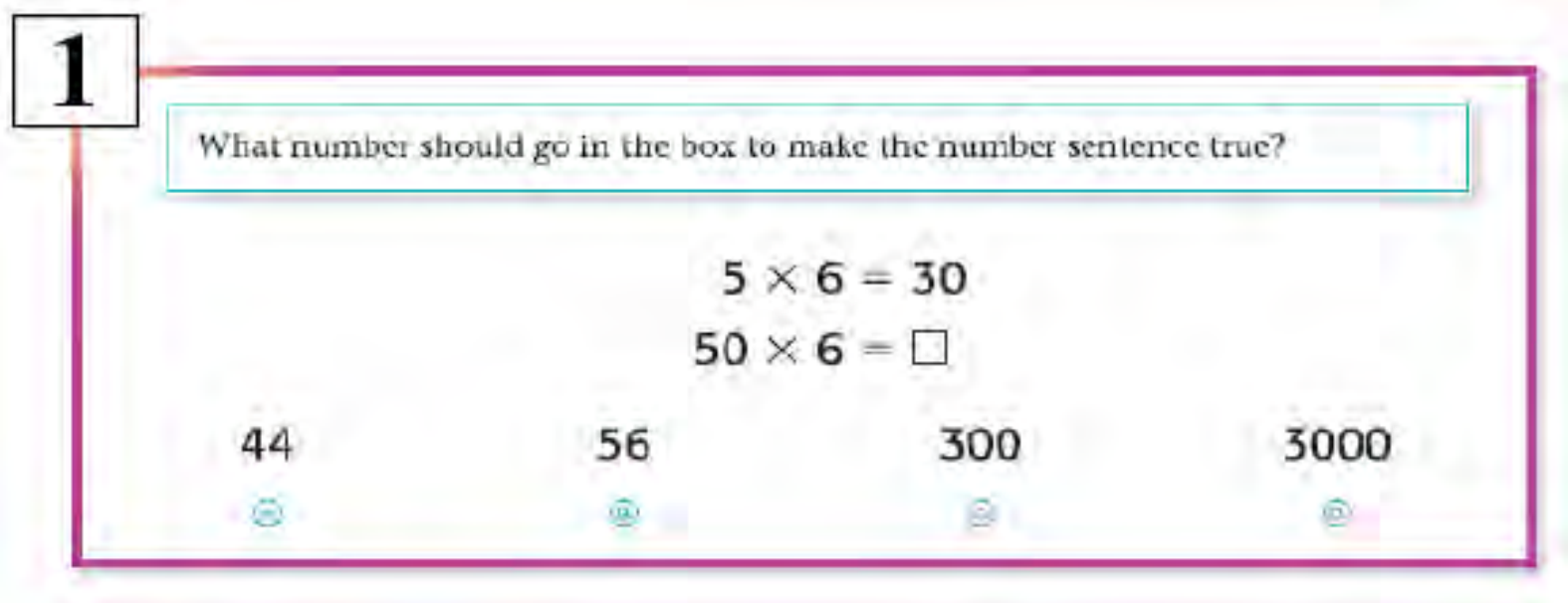
ISAT report templates are available online at

http://www.isbe.net/assessment/isat.htm

Sample Books and Interactive Items

- The 2013 Sample Books (PDF) are posted at www.isbe.net/assessment/htmls/sample_books.htm.
- Hard copies are no longer mailed to schools.
- The link to the 2013 Interactive ISAT items are posted online: www.isbe.net/assessment/htmls/sample_books.htm.

Grade 3 Multiple-Choice


1

What number should go in the box to make the number sentence true?

$5 \times 6 = 30$

$50 \times 6 = \square$

A 44 B 56 C 300 D 3000

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., $3 \times 4=12$, $30 \times 4=120$).

Grade 4 Multiple-Choice

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 Multiple-Choice

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 Multiple-Choice

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 $\frac{5}{9}$

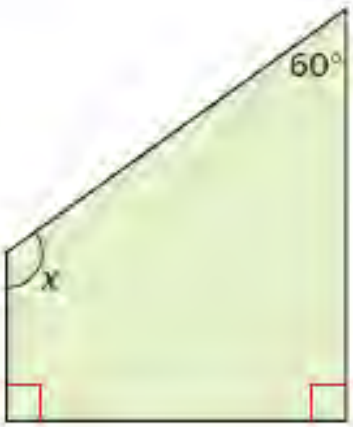
C $\frac{2}{5}$

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 Multiple-Choice

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 Multiple-Choice

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.

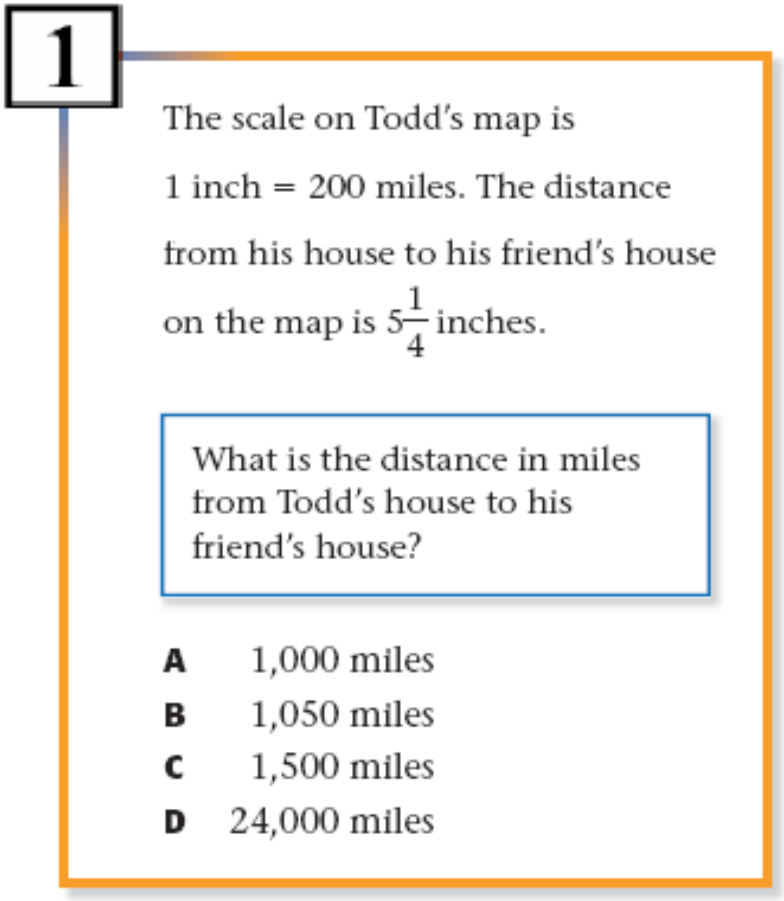
Reader Script for ISAT Mathematics and Science

- 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 and audio cassettes/CDs are produced using Form SF.

- A Reader Script or audio cassette/CD must be used so that every student in Illinois with that accommodation hears the item presented consistently. Test administrators should *NOT* read the test from a test booklet.

Reader Script Example 1



Reader Script Text

Question 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?

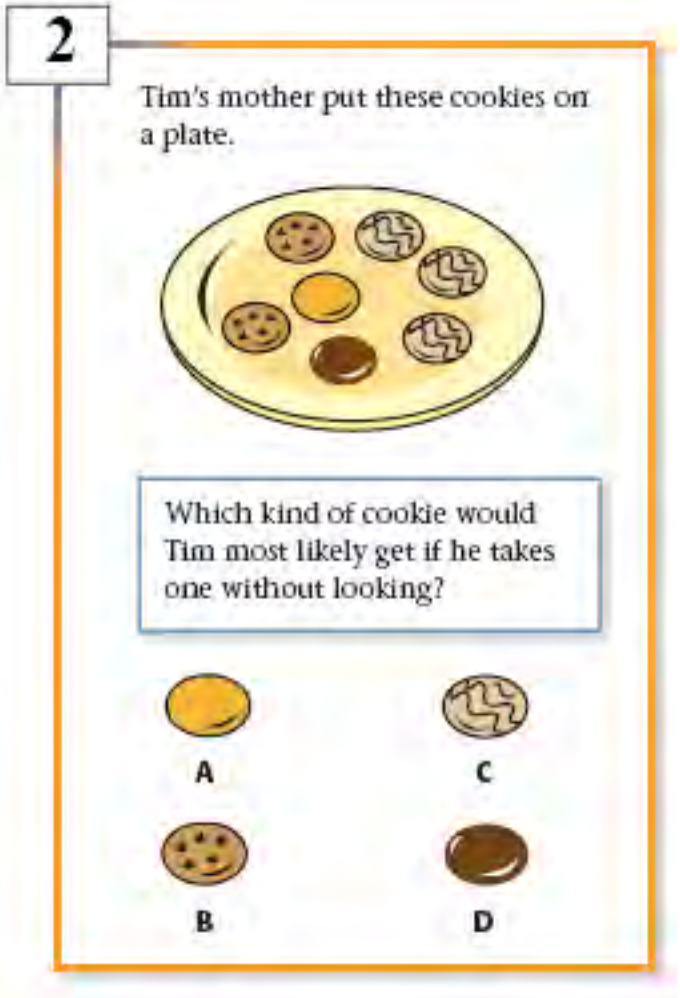
A. One thousand miles

B. One thousand fifty miles

C. One thousand five hundred miles

D. Twenty-four thousand miles

Reader Script Example 2



Reader Script Text

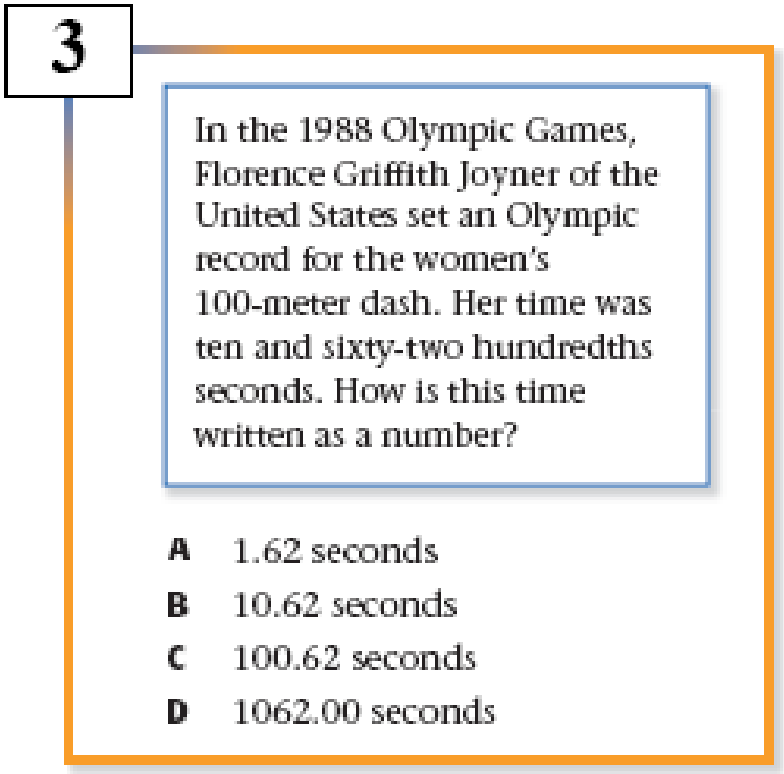
Question 2. Tim's mother put these cookies on a plate.

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

Choose answer A, B, C, or D.

Note: Reading the answers here is not possible since they are pictures, so students are instructed to choose from the options.

Reader Script Example 3



Reader Script Text

Question 3. 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?

All answers are labeled seconds.

Choose answer A, B, C, or D.

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

Short and Extended Response Items

- Short and Extended Response items are scored using a rubric
  - Item-specific rubrics are developed by IL educators and used by professional scorers for each SR and ER item prior to operational scoring.
- The 2 operational short response items contribute a total of 5% to the scale score
  - *Note: There are 3 short-response items; only 2 short-response items count in the scale score.*
- The 1 operational extended response item contributes a total of 10% to the scale score
  - *Note: There are 2 extended-response items; only 1 extended-response item counts in the scale score.*

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 and Common Core Standards.
- 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.

Short and Extended Response Items

- ✓ 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 students 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

Short Response Example

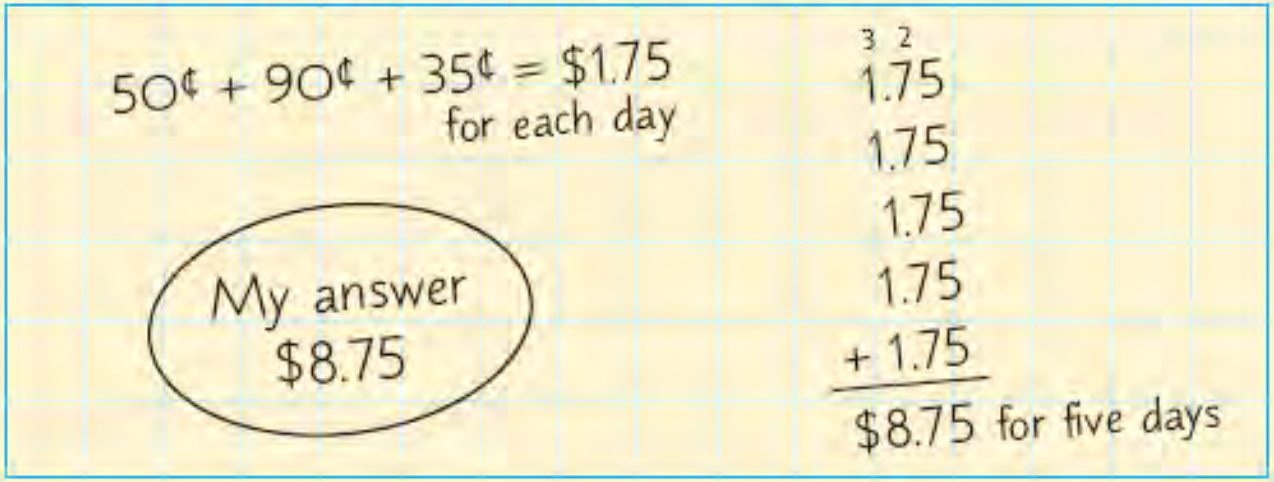
SAMPLE SHORT-RESPONSE QUESTION

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

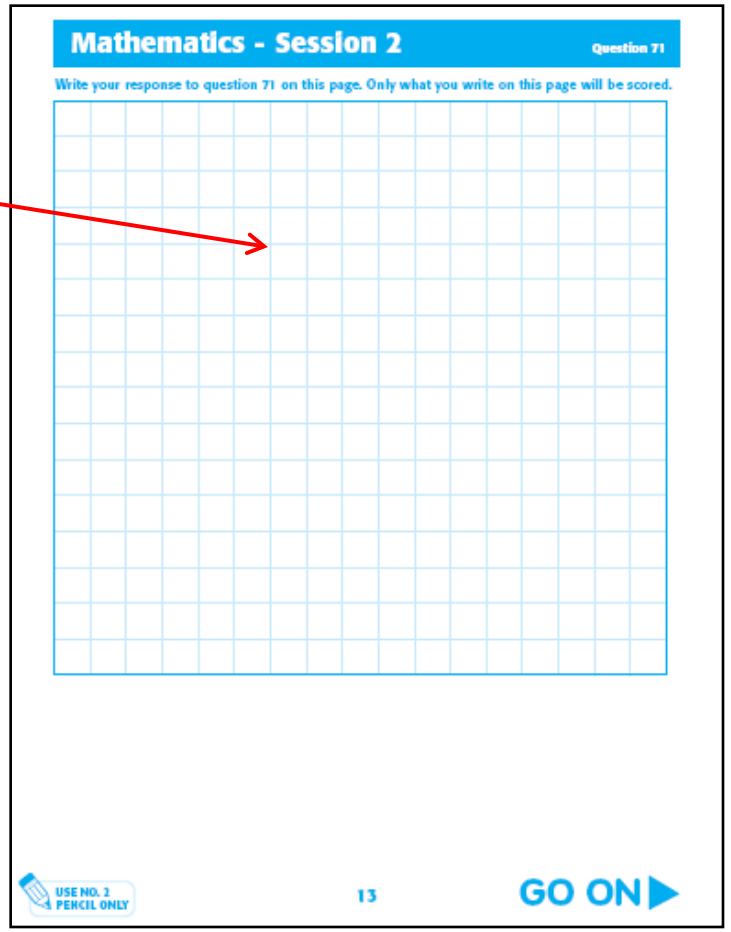


Short Response Answer Sheet

For grades 4-8, 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.

Grade 3 students respond directly on the short response item page in the grade 3 test booklet.



Short Response Rubric (general)

MATHEMATICS SCORING RUBRIC

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

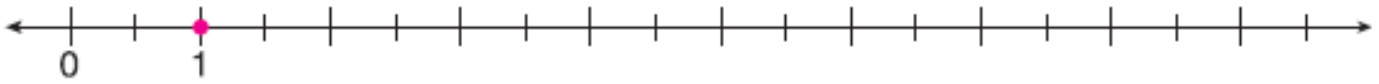
Score Level	
2	• Completely correct response, including correct work shown and/or correct labels/units if called for in the item
1	• Partially correct response
0	• No response, or the response is incorrect

Blank rubrics used for scoring a short response item can be found at:
http://www.isbe.net/assessment/math.htm

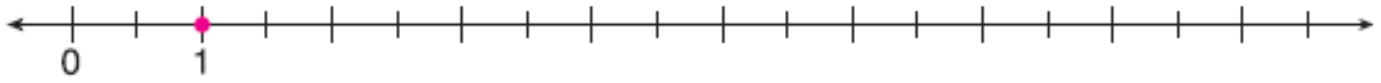
Grade 3 Short Response

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 Short Response

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 Short Response

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 Short Response

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 Short Response

1

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

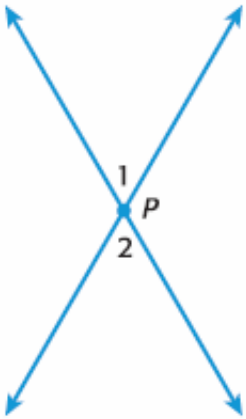
Label the length and width.

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 Short Response

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.

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. Showcase different strategies for solving the same problem.
4) Aim for the 

in all three 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 mathematics 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.

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.

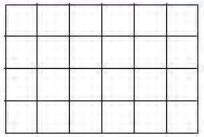
She also wants

$\frac{1}{2}$ 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

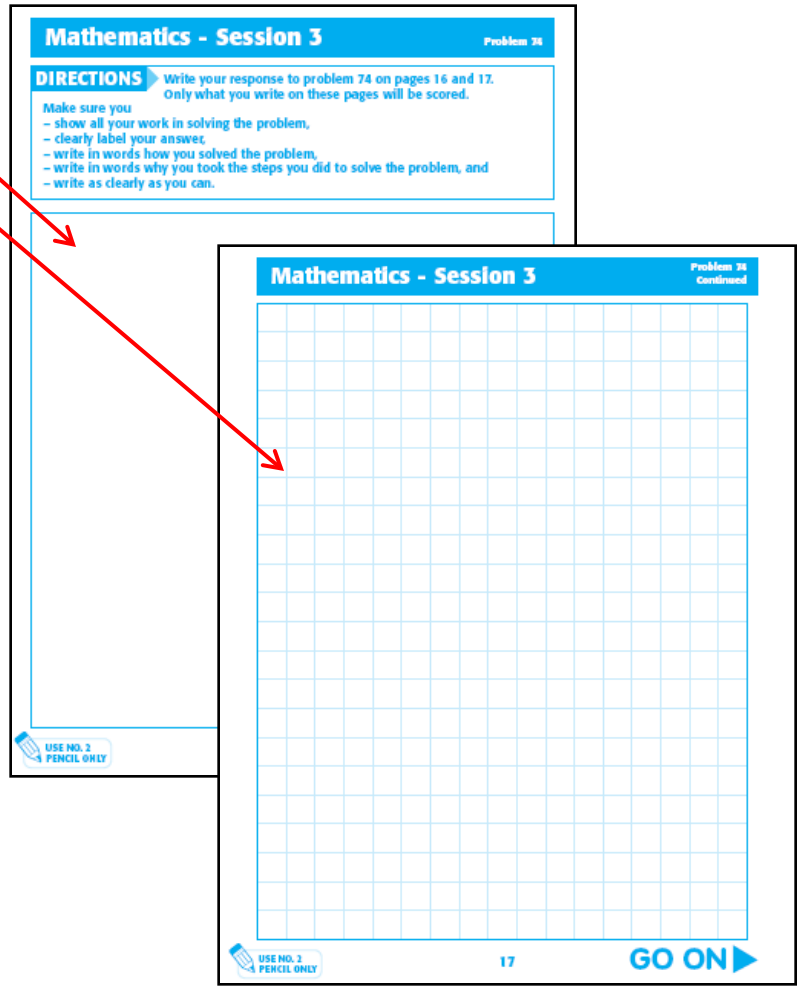
B	B	B	B	B	B	$\frac{1}{2}$ blue
B	B	B	B	B	B	
G	G	G	G	G	G	$\frac{1}{4}$ gray
R	R	R	R	R	R	$\frac{1}{4}$ red

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.

Extended Response Answer Sheets

For grades 4-8, the space in the answer document for each extended-response item is 2 full pages. Page 1 has a blank, unlined space, and page 2 has faint square cm grid lines. Students can write and show work on *either page or both pages*.

Grade 3 students also have at least two pages in the test booklet in which to write their answer to the extended-response items. The first page includes the item with some blank space, and the other page(s) has faint square cm grid lines. Students can write and show work on *any pages available for that item*.



Extended Response Rubric (general)

Blank rubrics used for scoring an extended response item can be found at: http://www.isbe.net/assessment/math.htm

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

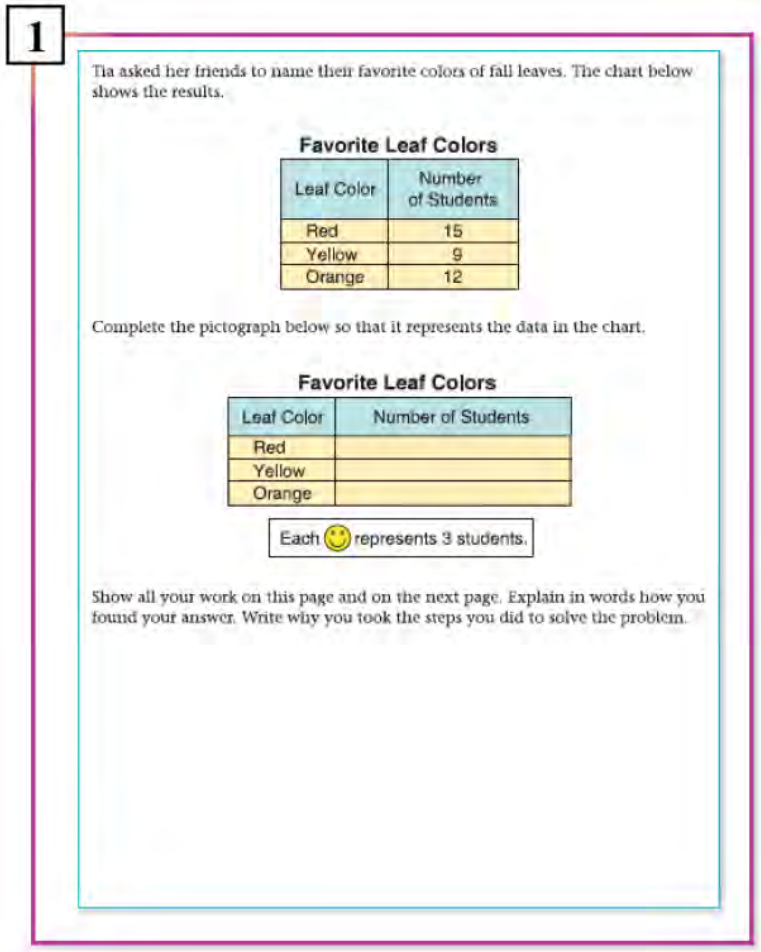
Score Level	MATHEMATICAL KNOWLEDGE: Knowledge of mathematical principles and concepts which result in a correct solution to a problem.	STRATEGIC KNOWLEDGE: Identification and use of important elements of the problem that represent and integrate concepts which yield the solution (e.g., models, diagrams, 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

MATHEMATICS SCORING RUBRIC

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

August 2005

Grade 3 Extended Response



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.

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 Extended Response

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 Extended Response

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 Extended Response

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 Extended Response

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 Extended Response

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.

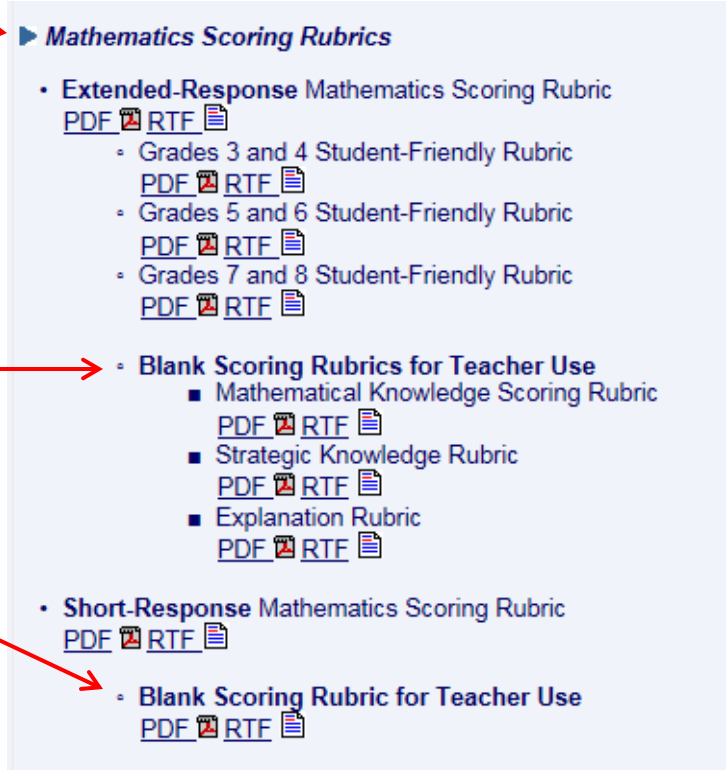
Create a graph to represent this information. Be sure to label all parts of your graph and include a title.

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.

Rubrics for Classroom Use

Rubrics are posted at http://www.isbe.net/assessment/math.htm.



Blank Scoring Rubrics for Teacher Use are available for classroom use and can be customized for individual tasks.

Questions?

Rachel Jachino
ISBE Principal Consultant for Mathematics
Division of Student Assessment

Email: rjachino@isbe.net
Web: www.isbe.net/assessment/ISAT and
www.isbe.net/assessment/math.htm