2011

ISAT
Sample Book

Illinois
Standards
Achievement
Test

GRADE
6

Sample Items for Reading and Mathematics

ILLINOIS STATE BOARD OF EDUCATION

Table of Contents

Introduction

This sample book contains sample ISAT items classified with an assessment objective from the *Illinois Assessment Frameworks*. These 2011 samples are meant to give educators and students a general sense of how items are formatted for ISAT. All 2011 ISAT test books will be printed in color. This sample book does not cover the entire content of what may be assessed. Please refer to the *Illinois Assessment Frameworks* for complete descriptions of the content to be assessed at each grade level and subject area. The *Illinois Assessment Frameworks* are available online at www.isbe.net/assessment/IAFindex.htm. The Student Assessment website contains additional information about state testing (www.isbe.net/assessment).

Illinois Standards Achievement Test
Reading Samples

Structure of the Grade 6 Reading ISAT

ISAT Reading testing in spring 2011 will consist of 30 norm-referenced items, as well as criterion-referenced items. The 30 norm-referenced items are an abbreviated form of the *Stanford 10 Reading* assessment, developed by Pearson, Inc. The criterion-referenced items are all written by Illinois educators and pilot tested with Illinois students.

Item Formats

All items are aligned to the *Illinois Reading Assessment Framework*, which defines the elements of the Illinois Learning Standards that are suitable for state testing.

Multiple-choice items require students to read and reflect, and then to select the alternative that best expresses what they believe the answer to be. A carefully constructed multiple-choice item can assess any of the levels of complexity, from simple procedures to sophisticated concepts.

Extended-response items require students to demonstrate an understanding of a passage by explaining key ideas using textual evidence and by using this information to draw conclusions or make connections to other situations. The extended-response items are scored with a holistic rubric and count as 10% of the scale score of the test.

Reading Sessions

All standard time administration test sessions are a minimum of 45 minutes in length. Any student who is still actively engaged in testing when the 45 minutes have elapsed will be allowed up to an additional 10 minutes to complete that test session. More details about how to administer this extra time will appear in the *ISAT Test Administration Manual*. This policy does not affect students who already receive extended time as determined by their IEP.

Reading ISAT Grade 6	
Session 1 45 minutes	6 shorter passages—30 multiple-choice items total
Session 2 45 minutes	Two longer passages consisting of: 1 expository passage with 10 multiple-choice items 1 literary passage with 10 multiple-choice items 1 extended-response item
Session 3 45 minutes	Consists of 2 or 3 passages 20 multiple-choice items 1 extended-response item
	(Some items will be pilot items.)

Shorter Passage Followed by Multiple-Choice Sample Items

A Candlelit Holiday

by
Elaine Masters

On one full-moon night every fall, the rivers and lakes of Thailand are dotted with twinkling candles. The Thais are celebrating "Loi Krathong," or "Floating Leaf Cup Day."

No one knows for sure how this lovely custom got started. Some say it was started 700 years ago by a wife of a king who wanted to surprise and please her husband. Others say it started even longer ago as a special religious ceremony. But however it began, it is delightful.

Families always used to make their floats, or little boats, from banana leaves torn into strips and woven into the shape of a bowl. Then they beautifully decorated them with flowers. Now, while many families still make their own floats, others simply buy them. Modern floats may be made of banana leaves or plastic. All of them still hold a lighted candle, a flower, a stick or two of sweet-smelling incense, and a coin.

On the holiday evening, families gather at parks near lakes, rivers, or canals for outdoor dinners. Adults sit on mats and visit with their neighbors while children play tag or hide-and-seek. In some cities, blazing fireworks and dancers in shining silk costumes entertain the crowd.

Many men and women sell things. People sell floats to those who have not made them at home. Other people sell balloons in various shapes and colors or clever toys made of bamboo. Food sellers offer noodle soup, dried fish, candy, little cakes, roasted chicken, and bamboo tubes filled with sticky rice cooked in coconut milk. They pour soft drinks into small plastic bags, whirl a rubber band around the top, and stick in a short straw.

Then, when the full moon rises, families light the candles and set their little boats afloat. The waterway soon twinkles like a fairyland with candles bobbing in their floats and fireworks reflecting in the water.

1 Paragraph 2 of this selection is mainly about —

A how this holiday might have begun
B what the floats are made of
C when the holiday takes place
D what people eat during the holiday

2 To understand more about the meaning of the floating leaf cups, the reader should ask —

A how the floats are kept from being burned by the flame
B why a coin is placed in the float
C what happens to all the floats when the holiday is over
D how much store-bought floats cost

3 After reading the title, what should you expect to learn from this selection?

A How to make your own candles
B Ideas for new recipes
C Why we celebrate the Fourth of July
D Where a candlelit holiday is celebrated

4 Which detail in the selection shows that this is a relaxing holiday?

A Families spend the evening eating, playing, and visiting.
B People spend hours making floats.
C There are many different kinds of food to buy.
D It is held in autumn.

STOP

Answer Key with Assessment Objectives Identified

	Item Number	Correct Answer	Assessment Objective
Shorter Passage	1	A	**1.6.12** Identify explicit and implicit main ideas.
	2	B	**2.6.05** Compare stories to personal experience, prior knowledge, or other stories.
	3	D	**1.6.08** Identify probable outcomes or actions.
	4	A	**1.6.15** Distinguish the main ideas and supporting details in any text.

To view all the reading assessment objectives, download the *Illinois Reading Assessment Framework* for Grades 3–8 online at www.isbe.net/assessment/IAFindex.htm.

Longer Passage Followed by Multiple-Choice Sample Items

The discovery of the x-ray let doctors "see" inside the body. As this passage tells, it signaled a new era in medical care.

Bone Shadows

by Carla Killough McClafferty

1   It was November 1895. Dr. Wilhelm Roentgen, working alone in his laboratory, was conducting an experiment that involved passing electric current through a glass tube from which the air had been pumped out. Scientists had discovered that the device, called a Crookes tube, produced a beam of flowing electrons, or cathode ray, which made the tube glow. To further study cathode rays, Roentgen had darkened the room and wrapped the Crookes tube in black cardboard. Then he turned on the electricity.

2   No light escaped through the cardboard as the current ran through the covered tube, but out of the corner of his eye, Roentgen detected a strange yellowish green glow in the darkness. It came from a sheet of paper on his workbench that had been coated with a fluorescent chemical.

3   Roentgen was surprised and curious. He turned the electricity on and off to make sure the paper's glow was caused by the Crookes tube. Some sort of energy was passing from the tube and through the cardboard to make the paper glow. He picked up a sheet of writing paper and put it between the tube and the coated page. The coated paper still glowed as if nothing were in front of it. Then he placed a thick book in front of the coated paper. The glow was a bit dimmer, but it was still there.

4   Roentgen tried everything he could get his hands on: playing cards, foil, wood, rubber, glass, water, and aluminum. No matter what he put between the tube and the coated paper, the paper glowed — sometimes a little less than others, but it always glowed.

5   Finally, he held a piece of lead in front of the coated paper. The area of the paper behind the lead no longer glowed. As he held the lead between his fingers, studying the shadow it cast on the paper, he saw something that no one had ever seen before. He saw the finger bones of his own skeleton.

6   The Crookes tube was *emitting* a new kind of invisible ray powerful enough to pass through his flesh and cast a shadow of his bones on the paper. Roentgen didn't know what the mysterious ray could be, so he called it the x-ray, because *x* is the mathematical symbol for the unknown.

GO ON▶

The Unknown X

7   Today, having an x-ray is routine. If you've ever broken a bone, you've certainly had an x-ray. And your dentist probably x-rays your teeth regularly to make sure you have no *cavities*. But when Roentgen first showed his wife an x-ray of her hand, she was horrified. Seeing the bones of her own hand, including the *eerie* shadow of her wedding ring, made her feel she might be close to death.

8   Others who heard about x-rays were confused and frightened, too. Word spread that x-rays could go through clothing, so people worried that others might use x-ray cameras or glasses to look at them as they walked down the street. Some people wondered if x-rays could be used by schools to place facts into the minds of students. The public didn't understand at the time that using x-rays in these ways was impossible.

9   Despite their fears, people were drawn to x-ray images and many flocked to have "bone portraits" made at new x-ray studios. Doctors quickly realized the value of the wonderful new x-ray machines. Before Roentgen's discovery, doctors could not "see" inside the body unless they performed surgery. If a doctor suspected a patient had a broken bone, he pressed on the injured part, which could be very painful, then gave his best guess as to whether the bone was broken. X-rays also took the guesswork out of locating foreign objects. One early x-ray helped doctors locate and safely remove a nail swallowed by a child. Chest x-rays helped doctors to identify patients with tuberculosis, a dreaded lung disease of the time.

A Camera inside Your Body

10   Roentgen's discovery remains important to medicine, but other methods to see inside the body have been developed that don't use x-rays at all. Expectant mothers have sonograms, which use high-frequency sound waves to safely show the growing baby inside. Magnetic Resonance Imaging (MRI) uses a powerful magnet instead of x-rays to create images of the patient.

11   And if you really want to get an in-depth look, there's PillCam, a tiny camera in the shape of a large pill that you swallow. PillCam looks at the inside of your body *from* the inside of your body. As it travels through the digestive system, it takes snapshots of the journey, sort of like a tourist on vacation. In eight hours, it transmits about 50,000 images to a recorder, which doctors play back like a video. PillCam is especially valuable for viewing diseases in the long, winding tube called your small intestine.

GO ON▶

1 What is the main purpose of the first paragraph?

A To establish the relationship between the characters
B To establish the mood communicated by the setting
C To provide a means of establishing irony in the passage
D To provide background information and establish theme

2 What happened after Dr. Roentgen saw something out of the corner of his eye?

A He invented the Crookes tube.
B He pumped the air out of a glass tube.
C He used Magnetic Resonance Imaging.
D He experimented with different objects.

3 What was the last item Dr. Roentgen experimented with before discovering x-rays?

A A piece of lead
B A wedding ring
C A sheet of paper
D A fluorescent chemical

4 What is the meaning of the word *emitting*?

A Sending out
B Going under
C Pulling away
D Turning back

5 Which of these is a synonym of *cavities* as used in the sentence below?

"And your dentist probably x-rays your teeth regularly to make sure you have no *cavities*."

A Holes
B Tubes
C Baby teeth
D Foreign objects

6 What does *eerie* mean?

A Defined
B Scattered
C Forbidden
D Mysterious

GO ON▶

7

Which of these *best* describes Dr. Roentgen?

A Worried
B Emotional
C Mysterious
D Determined

8

What would be another good title for "Bone Shadows"?

A "X-ray Studios"
B "PillCam Stories"
C "Darkened Room"
D "Mysterious Rays"

9

Which of these statements is a main idea of "Bone Shadows"?

A Paper that is coated glows.
B There are ways to see inside a body.
C There are x-rays that can find cavities.
D Electric current passes through glass tubes.

10

Which term *best* defines this passage?

A Narrative
B Persuasive
C Humorous
D Expository

STOP

Answer Key with Assessment Objectives Identified

	Item Number	Correct Answer	Assessment Objective
Longer Passage with Multiple-Choice Items	1	D	**2.6.03** Interpret literary passages using the following element of literary structure: exposition.
	2	D	**1.6.17** Identify or summarize the order of events in a story or nonfiction account.
	3	A	**1.6.17** Identify or summarize the order of events in a story or nonfiction account.
	4	A	**1.6.01** Determine the meaning of an unknown word or content-area vocabulary using knowledge of prefixes, suffixes, and word roots (see Roots and Affixes list).
	5	A	**1.6.05** Use synonyms and antonyms to define words.
	6	D	**1.6.03** Determine the meaning of an unknown word using word, sentence, and cross-sentence clues.
	7	D	**2.6.07** Determine what characters are like by what they say or do or by how the author or illustrator portrays them.
	8	D	**1.6.16** Summarize a story or nonfiction passage, or identify the best summary.
	9	B	**1.6.15** Distinguish the main ideas and supporting details in any text.
	10	D	**2.6.15** Identify whether a given passage is narrative, persuasive, or expository.

To view all the reading assessment objectives, download the *Illinois Reading Assessment Framework* for Grades 3–8 online at www.isbe.net/assessment/IAFindex.htm.

Extended-Response Sample Item

Assessment Objective: 1.6.19 Draw inferences, conclusions, or generalizations about text and support them with textual evidence and prior knowledge.

1

How did Dr. Wilhelm Roentgen show determination in the passage? Use information from the passage and your own observations and conclusions to support your answer.

STOP

Extended-Response Scoring Rubric

Reading Extended-Response Scoring Rubric

Readers identify important information found explicitly and implicitly in the text. Readers use this information to interpret the text and/or make connections to other situations or contexts through analysis, evaluation, or comparison/contrast. A student-friendly version of this extended-response rubric is available online at www.isbe.net/assessment/reading.htm.

Score	Criteria
4	• Reader demonstrates an accurate understanding of important information in the text by focusing on the key ideas presented explicitly and implicitly. • Reader uses information from the text to interpret significant concepts or make connections to other situations or contexts logically through analysis, evaluation, inference, or comparison/contrast. • Reader uses relevant and accurate references; most are specific and fully supported. • Reader integrates interpretation of the text with text-based support (balanced).
3	• Reader demonstrates an accurate understanding of information in the text by focusing on some key ideas presented explicitly and implicitly. • Reader uses information from the text to interpret significant concepts or make connections to other situations or contexts logically (with some gaps) through analysis, evaluation, inference, or comparison/contrast. • Reader uses relevant and accurate references; some are specific; some may be general and not fully supported. • Reader partially integrates interpretation of the text with text-based support.
2	• Reader demonstrates an accurate but limited understanding of the text. • Reader uses information from the text to make simplistic interpretations of the text without using significant concepts or by making only limited connections to other situations or contexts. • Reader uses irrelevant or limited references. • Reader generalizes without illustrating key ideas; may have gaps.
1	• Reader demonstrates little or no understanding of the text; may be inaccurate. • Reader makes little or no interpretation of the text. • Reader uses no references, or the references are inaccurate. • Reader's response is insufficient to show that criteria are met.
0	• Reader's response is absent or does not address the task. • Reader's response is insufficient to show that criteria are met.

Grade: 6   **Sample: 1**   **Score: 2**

DIRECTIONS ▶ Make sure you

- – Read the question completely before you start to write your answer,
- – Write your answer to the question in your own words,
- – Write as clearly as you can so that another person can read your answer and understand what you were thinking,
- – Read over your answer to see if you need to rewrite any part of it.

Dr. wilhelm showed determanation because he had made the xray. But at first he wasn't trying to make the X-ray, he had a crookes tube which glows in the dark. Roentgen wrapped the crookes tube in black cardboard. Then he turned on the electricity yellow greenish light came from the cardboard. Roentgen tried to stof the light but he couldnt. roentgen took out a piece of lead and in the cardboard it had a picture of his hand in srekenton. Roentgen

Showed his wife what he had done. The wife was frightened she thought that she was close to death. People were talking about what Roentgen has done. They were frightened because they thought that if that could be done, then there might be X-ray cameras. Also I think that Roentgen was determined because he was the first to make an X-ray and only doctors know how to make X-rays.

* The reader's response consists almost entirely of a retelling of the passage. The response includes a simplistic interpretation (*Dr. Wilhelm showed determanation because he had made the x-ray*). The same interpretation is restated at the end of the response (*...Roentgen was determined because he was the first to make an x-ray...*).

| Grade: 6 | Sample: 2 | Score: 2 |

DIRECTIONS ▶ Make sure you

- **Read the question completely before you start to write your answer,**
- **Write your answer to the question in your own words,**
- **Write as clearly as you can so that another person can read your answer and understand what you were thinking,**
- **Read over your answer to see if you need to rewrite any part of it.**

Dr. Roentgen showed determination by using his crooke tube and using it on everything. He would see the light passed through everthing he used even Foil. Then he Finally showed the light on his hand and saw his bones which could determine if a arm was broken because doctors would take guesses or open the body. In conclusion. he showed determination by going through every obeject he could find and the unknown ray is still used thanks to Dr. Roentgen.

* The reader demonstrates a limited understanding of the text. The reader summarizes the passage and provides a simplistic interpretation (*he showed determination by going through every obeject he could find and the unknown ray is still used thanks to Dr. Roentgen*). The reader generalizes without illustrating key ideas from the passage.

Grade: 6   **Sample: 3**   **Score: 3**

DIRECTIONS

Make sure you

– Read the question completely before you start to write your answer,
– Write your answer to the question in your own words,
– Write as clearly as you can so that another person can read your answer and understand what you were thinking,
– Read over your answer to see if you need to rewrite any part of it.

Dr. William Roentgen showed a lot of determination because he never gave up and kept trying.

First thing he did was he experimented with electrical currents. He made a tube and pumped air out of the tube. This tube is called a Crookes tube. His first experiment he wrapped black cardboard around the Crookes Tube and turned on the electricity. No light escaped through the cardboard when the electricity went through the tube. But a strong yellowish green glow captured Dr. Roentgen's eye. The glow came from a sheet of paper on his desk that had been coated with a flourescent chemical. Dr. Roentgen was suddenly curious. So he turned the electric current on and off to see if Crookes tube created the glow from the paper.

After this occurence Dr. Roentgen started putting things in front of the paper. His first try was putting a sheet of paper in front of the coated paper, the paper still glowed as if he had put nothing there. After that he started puttin other things

Thick books, playing cards, foil, wood, rubber, glass, water and aluminum. Finally he put a piece of lead in front of the paper. The paper did not glow. He put the between his fingers and it cast a shadow onto his bones. He called it the X-ray.

Dr. Roentgen put in a lot of effort into this X-ray so that people in the future can be examined more closely. I think Dr. Roentgen put a lot of effort because if you compare him to some of us, we just do our homework quickly watch TV. But Dr. Roentgen did not do this, he determined to create his invention.

* The reader demonstrates an accurate understanding of information in the text by focusing on some key ideas. The reader uses extensive text references in summarizing the passage and provides some interpretation of significant concepts (*Dr. Roentgen put in a lot of effort into this x-ray so that people in the future can be examined more closely. I think Dr. Roentgen put a lot of effort because if you compare him to some of us, we just do our homework quickly watch TV*). The partial integration of interpretation with text-based support reflects a lack of balance.

Grade: 6	Sample: 4	Score: 3

DIRECTIONS ▶ Make sure you

- **Read the question completely before you start to write your answer,**
- **Write your answer to the question in your own words,**
- **Write as clearly as you can so that another person can read your answer and understand what you were thinking,**
- **Read over your answer to see if you need to rewrite any part of it.**

In the passage Dr. Wilhelm Roentgen shows a lot of determination. One way Dr. Roentgen showed determination is that he never gave up. He kept trying. In the passage Dr. Roentgen kept trying to find something that would block the glowing of the paper. Another way Dr. Wilhelm Roentgen showed determination is he never gave up on an expirement. He was expirementing with electric currents. In the passage Dr. Wilhem Roentgen was

in his laboratory, by himself conducting an expirement that involved passing electric current through a glass tube. The third way Dr. Wilhelm Roentgen showed determination is he tried to convince people the xray wasn't bad. He tried to tell people it wasn't scarry. In the passage Dr. Wilhelm Roentgen tried to tell his wife that the xray would not harm his wife in any way. as you can see, In the passage Dr. Wilhelm Roentgen showed determination in many different ways.

* The reader demonstrates an accurate understanding of information in the text by focusing on some key ideas. The reader uses information from the text to interpret significant concepts through analysis (*he never gave up…Dr. Roentgen kept trying to find something that would block the glowing of the paper…he never gave up on an expirement. He was expirementing with electric currents…Dr. Wilhelm Roentgen tried to tell his wife that the x-ray would not harm his wife in any way*). The text-based support is accurate, though the partial integration leaves some gaps in the interpretation.

Grade: 6	Sample: 5	Score: 4

DIRECTIONS ▶ **Make sure you**

- **Read the question completely before you start to write your answer,**
- **Write your answer to the question in your own words,**
- **Write as clearly as you can so that another person can read your answer and understand what you were thinking,**
- **Read over your answer to see if you need to rewrite any part of it.**

Dr. Wilhelm Roentgen showed several acts of determination. As I read the beggining of the story I thought that he knew what he was doing. The author stated that the Doctor had darkened the room, wrapped the Crookes tube in black cardboard, and then turned on the electricity. You could tell by reading that sentence that he was showing effort, or determination, in his work. I know that it takes determination to even become a doctor. He would have had to go through years of school and hard work to get to where he is. That

shows determination as well.

Roentgen was putting effort, charged by curiosity, into his work, by testing out numerouse types of material in his new discovery. Yet another act of determination could be counted, because he was able to get x-rays into the public. He was able to market his product. I learned from my own experiance that x-rays became so popular that people would get many to frame in their house as a symbol of wealth.

Everything that Roentgen did showed some type of determination Without his effort we wouldn't be able to build off of his invention. The author, Carla.Killough McClafferty Stated some inventions that

branched off from his work. Things such as the PillCam, that shows the inside of your intestines. Also there is a sonogram used to see babies before they are born. They use x-rays to save lives. The life of a child who swallowed a nail, the life of a woman with tuberculosis, a lung disease, or even the life of a little boy with cancer could be, and have been, saved by the hard work, and effort of Dr. Wilhelm Roentgen. In my opinion that shows extreme measures of determination.

* The reader demonstrates an understanding of information in the text by focusing on key ideas. The reader integrates text support (*the Doctor had darkened the room, wrapped the Crookes tube in black cardboard, and then turned on the electricity*) with interpretation (*I know that it takes determination to even become a doctor. He would have had to go through years of school and hard work to get to where he is. That shows determination as well*). The reader also provides a connection between the text and another situation (*I learned from my own experiance that x-rays became so popular that people would get many to frame in their house as a symbol of wealth*). The text references are relevant, specific, and accurate. The reader balances and integrates interpretation of the text with text-based support.

Grade: 6   **Sample: 6**   **Score: 4**

DIRECTIONS ▶ Make sure you

- Read the question completely before you start to write your answer,
- Write your answer to the question in your own words,
- Write as clearly as you can so that another person can read your answer and understand what you were thinking,
- Read over your answer to see if you need to rewrite any part of it.

Dr. Wilhelm Roentgen showed determination by persisting to find an object that the light would not go through, and kept experimenting with the Crookes tube.

One reason Dr. Roentgen showed determination is by persisting to find an object that could block the light of the Crookes tube. As the text states "Roentgen tried everything he could get his hands on: playing cards, foil, wood, rubber,

glass, water, and aluminum"
before he discovered lead
could block the light. In
my opinion Dr. Roentgen
would have tried many
more objects i○ he hadn't
found the lead soon, I think
he would have been persisting
day after day to find the
object. Without Roentgen
persisting to find the object
we might not have x-rays
today.

Another reason Roentgen
showed determination is
that he was studying the
Crookes beam long after the
scientists have gone home.
As the text states "Dr. Wilhelm
Roentgen was working alone."
In my opinion Dr. Wilhelm
Roentgen had to be very

determined to stay for so long studying the Crookes tube. I think that Roentgen must have been very detemined to find what the Crookes tube was usefull for, or else he would not have been in his laboratory, while his peers were at home. If Dr. Roentgen was not determined he would not have persisted to find something that could block the light of the Crookes tube or been at the laboratory studying the tube while his peers were at home.

* In this response, the reader demonstrates an understanding of important information in the text by focusing on the key ideas. The reader provides interpretation through inference (*Dr. Roentgen showed determination is by persisting to find an object that could block the light of the Crookes tube…Without Roentgen persisting to find the object we might not have x-rays today*) and supports this with text references (*"Roentgen tried everything he could get his hands on: playing cards, foil, wood, rubber, glass, water, and aluminum" before he discovered lead*). The text references are relevant, specific, and accurate. The reader integrates interpretation (*he was studying the Crookes beam long after the scientists have gone home*) with text-based support (*"Dr. Wilhelm Roentgen was working alone"*).

Illinois Standards Achievement Test
Mathematics Samples

Structure of the Grade 6 Mathematics ISAT

ISAT Mathematics testing in spring 2011 will consist of 30 norm-referenced items, as well as 45 criterion-referenced items, some of which will be used for developmental purposes. The 30 norm-referenced items are an abbreviated form of the *Stanford 10 Mathematics Problem Solving* assessment, developed by Pearson, Inc. The 45 criterion-referenced items are all written by Illinois educators and pilot tested with Illinois students.

Item Formats

All 75 items are aligned to the *Illinois Mathematics Assessment Framework*, which defines the elements of the Illinois Learning Standards that are suitable for state testing.

Multiple-choice items require students to read, reflect, or compute, and then to select the alternative that best expresses what they believe the answer to be. This format is appropriate for quickly determining whether students have achieved certain knowledge and skills. Well-designed multiple-choice items can measure student knowledge and understanding, as well as students' selection and application of problem-solving strategies. A carefully constructed multiple-choice item can assess any of the levels of mathematical complexity from simple procedures to sophisticated concepts. They can be designed to reach beyond the ability of students to "plug-in" alternatives or eliminate choices to determine a correct answer. Such items are limited in the extent to which they can provide evidence of the depth of students' thinking.

Short-response items pose similar questions as multiple-choice items and provide a reliable and valid basis for extrapolating about students' approaches to problems. These items reduce the concern about guessing that accompanies multiple-choice items. The short-response items are scored with a rubric and count as 5% of the scale score of the test.

Extended-response items require students to consider a situation that demands more than a numerical response. These items require students to model, as much as possible, real problem solving in a large-scale assessment context. When an extended-response item poses a problem to solve, the student must determine what is required to "solve" the problem, choose a plan, carry out the plan, and interpret the solution in terms of the original situation. Students are expected to clearly communicate their decision-making processes in the context of the task proposed by the item (e.g., through writing, pictures, diagrams, or well-ordered steps). The extended-response items are scored with a rubric and count as 10% of the scale score of the test.

Scoring Extended- and Short-Response Items

Extended- and short-response items are evaluated according to an established scoring scale, called a rubric, developed from a combination of expectations and a sample of actual student responses. Such rubrics must be particularized by expected work and further developed by examples of student work in developing a guide for scorers. Illinois educators play a substantial role in developing these guides used for the scoring of the short- and extended-response items. Committees of mathematics educators from throughout the state attend a validation meeting, during which they use the mathematics scoring rubrics to establish task-specific criteria that are used to score all short- and extended-response items consistently and systematically.

Answer Document for Grade 6 Mathematics ISAT

Students in grade 6 respond to all test items in a separate answer document. Test administrators should monitor students carefully during testing to make sure students are using the appropriate pages of the answer document, especially for the short- and extended-response items.

Mathematics Sessions

All standard time administration test sessions are a minimum of 45 minutes in length. Any student who is still actively engaged in testing when the 45 minutes have elapsed will be allowed up to an additional 10 minutes to complete that test session. More details about how to administer this extra time will appear in the *ISAT Test Administration Manual*. This policy does not affect students who already receive extended time as determined by their IEP.
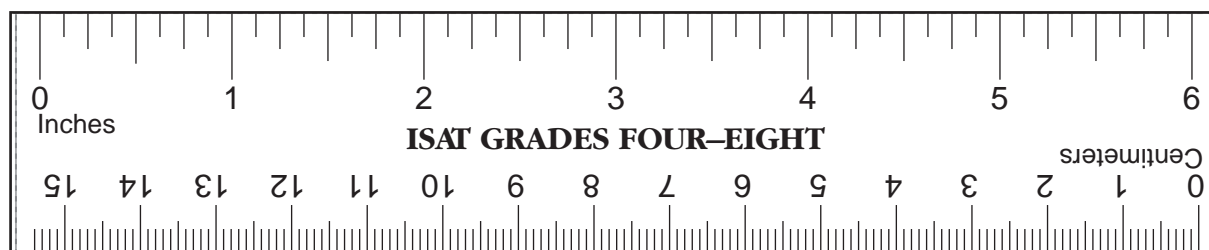
Mathematics ISAT Grade 6	
Session 1 **45 minutes**	40 multiple-choice items (30 of these are an abbreviated form of the *Stanford 10*.)
Session 2 **45 minutes**	30 multiple-choice items 3 short-response items
Session 3 **45 minutes**	2 extended-response items
(Some items will be pilot items.)	

Calculator Use for Grade 6 Mathematics ISAT

All students in grade 6 are allowed to use a calculator during all sessions of the mathematics assessment. Students are allowed to use a calculator as long as the calculator does not have any prohibited features as noted in the Calculator Use Policy for the ISAT Mathematics Tests (http://www.isbe.net/assessment/pdfs/2010/calculator_ISAT.pdf). Schools, teachers, and parents should be advised that when students attempt to use calculators with which they are unfamiliar, their performance may suffer. In a like manner, students who are not taught when and how to use a calculator as part of their regular mathematics instructional program are also at risk.

Rulers for Grade 6 Mathematics ISAT

All students in grade 6 will be provided with a ruler to use during all sessions of the mathematics assessment. This ruler will allow students to measure in both inches and centimeters.

Scratch Paper for Grade 6 Mathematics ISAT

Students must be provided with blank scratch paper to use during only session 1. Only session 1 contains norm-referenced items, which were normed under such conditions. Students may not use scratch paper during session 2 or session 3, but they may use the test booklet itself as scratch paper. However, students must show their work, when required, for each short-response item in session 2 on the appropriate page in the answer document. Students must show their work for each extended-response item in session 3 on the appropriate pages in the answer document.

1

Brian's calculator display is 587234. In order to change the 8 to a 9, which of the following could he do?

A   Add 1

B   Add 100

C   Add 10,000

D   Add 100,000

4

One notebook sells for $0.89. Mary can buy a package of 12 notebooks for $9.60.

How much money can Mary save on *each* notebook if she buys the package of 12?

$0.08 $0.09 $0.10 $0.12
A   **B**   **C**   **D**

2

In the 1988 Olympic Games, Florence Griffith Joyner of the United States set an Olympic record for the women's 100-meter dash. Her time was ten and sixty-two hundredths seconds. How is this time written as a number?

A   1.62 seconds

B   10.62 seconds

C   100.62 seconds

D   1062.00 seconds

5

Tom's schedule is shown below. How much total time did he spend doing these activities?

Tom's Schedule
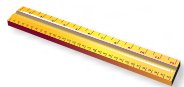
Activity	Time
Homework	$\frac{3}{4}$ hour
Television	$1\frac{1}{4}$ hours
Dinner	$\frac{1}{2}$ hour
Track Meet	$2\frac{1}{4}$ hours

A $3\frac{6}{14}$ hours   **C** $4\frac{1}{2}$ hours

B $3\frac{3}{4}$ hours   **D** $4\frac{3}{4}$ hours

3

Which expression is equivalent to $7 \times 7 \times 7 \times 7$?

7×4 4^7 7^4 28
A   **B**   **C**   **D**

GO ON▶

37

6

What is the value of the expression shown?

$$10 + 16 \div 2 \cdot 4$$

12	42	52	72
A	**B**	**C**	**D**

8

What is the ratio of even numbers to square numbers in the set of whole numbers from 1 to 20?

A   10:4   **C**   10:10

B   4:10   **D**   3:10

7

Which is equivalent to the expression shown below?

$$8 \times (15 + 9)$$

A $(8 \times 15) + (8 \times 9)$

B $(8 + 15) \times (8 + 9)$

C $(8 \times 15) \times (8 \times 9)$

D $(8 + 15) + (8 + 9)$

9

Julie has 50 jellybeans in a bag, and 20% of those jellybeans are red.

How many of the jellybeans in Julie's bag are red?

5	10	20	30
A	**B**	**C**	**D**

GO ON▶
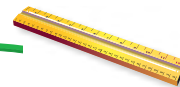
10 Use your centimeter ruler to help you answer this question.

Genna drew the rectangle below.

Which is closest to the length and width in centimeters of Genna's rectangle?

A   5.0 cm by 3.0 cm

B   5.5 cm by 3.5 cm

C   5.5 cm by 3.0 cm

D   6.0 cm by 3.5 cm

11 Which rectangle has an area of 24 square units and a perimeter of 20 units?

A
12
2

B
8
3

C
5
4

D
6
4
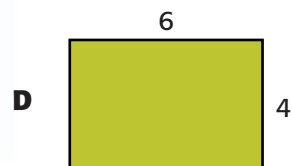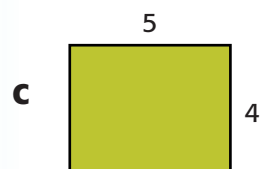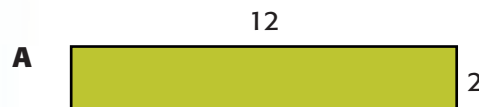
12

Which is closest to the measure of ∠XYZ?
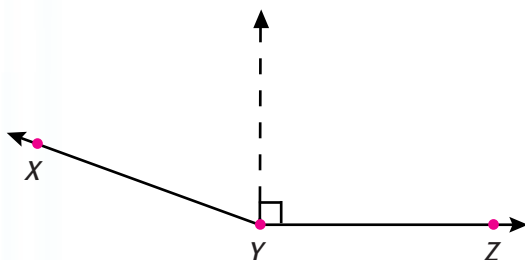
20°	90°	130°	160°
A	**B**	**C**	**D**

13

The bar graph below shows the number of minutes Bruce practiced piano during each day of the week.

Bruce's Piano Practice
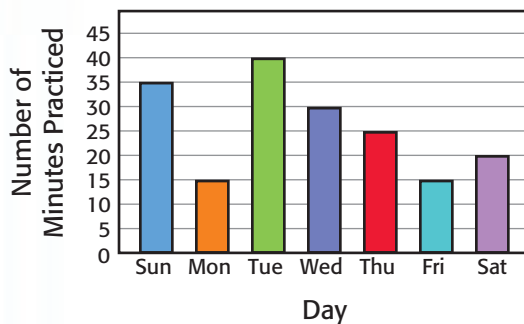
Exactly how many hours did Bruce practice piano during these 7 days?

A 2 hours

B $2\frac{1}{2}$ hours

C 3 hours

D $3\frac{1}{2}$ hours

GO ON▶

14

Use your centimeter ruler to help you answer this question.

Liza made the scale drawing shown below.
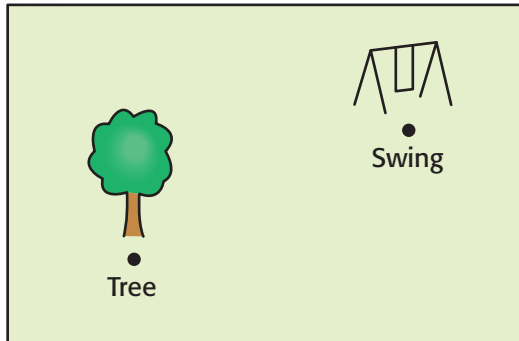
Swing

Tree

Key: 1 cm represents 5 feet

What is the shortest distance, in feet, from the tree to the swing?

A 4 feet   **C** 20 feet

B 5 feet   **D** 25 feet

15

Mike has x baseball cards. Tyrone has 3 times as many baseball cards as Mike. Frank has 20 baseball cards.

Which expression represents the total number of baseball cards Mike, Tyrone, and Frank have all together?

A $x + 3x + 20$

B $20 + 3x - x$

C $x + 3 + 20$

D $20 - 3x + x$

16

What is the value of the expression below when $x = 6$ and $y = 2$?

$$8x - y$$

84	46	12	4
A	**B**	**C**	**D**

GO ON▶

17

Which correctly describes the rule between *x* and *y* as shown in the table?

x	*y*
4	9
5	11
6	13
7	15

A $y = x + 6 - 1$

B $y = x \bullet x - 1$

C $y = x + x - 1$

D $y = x \bullet 2 + 1$

18

Which table of values satisfies the equation shown below?

$$y = x + 4$$

A

x	*y*
0	0
1	1
2	2
3	3

B

x	*y*
0	4
1	4
2	4
3	4

C

x	*y*
0	4
1	5
2	6
3	7

D

x	*y*
0	0
1	4
2	8
3	12

GO ON ▶
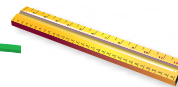
19

The graph below represents a linear equation.
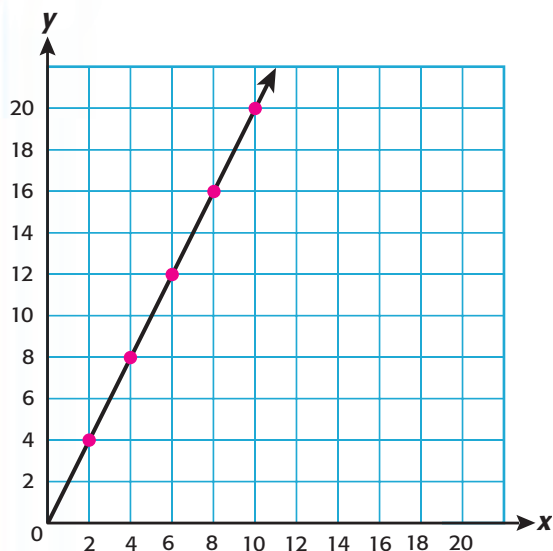
Using this graph, which value best represents the *y*-coordinate if the *x*-coordinate is 8?

4	14	16	18
A	**B**	**C**	**D**

20

Which inequality is best represented by the graph on the number line below?
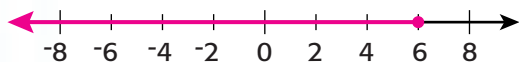
A	$x < 6$	**C**	$x \leq 6$
B	$x \geq 6$	**D**	$x > 6$

21

Which graph best represents the solution to the inequality shown?

$$\frac{m}{2} > 3$$

A

B

C

D

22

Philip has 18 video games. Emily has *v* video games. Together, Philip and Emily have a combined total of less than 30 video games.

Which inequality could be used to represent this situation?

A $v - 18 > 30$

B $v + 18 < 30$

C $v - 18 < 30$

D $v + 18 > 30$

GO ON▶
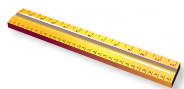
23

What value of *n* makes the equation below true?

$$4n = 220$$

50	55	216	220
A	**B**	**C**	**D**

24

What should be the value for *x* in the triangle shown?
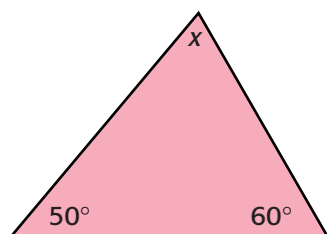
10°	40°	70°	90°
A	**B**	**C**	**D**

25
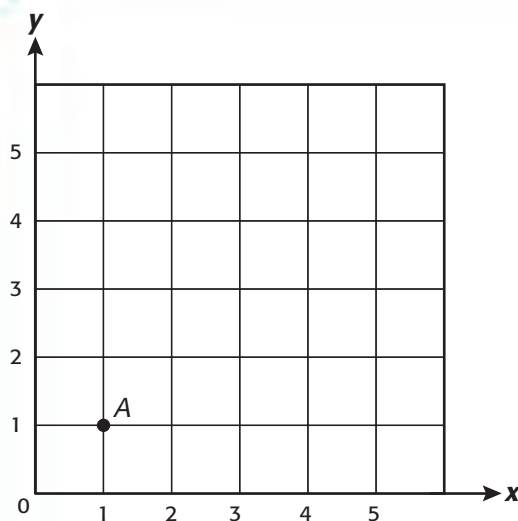
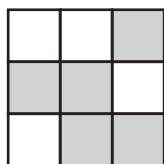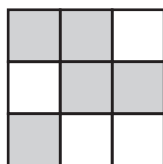Point *A* is moved 1 unit to the right and 2 units up. What are the coordinates of its new location?
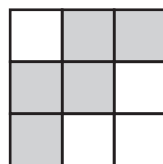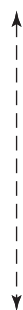
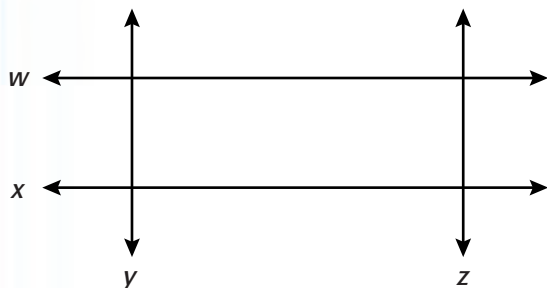| (2, 1)	(2, 3)	(1, 3)	(3, 2)
A	**B**	**C**	**D**

GO ON ▶

26
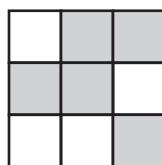
Which diagram shows a reflection over the vertical line in the drawing above?

A   B   C   D

GO ON▶
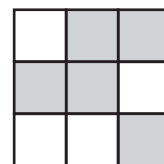
27

Lines *w* and *x* intersect lines *y* and *z* to form a rectangle as shown.

Which statement is true?

A   Line *x* is parallel to line *y*.

B   Line *x* is parallel to line *z*.

C   Line *w* is perpendicular to line *y*.

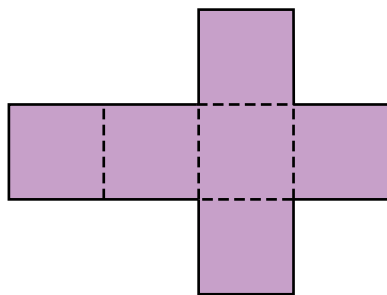**D**   Line *w* is perpendicular to line *x*.

28

Which streets on this map appear to never intersect?

A   Talley and Franklin

B   Starlight and Pierce

C   Franklin and Holloway

D   Holloway and Starlight
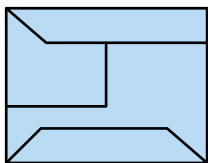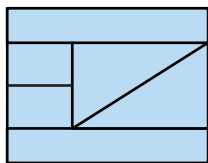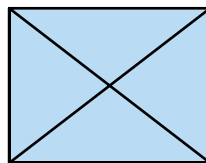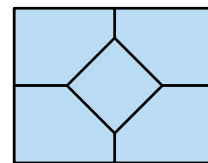
GO ON▶

29

What three-dimensional figure would this pattern make if it were folded along the dashed line segments?

A Rectangular pyramid
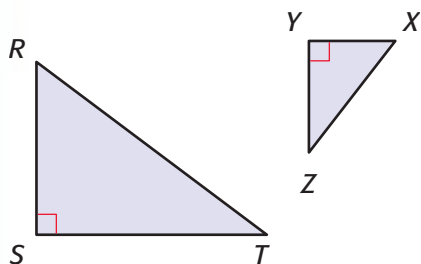
B Square pyramid

C Triangular prism

D Cube

30

Which figure does *not* appear to contain two or more congruent shapes?

A   B   C   D

GO ON

31

Triangle *RST* is similar to triangle *XYZ*.

$\overline{RS}$ corresponds to which side of triangle *XYZ*?

$\overline{SR}$	$\overline{YZ}$	$\overline{XZ}$	$\overline{XY}$
A	**B**	**C**	**D**

32

Parallelogram *RSTU* is similar to parallelogram *HIJK*.
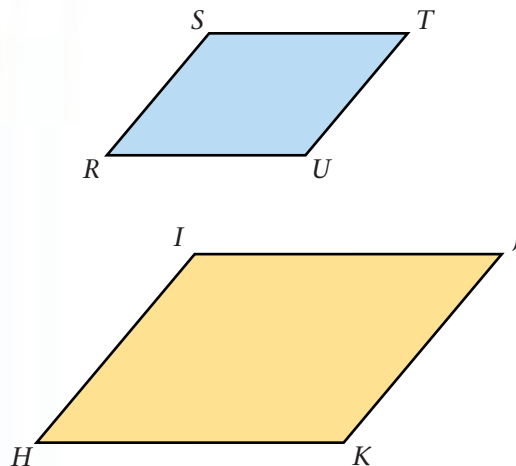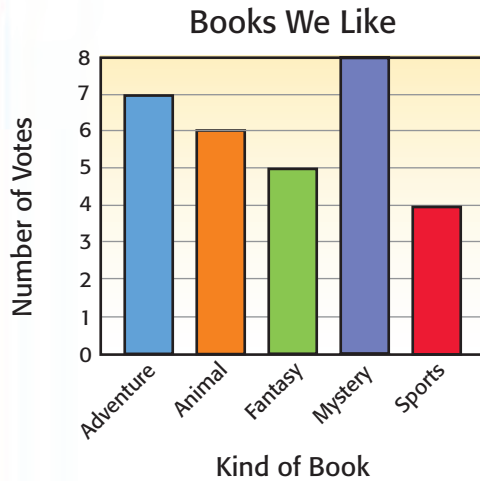

If the measure of ∠*RST* is 130°, then what is the measure of ∠*HIJ*?

A   50°

B   130°

C   260°

D   520°

33

Mrs. Robbins' class voted for their favorite kinds of books to read.

Books We Like

How many more students voted for books about adventures than books about sports?

0	1	2	3
A	**B**	**C**	**D**

34

The Venn diagram below shows the number of students at Washington Elementary who play baseball and football.
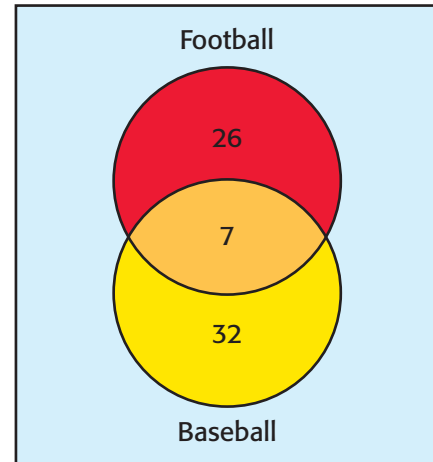
How many students play baseball but *not* football?

39	33	32	26
A	**B**	**C**	**D**

GO ON▶

35

Trista made the chart below using the last names of her friends.

LAST NAMES
WILLIAMS
BANKS
SMITH
ANDRADE
GONZALEZ
CAREY

Which line plot represents the number of letters in each friend's last name?

A

C

B

D

GO ON▶
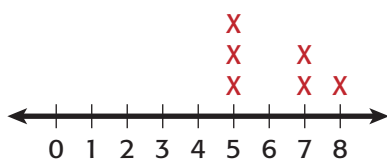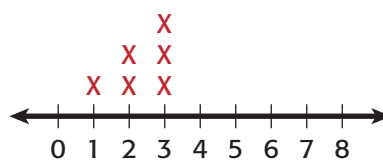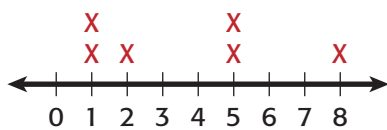
36 Carl has 16 books in his bookcase. This bar graph shows the number of each type of book.

Carl's Books
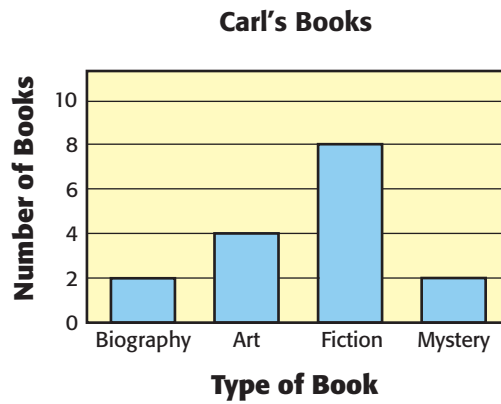
Which circle graph best shows the types of books Carl has in his bookcase?

Carl's Books

A

Carl's Books

C

Carl's Books

B

Carl's Books

D

GO ON
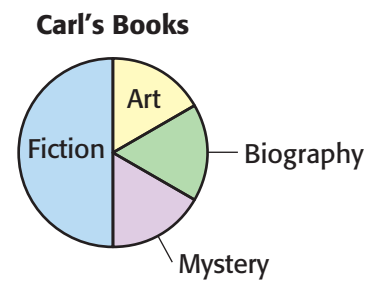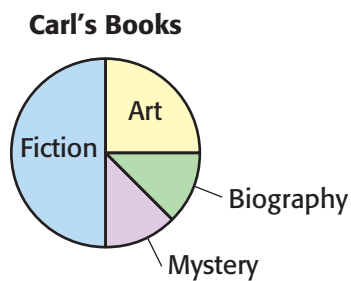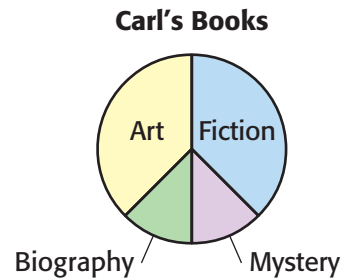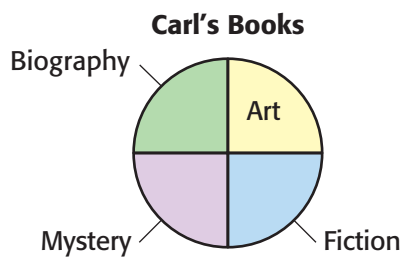
37

Greg took five tests each worth 100 points.

He earned the following scores:

85, 87, 87, 89, 97

What is Greg's mean (average) score for these five tests?

89	88	87	12
A	**B**	**C**	**D**

38

This table represents the first eight U.S. Presidents and their years in office.

U.S. President	Years in Office
G. Washington	8
J. Adams	4
T. Jefferson	8
J. Madison	8
J. Monroe	8
J.Q. Adams	4
A. Jackson	8
M. Van Buren	4

What are the median and range for the number of years in office for these eight U.S. Presidents?

A Median = 4, Range = 4
B Median = 4, Range = 8
C Median = 8, Range = 4
D Median = 8, Range = 8

GO ON▶

39

Which spinner has the greatest probability of the arrow landing on a section labeled B?

A

B

C

D
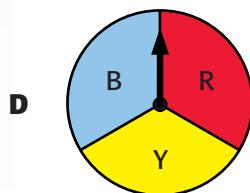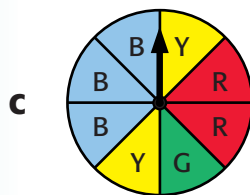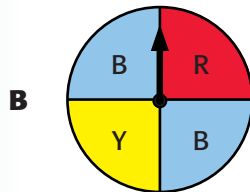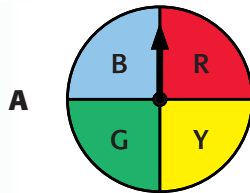
40

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 $\dfrac{4}{9}$

B $\dfrac{5}{9}$

C $\dfrac{2}{5}$

D $\dfrac{1}{2}$

STOP ■

Answer Key with Assessment Objectives Identified

Item Number	Correct Answer	Assessment Objective
1	C	**6.6.01** Read, write, recognize, and model equivalent representations of whole numbers and their place values.
2	B	**6.6.05** Read, write, recognize, and model equivalent representations of decimals and their place values through thousandths.
3	C	**6.6.06** Represent repeated factors using exponents.
4	B	**6.6.13** Solve problems and number sentences involving addition, subtraction, and multiplication of decimals.
5	D	**6.6.14** Solve problems involving addition and subtraction of fractions and mixed numbers, and express answers in simplest form.
6	B	**6.6.15** Identify and apply order of operations to simplify numeric expressions involving whole numbers.
7	A	**6.6.16** Solve problems involving the commutative, distributive, and associative properties of operations on whole numbers [e.g., (5×7)×2 = 5×(7×2)].
8	A	**6.6.18** Identify and express ratios using appropriate notation (i.e., a/b, a to b, a:b), identify equivalent ratios, and explain ratios that represent a given situation.
9	B	**6.6.21** Solve number sentences and problems involving percents.
10	C	**7.6.01** Select and use appropriate standard units and tools to measure length, mass/weight, capacity, and angles.
11	D	**7.6.02** Solve problems involving the perimeter and area of a triangle, parallelogram, or irregular shape using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description).
12	D	**7.6.03** Compare and estimate length (including perimeter), area, volume, weight/mass, and angles (0° to 180°) using referents.
13	C	**7.6.05** Solve problems involving unit conversions within the same measurement system for time, length, and weight/mass, including compound units (e.g., 5ft, 5in, 2lbs 2oz).
14	C	**7.6.06** Solve problems involving scale drawings and maps.
15	A	**8.6.02** Write an expression using variables to represent unknown quantities.
16	B	**8.6.03** Evaluate algebraic expressions with up to two whole number variable values (e.g., evaluate $3m + n + 3$ when $m = 4$ and $n = 2$).
17	D	**8.6.04** Determine a rule having two operations from an input–output table (e.g., multiply by 3 and add 2).
18	C	**8.6.05** Select a table of values that satisfies a linear equation, and recognize the ordered pairs on a rectangular coordinate system.

Item Number	Correct Answer	Assessment Objective
19	C	**8.6.05** Select a table of values that satisfies a linear equation, and recognize the ordered pairs on a rectangular coordinate system.
20	C	**8.6.07** Identify graphs of inequalities on a number line.
21	C	**8.6.07** Identify graphs of inequalities on a number line.
22	B	**8.6.08** Represent problems with equations and inequalities.
23	B	**8.6.09** Solve for the unknown in an equation with one operation (e.g., $8x = 24$, $m \div 2 = 25$).
24	C	**9.6.03** Solve problems using properties of triangles and quadrilaterals (e.g., sum of interior angles of a quadrilateral is 360°).
25	B	**9.6.05** Graph, locate, identify points, describe paths, and plot figures using ordered pairs (first quadrant).
26	B	**9.6.06** Identify, describe, and predict results of reflections, translations, and rotations of two–dimensional shapes.
27	C	**9.6.07** Identify and sketch parallel, perpendicular, and intersecting lines.
28	D	**9.6.07** Identify and sketch parallel, perpendicular, and intersecting lines.
29	D	**9.6.09** Identify a three–dimensional object from its net.
30	A	**9.6.11** Identify congruent and similar figures by visual inspection.
31	D	**9.6.12** Determine if figures are similar, and identify relationships between corresponding parts of similar figures.
32	B	**9.6.12** Determine if figures are similar, and identify relationships between corresponding parts of similar figures.
33	D	**10.6.01** Read, interpret, and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph.
34	C	**10.6.01** Read, interpret, and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph.
35	D	**10.6.01** Read, interpret, and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph.
36	B	**10.6.02** Compare different representations of the same data.
37	A	**10.6.04** Determine the mode, range, median, and mean, given a set of data or a graph.

Item Number	Correct Answer	Assessment Objective
38	C	**10.6.04** Determine the mode, range, median, and mean, given a set of data or a graph.
39	B	**10.6.05** Solve problems involving the probability of a simple event, including representing the probability as a fraction, decimal, or percent.
40	D	**10.6.05** Solve problems involving the probability of a simple event, including representing the probability as a fraction, decimal, or percent.

To view all the mathematics assessment objectives, download the *Illinois Mathematics Assessment Framework* for Grades 3–8 online at www.isbe.net/assessment/IAFindex.htm.

Mathematics Short-Response
Scoring Rubric
Followed by Student Samples

Mathematics Short-Response Scoring Rubric

The following rubric is used to score the short-response items for all grade levels.

SCORE LEVEL	DESCRIPTION
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

Using Short-Response Samples

Beginning with the spring 2008 ISAT, the sample short-response question and answer (shown below) that appeared in the 2006 and 2007 ISAT test directions will no longer be included in the directions immediately prior to session 2. ISBE encourages educators to practice these types of items with students during the course of the school year so they are familiar with them prior to ISAT testing.

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

$$50¢ + 90¢ + 35¢ = \$1.75$$
for each day

My answer
$8.75

$$
\begin{array}{r}
\overset{3}{}\overset{2}{} \\
1.75 \\
1.75 \\
1.75 \\
1.75 \\
+\ 1.75 \\
\hline
\$8.75 \text{ for five days}
\end{array}
$$

Please refer to the 2008 and 2009 ISAT sample books for additional short-response items and student samples (online at www.isbe.net/assessment/htmls/sample_books.htm).

Blank Short-Response Template

Mathematics - Session 2   **Question 1**

Write your response to question 1 on this page. Only what you write on this page will be scored.

Mathematics Short-Response Sample Item 1

Below is a short-response sample item, followed by 3 samples of student responses.

This short-response sample item is classified to assessment objective 6.6.20. "Read, write, recognize, and model percents from 0% to 100%."

1

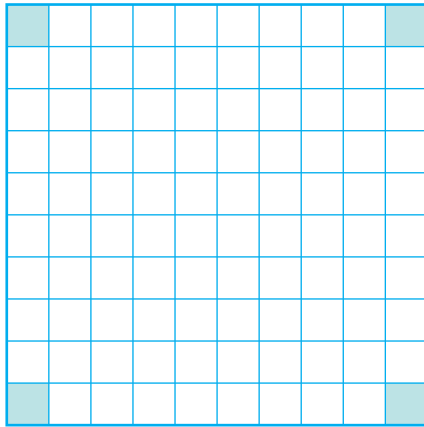Use the two figures below to answer the questions.

Figure A
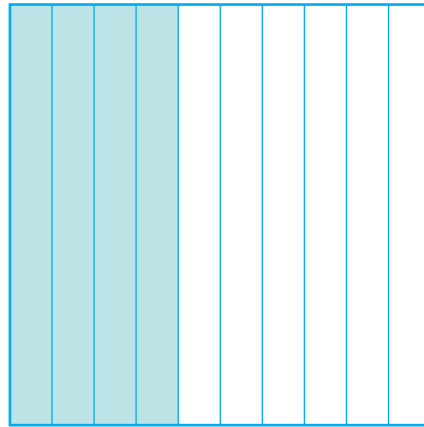
Figure B

1. What percent of Figure A is shaded?

2. What percent of Figure B is shaded?

In your answer document, clearly state which answer goes to Figure A and Figure B.

Short Response Student Sample 1A

My Answer
① 4 .\° = Figure A
② 40 .\° = Figure B

My work
Figure A has 100
Squares with 4 shaded
in each square is worth 1 square
So if there is 100 with four shaded
in the percent of that would be
4 .\°.
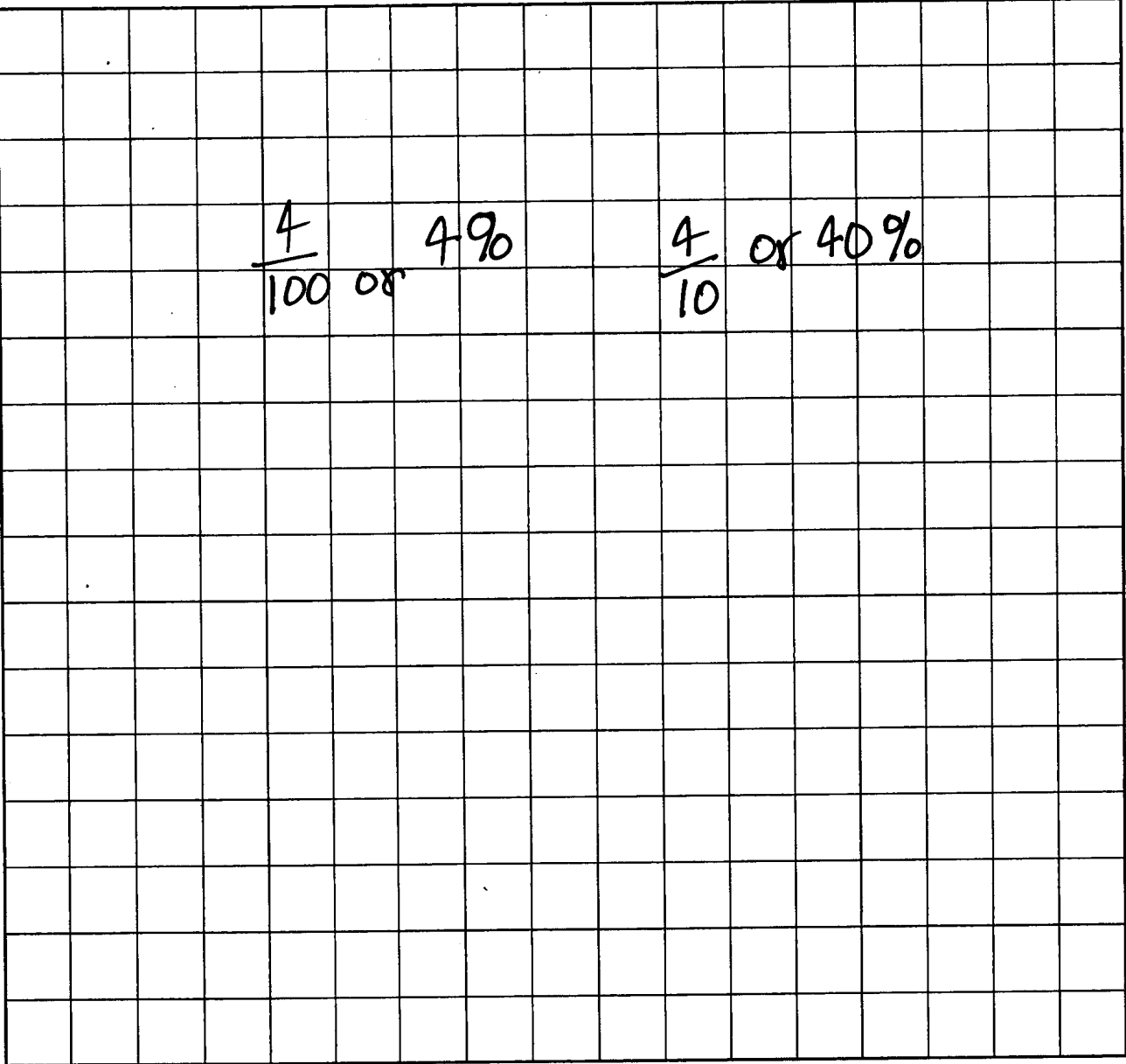
Figure B has 10 rows so each row
is worth 10 squares so if there is
four rows shaded it is 4×10 = 40 .\°.

Short-Response Student Sample 1A

Rubric Score Point = 2

Note: The student states the correct percentage shaded for both figures with identification (*4% = Figure A…40% = Figure B*).

Short Response Student Sample 1B

$$\frac{4}{100} \text{ or } 4\% \qquad \frac{4}{10} \text{ or } 40\%$$

Short-Response Student Sample 1B

Rubric Score Point = 2

Note: The student correctly states the percentage shaded and identification for both figures (*4/100 or 4%…4/10 or 40%*). The fraction *"4/100"* is sufficient identification of Figure A because it describes the figure with 100 squares as having 4 shaded squares. When the student identifies one figure, it implies that the additional figure is identified.

Short Response Student Sample 1C

Figure A

4%

$$\frac{4}{100} = 0.04 = 4\%$$

Figure B

4%

$$\frac{4}{10} = \frac{40}{100} = 0.04 = 4\%$$

Figure A has 4% shaded.

Figure B has 4% shaded.

Short-Response Student Sample 1C

Rubric Score Point = 1

Note: The student states a correct percentage shaded and identification of Figure A (*4%*), but has an incorrect percentage for Figure B due to an incorrect conversion (*4/10 = 40/100 = 0.04 = 4%*).

Mathematics Short-Response Sample Item 2

Below is a short-response sample item, followed by 3 samples of student responses.

This short-response sample item is classified to assessment objective 8.6.10, "Solve word problems involving unknown quantities."

2

Matthias has 15 coupon books to sell for the school fundraiser. Matthias sells all of his coupon books plus 3 additional coupon books.

If Matthias collects $198, how much does 1 coupon book cost?

Show your work.

Short Response Student Sample 2A

```
   15
  +3
  ───
   18

  ÷ 198
  ─────
   11


   11
 x 18
 ────
  198


  each Book
  cost 11.00
```

So that mean each
Book cost 11.00

Short-Response Student Sample 2A

Rubric Score Point = 2

Note: The student identifies the cost of a coupon book (*each book cost 11.00*) with correct work shown (*11 x 18 = 198*).

Short Response Student Sample 2B

$$\begin{array}{r} 15 \\ \times\ 3 \\ \hline \end{array}$$

18 books sold

$18 \times ? = 198$

$18 \times 10 = 180$

$18 \times 11 = 198$

$\$11.^{00}$

Short-Response Student Sample 2B

Rubric Score Point = 2

Note: The student identifies the cost of a coupon book (*$11.00*) with correct guess and check work shown (*18 x 10 = 180…18 x 11 = 198*).

Short Response Student Sample 2C

$198 ÷ 15 coupon books means the each coupon book is $13.20 each.

$198 ÷ 15 coupon books = $13.20.

Short-Response Student Sample 2C

Rubric Score Point = 1

Note: The student correctly divides the total money collected by the number of coupon books sold (*$198/15*), but fails to add in the 3 additional coupon books sold. The student provides an incorrect answer, but with correct dollars and cents format (*$13.20*).

Mathematics Extended-Response Scoring Rubric Followed by Student Samples

Mathematics Extended-Response Scoring Rubric

The following rubric is used to score the extended-response items for all grade levels. A student-friendly version of this extended-response scoring rubric is available online at www.isbe.net/assessment/math.htm.

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 of the 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

Using Extended-Response Samples

Beginning with the spring 2008 ISAT, the sample extended-response problem and solution (shown below) that appeared in the 2006 and 2007 ISAT test directions will no longer be included in the directions immediately prior to session 3. ISBE encourages educators to practice these types of items with students during the course of the school year so they are familiar with them prior to ISAT testing.

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
B	B	B	B	B	B
G	G	G	G	G	G
R	R	R	R	R	R

$\frac{1}{2}$ blue

$\frac{1}{4}$ gray

$\frac{1}{4}$ 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.

Please refer to the 2008 and 2009 ISAT sample books for additional extended-response items and student samples (online at www.isbe.net/assessment/htmls/sample_books.htm).

Blank Extended-Response Template

DIRECTIONS ▶

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.

Mathematics Extended-Response Sample Item 1

Below is an extended-response sample item, followed by 3 student samples.

This extended-response sample item is classified to assessment objective 6.6.13, "Solve problems and number sentences involving addition, subtraction, and multiplication of decimals."

1

Amy sells the following items at a farmer's market:

- 5 pounds of apples for $3.50
- 1 pound of cherries for $5.00
- 2 pounds of pears for $3.00
- 5 pounds of carrots for $5.50
- 2 pounds of beans for $2.50

If Amy sells 10 pounds of apples, 3 pounds of cherries, and 5 pounds of beans to one customer, how much money did she collect for what was sold?

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

Extended-Response Student Sample 1A

DIRECTIONS ▶

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.

$\frac{5}{\text{pound}} = \$3.50 \times 2$
apple

10 pounds of apples = $7.00 ⬅

3 pounds of cherries = $15.00 ↗

1 pound cherries = $5.00×3 ⟶

5 pounds of beans = $6.25

2 pounds of beans = $2.50 ⟩

$\mathscr{L} = \$5.00$ 1 $1.25

$7.00
15.00
+ 6.25
_____
28.25

answer= $28.25

→ I added all the cost of 10 pounds of apples,
3 pounds of cherries, and 5 pounds of
beans and got $28.25.

Extended-Response Student Sample 1A Continued

First, I knew five pounds of apples was three dollars and fifty cents so I multiplied three dollars and fifty cents by two and got seven dollars. I did this because I knew five was half of ten because five pounds of apples equals three dollars and fifty cents. Then, she sold three pounds of cherries and I knew that one pound of cherries equaled five dollars so I multiplied that by three and got fifteen dollars. I did this because they needed to know the cost of three pounds of cherries that she sold. Last, I needed to figured how much five pounds of beans cost. I knew two pounds of beans cost two dollars and fifty cents then I multiplied that by two and got five dollars but then I only had four pounds of cherries and I needed five so I split two pounds in half and got $1.25 then I added that to $5.00 and got $6.25.

Extended-Response Student Sample 1B

DIRECTIONS ▶

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.

First I knew that 5 lbs. of apples = $3.50 so I took $3.50 and multiplyed it by 2 because they give you 5 lbs. for $3.50. Then I got $7.00. Then I knew that 1 lb. of cherries = $5.00. Next I multiplyed $5.00 × 3 because the person wanted 3 lbs. and 1 lb. = $5.00 and I got $15.00. Then I knew that 2 lbs. of beans = $2.50 so I multiplyed it by 2.5 because they wanted 5 lbs. of beans and 2.50 × 2.50 = $6.25. Then I took $15.00 + $7.00 + $6.25 = 28.25 because it gave us the total.

Now I know Amy sold $28.25 worth of food.

Extended-Response Student Sample 1B Continued

5 lbs. of apples = $3.50   10 lbs of apples = $7.00

1 lb of cherries = $5.00   3 lbs. of cherries = $15.00

2 lbs of beans = $2.50   5 lbs. of beans = $6.25

Apples → $3.50
      × 2
    7.00

Cherries
   ↓
  $5.00
  × 3
  $15.00

Beans → $2.50
      2.5
     $6.25

  $15.00
  + 6.25
  + 7.00
  $28.25

Amy sold $28.25 worth of food.

Extended-Response Student Sample 1C

DIRECTIONS ▶

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.

What I did	Why I did it
1. ÷ 5 $ 3.50 ——— $ .70 per pound for apple 1 Ib = $ 5.00 for cherry $3.00 ÷ 2 Ib ——— $1.50 Ib of pears $ 5.50 ÷ 5 Ibs ——— $1.10 per pound for Carrot $ 2.50 ÷ 2 Ib ——— $1.25 per pound of beans	1. I divided the amount of money by the pounds to find out what it Coast per pound $.70 for a pound of apples. $5.00 for a pound of Cherrys $1.50 for a pound of pears $1.10 for a pound of Carrots $2.50 for a pound of beans

Extended-Response Student Sample 1C Continued

What I did	Why I did it
2. 1.70	2. I took the price
x 10	of apples per pound
$7.00 apples	times 10 pound to
	get $7.00 made.
$1.00	
x 3	I took the price
$3.00 cherry	of cherry per pound
	times three to get
$2.50	$3.00 made.
x 5	
$12.50 beans	I took the price of
	beans per pound
$7.00	times 5 pound wich
$3.00	made $12.50 made
$12.50	I added them all
$22.50	up to get the cost
	wich is $22.50
	made at the market.

Scoring Guide for "Amy's Items at Farmer's Market"

To solve this problem, students are asked to determine how much money was collected for goods sold.

Extended-Response Student Sample 1A		
MATHEMATICAL KNOWLEDGE	STRATEGIC KNOWLEDGE	EXPLANATION
4	**4**	**4**
This response shows complete understanding of the problem's mathematical concepts and principles. The student provides a completely correct total of the amount collected for what was sold (*$28.25*) and all mathematical computations shown are completely correct (*$3.50 x 2 = 7.00, $5.00 x 3 = $15.00…two pounds of beans cost two dollars and fifty cents…multiplied that by two and got five dollars but then I only had four pounds of cherries and I needed five so I split two pounds in half and got $1.25 then I added that to $5.00 and got $6.25…$7.00 + 15.00 + 6.25 = 28.25*).	This response identifies all important elements of the problem and shows complete understanding of the relationship among elements. The student provides evidence of finding the cost of one pound of beans in calculating the total cost of beans (*two pounds of beans cost two dollars and fifty cents…multiplied that by two and got five dollars but then I only had four pounds of cherries and I needed five so I split two pounds in half and got $1.25 then I added that to $5.00 and got $6.25*) and uses the correct unit of measure for apples (*$3.50 x 2 = $7.00*) and cherries (*$5.00 x 3 = $15.00*), demonstrating the use of an appropriate strategy to solve the problem.	The response gives a complete written explanation of the solution process. The student clearly explains what was done in the solution process and why it was done (*…knew five pounds of apples was three dollars and fifty cents so I multiplied three dollars and fifty cents by two and got seven dollars…because I knew five was half of ten because five pounds of apples equals three dollars and fifty cents…one pound of cherries equaled five dollars so I multiplied that by three and got fifteen dollars…because they needed to know the cost of three pounds of cherries that she sold…needed to figured how much five pounds of beans cost… two pounds of beans cost two dollars and fifty cents then I multiplied that by two and got five dollars but then I only had four pounds of cherries and I needed five so I split two pounds in half and got $1.25…added that to $5.00 and got $6.25…added all the cost of 10 pounds of apples, 3 pounds of cherries, and 5 pounds of beans and got $28.25*). Although the student refers to the beans as cherries in one part of the explanation, the student correctly utilizes the cost for the beans and the knowledge that 5 pounds of beans are needed, so this does not detract from the correct solution.

Extended-Response Student Sample 1B

MATHEMATICAL KNOWLEDGE	STRATEGIC KNOWLEDGE	EXPLANATION
4	**4**	**4**

This response shows complete understanding of the problem's mathematical concepts and principles. The student provides a completely correct total of the amount collected for what was sold (*$28.25*). All mathematical computations shown are completely correct (*$3.50 x 2 = 7.00, $5.00 x 3 = $15.00, $2.50 x 2.5 = $6.25, $15.00 + 6.25 + 7.00 = $28.25*).

This response identifies all important elements of the problem and shows complete understanding of the relationship among elements. The student provides evidence of using the correct unit price for beans in calculating the total cost of beans (*…knew that 2 lbs. of beans =$2.50 so I multiplied it by 2.5…2.50 x 2.50 = $6.25*) and uses the correct unit of measure for apples (*$3.50 x 2 = 7.00*) and cherries (*$5.00 x 3 = $15.00*).

The response gives a complete written explanation of the solution process. The student clearly explains what was done in the solution process and why it was done (*…knew that 5 lbs of apples = $3.50…took $3.50 and multplyed it by 2 because they give you 5 lbs. for $3.50… got $7.00… knew that 1 lb. of cherries = $5.00…multplyed $5.00 x 3 because the person wanted 3 lbs. and 1 lb. = $5.00…got $15.00…knew that 2 lbs. of beans = $2.50 so I multplyed it by 2.5 because they wanted 5 lbs. of beans and 2.50 x 2.50 = $6.25…took $15.00 + $7.00 + $6.25 = 28.25 because it gave us the total. Now I know Amy sold $28.25 worth of food*).

Extended-Response Student Sample 1C

MATHEMATICAL KNOWLEDGE	STRATEGIC KNOWLEDGE	EXPLANATION
2	**4**	**2**

This response shows some understanding of the problem's mathematical concepts and principles. The student correctly computes the unit price of all items in the prompt (*$.70 per pound for apple, 1 lb = $5.00 for cherry, $1.50 lb of pears, $1.10 per pound for carrot, $1.25 per pound of beans*). The correct amount for apples is shown (*$.70 x 10 = $7.00 apples*). However, the computations shown for cherries (*$1.00 x 3 = $3.00 cherry*) and beans (*$2.50 x 5 = $12.50 beans*) demonstrate major mathematical errors.

This response identifies all important elements of the problem and shows complete evidence of an appropriate strategy that would correctly solve the problem. The student has shown evidence of finding the correct price per pound of all items at the farmer's market (*$.70 per pound for apple, 1 lb = $5.00 for cherry, $1.50 lb of pears, $1.10 per pound for carrot, $1.25 per pound of beans*). The correct pricing for apples is used (*$.70 x 10 = $7.00 apples*) and the student's explanation provides evidence of using the price per pound for cherries (*I took the price of cherry per pound times three…*) and beans (*I took the price of beans per pound times 5 pound…*). The use of an incorrect price per pound for cherries and beans are considered computational errors.

The response gives some written explanation of the solution process. The student explains what was done and why some of the steps were taken (*$.70 per pound for apple, 1 lb = $5.00 for cherry, $1.50 lb of pears, $1.10 per pound for carrot, $1.25 per pound of beans…I divided the amount of money by the pounds to find out what it coast per pound*). However, the explanation does not entirely match the work shown. The explanations for determining prices are not consistent with the work shown for cherries (*1 lb = $5.00 for cherry…$1.00 x 3 = $3.00*) or beans (*$2.50 ÷ 2 = $1.25 per pound of beans…$2.50 x 5 = $12.50 beans…took the price of beans per pound times 5 pound wich made $12.50*).