## 2009

# ISAT Sample Book 

## Illinois Standards Achievement Test

## GRADE



Sample Items for Reading, Mathematics, and Science

## ACKNOWLEDGMENTS

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## Introduction

This sample book contains sample ISAT items classified with an assessment objective from the Illinois Assessment Frameworks. These samples are meant to give educators and students a general sense of how items are formatted for ISAT. All 2009 ISATs 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 4 Reading ISAT

ISAT Reading testing in spring 2009 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 4 |  |
| :---: | :---: |
| Session 1 45 minutes | 6 shorter passages-30 multiple-choice items total |
| Session 2 45 minutes | Two longer passages consisting of: <br> 1 expository passage with 10 multiple-choice items 1 literary passage with 10 multiple-choice items 1 extended-response item |
| Session 3 45 minutes | Two longer passages consisting of: <br> 1 expository passage (or paired passage) with 10 multiple-choice items 1 literary passage (or paired passage) with 10 multiple-choice items 1 extended-response item |
|  | (Some items will be pilot items.) |

# Shorter Passage Followed by <br> Multiple-Choice Sample Items 

## Summer Palace

by Heidi Chang

"Here, Yeh Yeh (grandfather), I drew another picture for you."
"Ah, Sasha, you are getting so good now," her grandfather said. Sasha liked to draw so much. She could spend hours at the kitchen table drawing. Sasha especially liked giving her drawings to her grandfather.

Yeh Yeh hung all of Sasha's pictures in his study. It made Sasha feel special. Her grandfather always found a place for them.
"What is this drawing, Sasha?" her yeh yeh asked, putting on his glasses and looking closely. Sasha liked the way her grandfather took time to talk about her drawings.
"Well, that's Dad coming home from work and taking off his shoes," Sasha said.
"It's very nice. I think I'll put it here right next to my books." Sasha's grandfather had been a scholar in China and had a lot of books. Many of them were old and taped together. She knew the story of when Yeh Yeh left China. All he packed in his two suitcases were books. Sasha knew how much Yeh Yeh's books meant to him. She was proud to have her drawings hang above them.
"I'm glad you always like my drawings, Yeh Yeh," Sasha said.
"Your drawings are very special to me, Sasha," he said. "Do you know why?"

"Well, probably because I'm your granddaughter," she laughed.
"Yes, I suppose," her grandfather said, removing his glasses. He patted Sasha on the head. "I never told you this before because I thought you were too young to understand. But your drawings remind me of my father."
"They do? Why?" she asked.
"Well, he was an artist. He came to Beijing from a small village in China. He was a young man at the time when they were building Yi He Yuan, the Summer Palace. He was one of the major craftspeople who worked on it. It is a famous garden in China and has some of the most beautiful buildings."
"Wow, Yeh Yeh. I didn't know that," Sasha said. "He liked to draw, too?"
"Yes, Sasha. So you see, I am so glad you like to draw. Every time you give me a drawing, I think of my father."

Sasha smiled and looked around at all her pictures on the walls. She felt happy to have given her grandfather so many memories.

B He thought she was too young to understand.
C It made him sad to tell the story.
D He was embarrassed about the story.

2
Sasha's drawings and Yeh Yeh's books were alike because they both -

A were handmade
B reminded Yeh Yeh of his homeland
C were treasures to Yeh Yeh
D had been especially made for him

This story is mainly about a -

A girl who likes to read
B grandfather who travels
C beautiful palace
D girl learning about her great-grandfather
3

## 4

Which of these did the author use in this story?

A Dialogue
B Humor
C Rhyme
D Flashback

## Answer Key with Assessment Objectives Identified

|  | Item Number | Correct Answer | Assessment Objective |
| :---: | :---: | :---: | :---: |
| Shorter Passage | 1 | B | 1.4.17 Determine the answer to a literal or simple inference question regarding the meaning of a passage. |
|  | 2 | C | 1.4.22 Draw inferences, conclusions, or generalizations about text, and support them with textual evidence and prior knowledge. |
|  | 3 | D | 1.4.19 Identify the main idea of a selection when it is not explicitly stated (e.g., by choosing the best alternative title from among several suggested for a given passage). |
|  | 4 | A | 1.4.22 Draw inferences, conclusions, or generalizations about text, and support them with textual evidence and prior knowledge. |

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 <br> Multiple-Choice Sample Items 

Some people say there's no magic left in the world, but people in Missoula, Montana, might not agree.

# The Mağic Carousel 

by Ann Behan
1 Chuck Kaparich had a dream. A cabinetmaker, he was fascinated by wooden carousel ${ }^{1}$ horses.
2 He researched their history and construction, then decided to carve one himself. In 1990 he received a set of carving tools for his birthday.
3 As he worked,
 Chuck imagined building an entire carousel and giving it to the city of Missoula, Montana. Grateful for the successful life his immigrant ${ }^{2}$ ancestors had created in America, Chuck believed the gift would be a fitting way to repay that debt. in the United States for more than fifty years. in Missoula's riverfront park.

When he'd finished four wooden ponies, Chuck put one in the back of his truck and went to see the mayor.
7 He dragged the horse into the mayor's office. "This is how naive ${ }^{3}$ I was," he said later. "I said, 'I want to build a carousel for Missoula. I don't want to get paid for it, but I want it to be preserved for the future, and I want this little spot on the riverfront.'"

[^0] Badenoch, the city official who had to approve the use of the riverfront land. No, Badenoch's head shook from side to side. No.
But Chuck kept talking. His enthusiasm was contagious. Soon Badenoch's head began to nod yes. "He made me believe," Badenoch said. "He made us all believe."
News of the "carousel man" got around. Wood-carvers offered to help Chuck make the ponies. The Kaparich's garage became headquarters for an army of volunteer carvers who worked from 7 to 10 p.m., four nights a week.
Quality was a priority with Chuck. It took eight hundred hours to carve, sand, and paint one pony. "We are not going to rush," he told his workers. "Ever."
As the ponies were completed, they went on display around the community. "The horses were our best ambassadors ${ }^{4}$," said Chuck. They made everyone believe.
But the carousel needed a building, a frame and platform, and an organ. Volunteers began raising money. They became as important as the artisans. The first money-making idea was the Adopt-a-Pony campaign. An individual, family, business, or organization could adopt a pony for $\$ 2,500$, earning the right to design and name the horse.
Schoolteachers dreamed up the Pennies-for-Ponies campaign. Classrooms collected 942,794 pennies, or
 nearly $\$ 10,000$, enough to adopt four ponies! The four classrooms that collected the most pennies won the right to "adopt" a pony.
Chuck and carousel artist John Thompson helped the children design their horses. Sir Franklin, Snapples, Meriwether, and Moonlight were designed by the kids. Several pennies were hidden in the design of each "penny pony" as a reminder that each one was paid for, one chore at a time.
Sometimes Chuck had doubts. In the middle of the night he'd worry, "We can't do this. There are too many problems."
But the project continued. The city assigned the west end of its riverside park, Chuck's "little spot on the riverfront," as the site for the carousel.
19 In 1991 a tip led Chuck to an old carousel frame. It lay behind a rural museum - bent, rusted, and covered in snow. Four years later Chuck and a volunteer crew had restored it to superb condition.

[^1]An organ was built especially for Missoula's carousel. Its four hundred pipes duplicate the sounds of twenty-three instruments and forty-five musicians.
21 Finally in May 1995, everything was done. The site, building, carousel, and organ were ready. Thirty-eight ponies and two chariots awaited riders. After a jubilant parade, the carousel opened. Riders experienced the joy of being young, if not in years, then surely at heart.
22 Chuck Kaparich and his neighbors knew that magic can come from dreaming and working together. Missoula's carousel will work its magic for years to come.

## 1

Which of these is a synonym for the word grateful from paragraph 3?

A Careful
B Helpful
C Thankful
D Thoughtful

## 2

According to the passage, which of these happened first?

A Chuck found an old carousel frame.
B An organ was built just for the carousel.
C Chuck made four wooden carousel ponies.
D Riverfront land was provided for the carousel.

## 3

How did Chuck change the opinion of the city officials?

A He gave the city land on the riverfront.
B He offered to name a pony after the mayor.
C He brought in an army of volunteer carvers.
D He kept talking to the officials about the project.

## 4

Which of these is the meaning of contagious as used in paragraph 9 ?

A Soaring
B Exciting
C Catching
D Flickering

The chart below shows the order of events in the passage.


Which event belongs in the blank box?

A The organ was built for the carousel.
B Community members adopted ponies.
C Many wood-carvers offered to help Chuck.
D A tip led Chuck to a rusty, old carousel frame.

6
What was one way that children helped with Chuck's project?

A They carved horses.
B They painted horses.
C They repaired horses.
D They designed horses.

## Which of these is a minor

 detail in this passage?A Chuck worried about many problems.
B Children raised money for the project.
C Chuck imagined building an entire carousel.
D Wood-carvers offered to help make the ponies.

## 8

Which of these is an opinion from the passage?

A "The first money-making idea was the Adopt-a-Pony campaign."
B "Several pennies were hidden in the design of each 'penny pony' as a reminder that each one was paid for, one chore at a time."
C "Its four hundred pipes duplicate the sounds of twenty-three instruments and forty-five musicians."
D "Riders experienced the joy of being young, if not in years, then surely at heart."

9
What is the author's message in this passage?

A Magic comes from inside a carousel.
B Dreams can come true with hard work.
C Schoolteachers can dream up fundraisers.
D Schoolchildren can build a carousel by doing chores.

10
Which of these would be the best title for this passage?

A "Riding a Carousel"
B "The Carousel Man"
C "Pennies for Ponies"
D "Wood-carvers at Work"

## Answer Key with Assessment Objectives Identified

|  | Item Number | Correct Answer | Assessment Objective |
| :---: | :---: | :---: | :---: |
| Longer Passage with Multiple-Choice Items | 1 | C | 1.4.05 Use synonyms to define words. |
|  | 2 | C | 1.4.21 Identify or summarize the order of events in a story. |
|  | 3 | D | 1.4.22 Draw inferences, conclusions, or generalizations about text, and support them with textual evidence and prior knowledge. |
|  | 4 | C | 1.4.04 Determine the meaning of an unknown word using word, sentence, and cross-sentence clues. |
|  | 5 | C | 1.4.21 Identify or summarize the order of events in a story. |
|  | 6 | D | 1.4.17 Determine the answer to a literal or simple inference question regarding the meaning of a passage. |
|  | 7 | A | 1.4.13 Distinguish between minor and significant details in a passage. |
|  | 8 | D | 1.4.23 Differentiate between fact and opinion. |
|  | 9 | B | 2.4.05 Identify author's message. |
|  | 10 | B | 1.4.19 Identify the main idea of a selection when it is not explicitly stated (e.g., by choosing the best alternative title from among several suggested for a given passage). |

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 Extended-Response Sample Item 

Elephants are smarter than people may think they are. Scientists are discovering where these huge animals go and what they do at night.


## Tracking the Elephants

by George W. Frame

1 One sunny afternoon, I bicycled to the dams near my house in West Africa to watch elephants. I am a biologist, and my job was to work with dozens of scientists and students. I had to know about all of their projects, including the elephant research.
2 I wanted to see if the usual elephants were at the dams. The weather was terribly hot, so I could imagine how much the elephants were enjoying the water.

## Bold Elephants

3 Most antelopes and warthogs are shy. They come to drink at night. But not the elephants: They boldly come in the daytime, and ignore all of us people who gather to watch them or who are fishing in the reservoir. ${ }^{1}$ The elephants "know" that they are safe here in the heart of the reserve. ${ }^{2}$
4 I watched as family after family of elephants came to the water to drink and bathe. Each family consists of an old female, her grown daughters and nieces, and all their "children." Sometimes a big bull elephant accompanies a family.

[^2] individuals. These scientists know them by the size and shape of the tusks, any notches or holes in the ears, the absence of a tail tassel, and other marks and scars. collars on elephants to see where they would travel.
Of course, elephants are easy to find when they are near the villages and roads. Often I didn't even have to leave my house to find elephants, I just looked out my window. But sometimes the elephants just seem to vanish. That's when a radio signal comes in handy.

## Work Fast!

To put a radio collar on an elephant, we shot a syringe ${ }^{3}$ dart into the elephant, which gave the animal a medicine that made it drowsy. When the elephant lay down, we lifted its ears and put a radio collar around its neck. The collar fit right behind the skull and jaws, and was hidden by the huge floppy ears.
We hurriedly bolted together the ends of the collar. Then we gave the animal a different medicine to awaken it, and we ran away to watch from a safe distance.
When tracking elephants, I sometimes drove in darkness through the bushlands with two researchers, Urbain Belemsobgo and Benoit Doamba, who work for the government.
We stopped and climbed onto high places - the top of the truck or a rock pile - with antenna and radio receiver in hand. Wearing earphones, and turning slowly in all directions, we took turns listening for the faintest radio signal from a distant radio collar.
We were determined to find out where the elephants went at night. Usually we succeeded in hearing the radio's bleep bleep bleep bleep signal, which told us the direction.
But it didn't always tell us how far away the elephant was. A weak signal often meant that the elephant was miles away. Sometimes the elephant was close by, but the radio's signal was weak because it was partially blocked by trees or rocks - or even by other elephants.

[^3]

14 So we had to go in the direction of the signal to find out how far away the elephant was. We also wanted to see what the elephant was doing and who was with it. After a long night of tracking elephants, we returned home and fell into bed.

## Sneaky Elephants

15 Tracking the radio signals was worth all the effort. We learned that under the cover of darkness some elephants quickly walk miles outside of the protected area to find different foods, including farm crops. Elephants love to eat corn and millet. ${ }^{4}$
16 Sometimes the farmers shoot at the elephants, and this is a lesson that the older elephants have learned well: By raiding a farm, the elephants risk being killed by a bullet. For the elephants, the trick is to raid the farm when all the people are asleep. Shortly before dawn, the elephants hurry their families back into the safety of the reserve.
I always knew that elephants are smart. By identifying individuals and by using radio collars to help find them, we learned how elephants travel daily to satisfy their needs for food and water while avoiding danger. The elephants showed us they know that in some places people are dangerous, and in other places they are not!

[^4]Assessment Objective: 1.4.22 Draw inferences, conclusions, or generalizations about text, and support them with textual evidence and prior knowledge.

1
Explain why the author thinks that the elephants in the passage are smart. Use information from the passage and your own ideas and conclusions to support your answer.

# 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 <br> explicitly and implicitly. <br> - Reader uses information from the text to interpret significant concepts or make connections to other situations or contexts logically <br> through analysis, evaluation, inference, or comparison/contrast. <br> - Reader uses relevant and accurate references; most are specific and fully supported. <br> - 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 <br> implicitly. <br> - Reader uses information from the text to interpret significant concepts or make connections to other situations or contexts logically <br> (with some gaps) through analysis, evaluation, inference, or comparison/contrast. <br> - Reader uses relevant and accurate references; some are specific; some may be general and not fully supported. <br> - Reader partially integrates interpretation of the text with text-based support. |
| 2 | - Reader demonstrates an accurate but limited understanding of the text. <br> - Reader uses information from the text to make simplistic interpretations of the text without using significant concepts or by making <br> only limited connections to other situations or contexts. |
| - Reader uses irrelevant or limited references. |  |
| - Reader generalizes without illustrating key ideas; may have gaps. |  |

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.

The author of the passage thinks that elephants are smart.

First, elephants. ane smart because they go to the formers house at night so that they don't get shot for taking food, "For setephants, the frich is to call the farm it night" as if says in the passage. This shows that elephants ane sot because they know when to raid a form, instead ${ }_{0}$ f just doing it whenever they want to, so thrust they don't get shot.

Second, elephants" are smart for knowing that they are sole in the reserve, "The elephants

*This response demonstrates an accurate understanding of the information in the text. The reader makes interpretations based on significant concepts from the text (. . they know when to raid a farm, instead of just doing it whenever they want to, so that they don't get shot. . . . not every animal can tell where they are safe). The reader does not make any connections to other situations. The reader uses relevant and accurate references; some are fully supported while others are more general.

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.

The avorther thinks that elephants in the passage are smart because elephants boldby come in daytime and ignore all of the people who watch them. They also know to raid $A$ farm when all of the people are asleep. This tells the another that they are smart. Also, the elephants know that in some places people are dangerous, and tn other places people are not! That tells the quother that its thier instinks kick in working with thier experierences and intellegince helps them survie out side of reserve.

Elephants also leave thier reserve at night time to go get food from
farms for crops and millet and shortly before dawn, the elephants leave and go back to there reserve. If they don't they will get shot by farmers.
$\qquad$
I think another animal is smart to. That animal is a lizard. Ithought it was smart but my friend, Ryan, didn't.
I showed him that I put some small flies stuck on some sticky substains. and stood there. The lizard didn't come so I went inside ant looked out the window sure enough, the lizard came and ate the flies, which shows that they wont come until the cost is
clear and the think its safe to came and go. Also, they are very fast and can escape a bad Situation or run to catch food to eat.
*This response demonstrates an accurate understanding of the information in the text. The reader makes interpretations based on significant concepts from the text (. . its their instinks kick in working with thier experierences and intellegince helps them survie out side of reserve). However, the connection to another situation is weak and creates a gap. The reader uses relevant and accurate references; some are fully supported while others are more general.

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.

The author thinks that the elephants in the passage are smart because they ignore people. According to the story, unlike antelopes and warthogs, elephantsboldly come in the daytime to drink, ignoring the people who gather to watch them or who are fishing in the reservoir. Also, the elephants know they are safe in the heart of the reserve. The author also said that some elephants would quickly walk miles out of the reserve to find different foods, such as farm crops, corn, and millet. Then, they would hurry their families back into the safety of the reserve. I think elephants are active both night and dou because they walk out of the reserve in search of food. Also, they
would come to the reservoir at daytime to drint,too
Ialso think elephants are smart because I read in the scholastic News that scientists found out that Asian elephants now have the capability to recognize their own reflection when the scientists put mirror in front of the elephants. This is why the author thinks that the elephants in this passage are smart.
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*This response demonstrates an accurate understanding of important information in the text by focusing on key ideas from the text. The reader makes interpretations based on significant concepts from the text (According to the story, unlike antelopes and warthogs, elephants boldly come in the daytime to drink . . . Also, the elephants know they are safe in the heart of the reserve). The reader also makes a connection to another situation (I read in the Scholastic News that scientists found out that Asian elephants now have the capability to recognize their own reflection when the scientists put a mirror in front of the elephants). The reader uses relevant and accurate references that are specific and fully supported.

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.

The author thinks elephants are smart because in the story he says it and you can make an inference of how elephants are smart.

Someways the author think s elephants are smart are ways like these. My first way is elephants are smart cause they know when they should go places and when the should not. The text stated that When the elephant went to the farm in the day some of them would get killed and the rest would be shot at so instead of going during the day the went at night. Another way that they're smart is they know that the people who come to look at them

While in the reserve they completely ignore even if they're yelling and screaming In the story it says that the elephants just ignore the people when the walk by cause the know they're sate. My last reason is elephants know where to get their pwn food and water. The text stated that the elephants knew where the farm was so that they can walk to eat from miles away so the could eat. This shows that elephants have a good sense of direction and a good memory. These are some reasons elephants are smart and know what to do and there are still more!
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
*This response demonstrates an accurate understanding of important information in the text by focusing on key ideas from the text. The reader makes interpretations based on significant concepts from the text (. . . elephants are smart cause they know when they should go places and when the [y] should not. . . . the elephant went to the farm in the day some of them would get killed and the rest would be shot at so instead of going during the day the [y] went at night). The reader also makes a connection to another situation (. . . the elephants knew where the farm was so that they can walk to eat from miles away so the [y] could eat. This shows that elephants have a good sense of direction and a good memory). The reader uses relevant and accurate references that are specific and fully supported.

# Illinois Standards Achievement Test Mathematics Samples 

## Structure of the Grade 4 Mathematics ISAT

ISAT Mathematics testing in spring 2009 will consist of 30 norm-referenced items, as well as 45 criterionreferenced 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 4 Mathematics ISAT

Students in grade 4 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 4 |  |
| :--- | :--- |
| Session 1 <br> 45 minutes | 40 multiple-choice items <br> (30 of these are an abbreviated form of the Stanford 10.) |
| Session 2 <br> 45 minutes | 30 multiple-choice items <br> 3 short-response items |
| Session 3 <br> 45 minutes | 2 extended-response items |
| (Some items will be pilot items.) |  |

## Calculator Use for Grade 4 Mathematics ISAT

All students in grade 4 are allowed to use a calculator during all sessions of the mathematics assessment. Students are allowed to use any calculator they normally use in their mathematics classes. 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 4 Mathematics ISAT

All students in grade 4 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 4 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.


2
Which expression is equal to $7 \times 8$ ?

A $7+7+7+7+7+7+7$
B $\quad 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7$
C $8+8+8+8+8+8+8$
D $8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8$


The 4th-grade class has 32 students.
There are 13 girls in the class.

| What fractional part of the class |
| :--- |
| is boys? |


| 19 | $\frac{13}{32}$ | $\frac{32}{19}$ | $\frac{32}{13}$ |
| :--- | :---: | :---: | :---: |
| A | B | C | D |



Use your inch ruler to help you answer this question.


Which is closest to the length in inches of line segment MN?

A 1 in.
B $1 \frac{1}{2} \mathrm{in}$.
C 2 in.
D $2 \frac{1}{2} \mathrm{in}$.

## 9

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


12
What is the volume of this shape?


Represents 1 cubic unit

A 10 cubic units
B 11 cubic units
C 12 cubic units
D 18 cubic units

13
Ben is $1 \frac{1}{2}$ years old.

How many months are equal to $1 \frac{1}{2}$ years?

A 10 months
B 12 months
C 18 months
D 24 months

14
Raj earns 5 points for each question he answers correctly.

Let $p$ represent the number of questions Raj answers correctly.

Which expression could be used to find the total number of points Raj earns?

A $p \times 5$
B $p+5$
C $p \div 5$
D $p-5$

15
If $b$ equals 5 , which equation is true?

A $3+b=15$
B $3-b=15$
C $3 \div b=15$
D $3 \times b=15$

16
Tom has been saving his money for three weeks. The chart below shows his total savings each week.

Tom's Savings

| Week | Total Amount <br> Saved |
| :---: | :---: |
| 1 | $\$ 2.25$ |
| 2 | $\$ 4.50$ |
| 3 | $\$ 6.75$ |
| 4 |  |

> If Tom continues to add the same amount to his savings each week, what should be the total amount saved by week 4 ?

| $\$ 3.50$ | $\$ 5.50$ | $\$ 8.00$ | $\$ 9.00$ |
| :---: | :---: | :---: | :---: |
| A | B | C | D |


| Which sentence describes the <br> information in the table below? <br> Number of <br> Tables Number of <br> People <br> 0 0 <br> 1 2 <br> 2 4 <br> 3 6 <br> 4 8 <br> 5 10$.$\begin{tabular}{cc}
\hline
\end{tabular} |
| :---: |

A There are 2 people at each table.
B There are 4 people at each table.
C There are 6 people at each table.
D There are 8 people at each table.

## 18

What is the value of $M$ in the number sentence?
$M \div 2=20$
40
$22 \quad 18$
A
B
C
D


20
Which statement is true?

A All polygons have 4 angles.
B All polygons are closed figures.
C All polygons are 4-sided figures.
D All polygons have lines of symmetry.


22
Which of the following figures shows only a flip of the shaded figure across line $m$ ?


B


C


D



24
What solid figure can be made by folding the pattern shown below along the dashed line

25


A Rectangular prism
B Triangular prism
C Cylinder
D Cube

A Rectangle
B Trapezoid
C Square
D Pentagon
If the regular hexagon below were cut on the dashed line segment, what would be the shape of each piece?


## 26

The graph below shows the results of a survey to find the number of students who ride their bicycles to school.

| Students Riding Bicycles to School |  |
| :--- | :--- |
| Beth's class |  |
| Miguel's class | Ali's class |
| Kamilla's class |  |

Each $\circledast$ represents one student.

Whose class has the most students ride their bicycles to school?

A Beth's class
B Miguel's class
C Ali's class
D Kamilla's class



Sally put the cubes shown below in a box. She chose one cube without looking.


What is the probability that she chose a white cube?

A 1 out of 4
B 4 out of 9
C 5 out of 9
D 4 out of 4

## Answer Key with Assessment Objectives Identified

| Item Number | Correct Answer | Assessment Objective |
| :---: | :---: | :---: |
| 1 | B | 6.4.01 Read, write, recognize, and model equivalent representations of whole numbers and their place values up to $1,000,000$. |
| 2 | C | 6.4.04 Represent multiplication as repeated addition. |
| 3 | B | 6.4.05 Order and compare whole numbers up to 100,000. |
| 4 | B | 6.4.08 Identify and locate whole numbers, halves, and fourths on a number line. |
| 5 | A | 6.4.09 Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than). |
| 6 | A | 6.4.13 Model situations involving addition and subtraction of fractions with like denominators. |
| 7 | D | 6.4.14 Solve problems involving the commutative and distributive properties of operations on whole numbers $\text { [e.g., } 8+7=7+8,27 \times 5=(20 \times 5)+(7 \times 5)] .$ |
| 8 | C | 6.4.16 Make estimates appropriate to a given situation with whole numbers. |
| 9 | C | 6.4.16 Make estimates appropriate to a given situation with whole numbers. |
| 10 | D | 7.4.02 Select and use appropriate standard units and tools to measure length (to the nearest $1 / 2$ inch or $1 / 2 \mathrm{~cm}$ ), time, and temperature. |
| 11 | C | 7.4.04 Compare and estimate length (including perimeter), area, volume, and weight/mass using referents. |
| 12 | C | 7.4.05 Determine the volume of a solid figure that shows cubic units. |
| 13 | C | 7.4.06 Solve problems involving unit conversions within the same measurement system for time, length, and weight/mass. |
| 14 | A | 8.4.02 Write an expression using letters or symbols to represent an unknown quantity. |
| 15 | D | 8.4.03 Evaluate algebraic expressions with a whole number variable value (e.g., evaluate $3+m$ when $m=4$ ). |
| 16 | D | 8.4.04 Identify or represent situations with well-defined patterns using words, tables, and graphs (e.g., represent temperature and time in a line graph). |
| 17 | A | 8.4.05 Translate between different representations (table, written, or pictorial) of whole number relationships. |


| Item Number | Correct Answer | Assessment Objective |
| :---: | :---: | :---: |
| 18 | A | 8.4.07 Solve for the unknown in an equation with one operation (e.g., $10=\square+3+2, \square-1=3$ ). |
| 19 | C | 9.4.02 Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices). |
| 20 | B | 9.4.03 Differentiate between polygons and non-polygons. |
| 21 | D | 9.4.05 Identify whether or not a figure has one or more lines of symmetry, and sketch or identify all lines of symmetry. |
| 22 | A | 9.4.06 Identify images resulting from flips (reflections), slides (translations), or turns (rotations). |
| 23 | B | 9.4.09 Identify the two-dimensional components of a three-dimensional object. |
| 24 | A | 9.4.10 Identify a three-dimensional object from its net. |
| 25 | B | 9.4.11 Predict the result of composing or decomposing shapes or figures. |
| 26 | D | 10.4.01 Read and interpret data represented in a pictograph, bar graph, line (dot) plot, Venn diagram (with two circles), tally chart, table, line graph, or circle graph. |
| 27 | D | 10.4.01 Read and interpret data represented in a pictograph, bar graph, line (dot) plot, Venn diagram (with two circles), tally chart, table, line graph, or circle graph. |
| 28 | B | 10.4.01 Read and interpret data represented in a pictograph, bar graph, line (dot) plot, Venn diagram (with two circles), tally chart, table, line graph, or circle graph. |
| 29 | C | 10.4.04 Classify events using words such as certain, most likely, equally likely, least likely, possible, and impossible. |
| 30 | B | 10.4.05 Describe the chances associated with a context presented visually, including using the response format " 3 out of 4 " or $3 / 4$. |

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 <br> Scoring Rubric <br> 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 <br> LEVEL | DESCRIPTION |
| :---: | :--- |
| 2 | Completely correct response, including correct work shown and/or correct labels/units if called <br> for in the item |
| 1 | Partially correct response |
| $\mathbf{0}$ | 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 $50 \mathbb{4}$, a sandwich that costs $90 ¢$, and fruit that costs $35 ष$.

Exactly how much money does Sam need to buy lunch for 5 days?
Show your work and label your answer.

SAMPLE SHORT-RESPONSE ANSWER

$$
\begin{array}{rl}
50 \phi+90 \phi+35 \phi=\$ 1.75 & 1.75 \\
\text { for each day } & 1.75 \\
& 1.75 \\
M y \text { answer } \\
\$ 8.75
\end{array} \quad \begin{aligned}
& 1.75 \\
& \\
& \hline
\end{aligned}
$$

Please refer to the 2006 and 2007 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.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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## 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 6.4.10, "Solve problems and number sentences involving addition and subtraction with regrouping and multiplication (up to three-digit by one-digit)."

## 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.

Short-Response Student Sample 1A

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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## Short-Response Student Sample 1A

Rubric Score Point $=2$
Note: The student provides the correct answer of 9 slices and shows work.

Short-Response Student Sample 1B

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## Short-Response Student Sample 1B

Rubric Score Point $=2$
Note: The student provides the correct answer of 9 "pizzas" (defines one piece as a "pizza") and shows work that includes drawings.

## Short-Response Student Sample 1C



## Short-Response Student Sample 1C

Rubric Score Point = 1
Note: The student provides an incorrect answer of 8 pizza slices due to a calculation error. All other work shown is correct.

## 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 10.4.05, "Describe the chances associated with a context presented visually, including using the response format " 3 out of 4 " or $3 / 4$."

2
Derek has the gumballs below in a bag. He will choose 1 gumball from the bag without looking.


- What is the probability that Derek will choose a blue gumball?
- What other color of gumball has the same probability of being chosen as blue?

Short-Response Student Sample 2A

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## Short-Response Student Sample 2A

Rubric Score Point $=2$
Note: The student provides a correct answer for each part of the problem: $\frac{3}{15}$ and red.

Short-Response Student Sample 2B

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|  |  | Y) |  | P |  | G |  | (B) |  | (B) |  |  | 2 |  |  |  |
|  |  | (Y) |  | $\rho$ |  | $\square$ |  | (R) |  | (B) |  |  | 5 |  |  |  |
|  |  | 2 | - | P |  | 2 |  | $R$ |  | (B) |  |  | 2 |  |  |  |
|  |  |  |  | $P$ |  |  |  | $3$ |  | $3$ |  |  | 3 |  |  |  |
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Short-Response Student Sample 2B
Rubric Score Point $=2$
Note: The student provides a correct answer for each part of the problem: $\frac{3}{15}$ and red.

Short-Response Student Sample 2C

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## Short-Response Student Sample 2C

Rubric Score Point = 1
Note: The student provides an incorrect probability of " 2 out of 3 tries" for the first part of the problem and a correct answer of "red" for the second part of the problem.

# 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: <br> Knowledge of mathematical principles and concepts which result in a correct solution to a problem. | STRATEGIC KNOWLEDGE: <br> 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: <br> 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 <br> - uses appropriate mathematical terminology and notations including labeling answer if appropriate <br> - executes algorithms and computations completely and correctly | - identifies all important elements of the problem and shows complete understanding of the relationships among elements <br> - 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 <br> - 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 <br> - uses mostly correct mathematical terminology and notations <br> - 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 <br> - 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 <br> - may include a diagram with most of its elements explained |
| 2 | - shows some understanding of the problem's mathematical concepts and principles <br> - uses some correct mathematical terminology and notations <br> - may contain major algorithmic or computational errors | - identifies some important elements of the problem but shows only limited understanding of the relationships among them <br> - 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 <br> - explanation is vague, difficult to interpret, or does not completely match the solution process <br> - may include a diagram with some of its elements explained |
| 1 | - shows limited to no understanding of the problem's mathematical concepts and principles <br> - may misuse or fail to use mathematical terminology and notations <br> - attempts an answer | - fails to identify important elements or places too much emphasis on unrelated elements <br> - 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 <br> - explanation does not match presented solution process <br> - 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

| $B$ | $B$ | $B$ | $B$ | $B$ | $B$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $B$ | $B$ | $B$ | $B$ | $B$ | $B$ |
| $G$ | $G$ | $G$ | $G$ | $G$ | $G$ |
| $R$ | $R$ | $R$ | $R$ | $R$ | $R$ |
| $\frac{1}{4}$ gray |  |  |  |  |  |
| $\frac{1}{4}$ red |  |  |  |  |  |

First, 1 know that there are 4 equal rows, so 2 rows is half and 1 row is $\frac{1}{4}$. So 1 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 2006 and 2007 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

$$
\text { Mathematics - Session } 3 \quad \text { Problem } 1
$$

## 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 6.4.11, "Solve problems involving the value of a collection of bills and coins whose total value is $\$ 100.00$ or less, and make change."

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


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. 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.


## Baseball Card $=\$ 2.00$ per card

Basketball card $=\$ 5.00$ per card Football card $=\$ 3.00$ per card

$$
\begin{gathered}
2+5+3=10.00 \\
2+2+5+3+3=15 \\
5+5+2+2+3+3=20 \\
\text { answer } \\
1 \\
5+5+2+2+3+3=20
\end{gathered}
$$

Extended-Response Student Sample 1A Continued

I got my answer by adding.
First I read the problem. second I added $2+5+3=10.00$, but Aroid wanted to spend exactly \$20.00.
Third II added $2+2+5+3+3=15$
it was close but wasn't 20.00 .
Last I added $5+5+2+2+3+3=20$.
So Arnold can buy two of each kind because if you buy two of each kind it will give you exactly $\$ 20.00$. That's how I got my answer.

$$
\left(\begin{array}{l}
5.00+5.00+2.00+3.00+2.00+ \\
3.00=\$ 20.00
\end{array}\right.
$$

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.

Arnold can buy 6 baseball cards, I football card, and I basketball card.

Extended-Response Student Sample 1B Continued


## 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.


Baseball - 4 cards
Basketball - 1 card
Football - 3 cards

The problem asked to list one combination of sports cards Arnold could buy using exactly $\$ 20.00$. I know that baseball cards cost $\$ 2.00$, basketball cards cost \$5.00, and football cards cost $\$ 3.00$. I multiplied 4, which is the number of baseball cards he could get, by $\$ 2.00$ because I wanted to find the amount of money he could spend on 4 baseball cards.
I multiplied $\$ 5.00$ by 1 card because I wanted to find the amount of money he would spend on 1 basketball card.
I multiplied $\$ 3.00$ by 3 cards because I wanted to find the amount of money Arnold would spend on 3 football cards. I added my products, which were $\$ 11.00$ and $\$ 9.00$ because I wanted to find the total amount of money he spent.

My answer is Arnold can get 4 baseball cards, 1 basket ball card, and 3 football cards.

## Scoring Guide for "Sports Cards"

To solve this problem, the student must determine one possible combination of sports cards that costs exactly $\$ 20.00$. Four combinations of answers were accepted: 2 baseball, 2 basketball, 2 football; 3 baseball, 1 basketball, 3 football; 1 baseball, 3 basketball, 1 football; and 6 baseball, 1 basketball, and 1 football.

## Extended-Response Student Sample 1A

MATHEMATICAL KNOWLEDGE

## 4

The response shows complete understanding of the problem's mathematical concepts and principles. A correct combination of sports cards is provided (so Arnold can buy two of each kind). The mathematical computations are completely correct.

STRATEGIC KNOWLEDGE

4
The response identifies all important elements of the problem and shows complete understanding of the relationships among them. The student uses an appropriate strategy of addition to solve the problem. The student demonstrates an understanding of using exactly $\$ 20.00$ to purchase the sports cards and provides evidence for the purchase of at least one card of each type.

## EXPLANATION

4
The response provides a complete written explanation of the solution process (Second I added $2+5+3=10.00$, but Arnold wanted to spend exactly $\$ 20.00$. Third / added $2+2+5+3+3=15$ it was close but wasn't 20.00. Last I added $5+5+2+2+3+3=20$....if you buy two of each kind it will give you exactly $\$ 20.00$ ). The student clearly explains what was done in the solution process and why it was done.

## Extended-Response Student Sample 1B

## MATHEMATICAL KNOWLEDGE

## 4

The response shows complete understanding of the problem's mathematical concepts. A correct combination of sports cards is provided (Arnold can buy 6 baseball cards, 1 football card, and 1 basketball card).

STRATEGIC KNOWLEDGE

4
The response identifies all important elements of the problem and shows complete understanding of the relationships among elements. The student uses an appropriate strategy of multiplying and adding and demonstrates an understanding of using exactly $\$ 20.00$ by stopping the computations after $\$ 20.00$ is reached.

## EXPLANATION



The response fails to explain what was done or why it was done. However, the symbols shown to represent the three types of cards are identified.

## Extended-Response Student Sample 1C

MATHEMATICAL KNOWLEDGE

3

The response shows nearly complete understanding of the problem's mathematical concepts. One mathematical computation error $(\$ 2.00 \times 4=\$ 6.00)$ leads to an incorrect combination of cards given as the answer (Arnold can get 4 baseball cards, 1 basketball card, and 3 football cards).

STRATEGIC KNOWLEDGE


#### Abstract

4

The response identifies all important elements of the problem and shows complete understanding of the relationships among elements. The student uses an appropriate strategy of multiplying and adding and demonstrates an understanding of using exactly $\$ 20.00$ by stopping the computations after $\$ 20.00$ is reached.


EXPLANATION

4

The response provides a complete written explanation of what was done and why it was done (I multiplied 4...by $\$ 2.00$ because I wanted to find the amount of money he could spend on 4 baseball cards...l added my products... because I wanted to find the total amount of money he spent).

## Illinois Standards Achievement Test Science Samples

## Structure of the Grade 4 Science ISAT

ISAT Science testing in spring 2009 will consist of 80 items: 30 norm-referenced, as well as 50 criterion-referenced items. The 30 norm-referenced items are an abbreviated form of the Stanford 10 Science assessment, developed by Pearson, Inc. The 50 criterion-referenced items were written by Illinois educators and pilot tested with Illinois students.

## Item Format

All 80 items will be in multiple-choice format. All items are aligned to the Illinois Science Assessment Framework, which defines the elements of the Illinois Learning Standards that are suitable for state testing.

## Science 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.

| Science ISAT Grade 4 |  |
| :--- | :--- |
| Session 1 <br> 45 minutes | 40 multiple-choice items <br> (30 of these are an abbreviated form of the Stanford 10.) |
| Session 2 <br> 45 minutes | 40 multiple-choice items <br> (Some items will be pilot items.) |

## Cumulative Knowledge

ISAT tests students on the knowledge and skills that they should have acquired by grade 4 and grade 7 . Proper curriculum alignment can establish which assessment objectives are covered at each grade level so that by the spring of any given year, all objectives have been presented. It is not the sole responsibility of a 4th grade teacher or a 7 th grade teacher to teach all of the assessment objectives contained within the framework.
The grade 4 ISAT will assess the grade 4 assessment objectives. The grade 7 ISAT will assess the grade 7 assessment objectives but may also include the assessment objectives from grade 4. The sample items within this booklet provide the reader with an opportunity to see the ISAT format and how the items align to the assessment framework.

## 1

If a scientist wanted to find out how tall a plant grows each day, the scientist would -

A give the plant a half-cup of water each day
B put the plant in a sunny place each day
C measure the plant with a ruler each day
D put the plant on a scale each day and weigh it

2


Nine bean plants were grown in varying amounts of light. What conclusion can be drawn from the graph?

A Bean plants grow best in low light.
B Bean plants grow best in high light.
C Bean plants grow best in moderate light.
D Bean plants grow the same in all light.

| Conditions of <br> Balloon | Length of Line <br> Around Balloon <br> (in centimeters) |
| :--- | :---: |
| Balloon after <br> coming out of the <br> freezer | 12 cm |
| Balloon at room <br> temperature | 20 cm |
| Balloon after being <br> warmed for 2 min | 35 cm |
| Balloon after being <br> warmed for 4 min | 51 cm |

A student conducted an experiment to find out how temperature affects air in a balloon. He drew a line around the center of the balloon and measured the length of the line around the balloon. According to the chart, what conclusion can be made about how temperature affects air in a balloon?

A The warmer the balloon gets, the more it expands.
B The balloon bursts after being warmed for 4 minutes.
C The colder the balloon gets, the faster the gas moves.
D The balloon is unaffected by changes in temperature.

## Weather Data for Sun City

| Day |  | Mon | Tues | Wed | Thurs | Fri | Sat | Sun |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time |  | Noon | Noon | Noon | Noon | Noon | Noon | Noon |
| Cloudiness | $\cdots$ |  |  |  | \#\#\# | $00$ | $\cdots$ | f111 |
| Temperature ${ }^{\circ} \mathrm{F}$ | $\begin{aligned} & 80^{\circ} \\ & 60^{\circ} \\ & 40^{\circ} \end{aligned}$ |  |  |  |  | o |  |  |
| Atmospheric Pressure millibars | $\begin{aligned} & 1040 \\ & 1020 \\ & 1000 \end{aligned}$ |  | $a$ |  |  |  |  |  |

Look at the diagram for the days Monday through Thursday. Which best describes the relationship between temperature and pressure for those days?

A As the temperature rose, the pressure remained the same.
B As the pressure rose, the temperature remained the same.
C As the pressure rose, the temperature dropped.
D As the temperature rose, the pressure dropped.

## 5



What could be done to make this kite fly better?

A Add a tail
B Add more string
C Add more designs
D Add another side

The fish, dog, and bird are alike in many ways. One way is that they all have -

A legs
B hair
C lungs
D backbones

7
All of the following are needed for a fish to live in an aquarium except -

A food
B sand
C water
D oxygen

A girl found the skull of an animal. She did not know what the animal was, but she was sure that it preyed on other animals for its food. Which clue led to her conclusion?

A The eye sockets faced sideways.
B The skull was much longer than it was wide.
C There was a projecting ridge on the front of the skull.
D Four of the teeth were long and pointed.

9
Decomposers are helpful to the food chain because they -

A provide nutrients for the soil
B prey on carnivores
C use photosynthesis to make food
D are food for carnivores

10
Which of these skulls is from a dinosaur that was probably a carnivore?

A


B

c


D



12


What do these animals have in common?

A Warm-blooded
B Cold-blooded
C Vertebrate
D Invertebrate

13
A town passes a law that makes it illegal to hunt deer. Which will most likely happen during the following year in the town's forests?

A Trees will increase.
B Deer will decrease.
C Insects will increase.
D Small plants will decrease.

14

| Solid | Liquid | Gas |
| :--- | :--- | :--- |
| brick | milk | steam |
| pencil | ice cube | oxygen |
| eraser | orange juice | water vapor |

Which word is under the wrong heading?

A Steam
B Pencil
C Milk
D Ice cube

15
An object is placed on a table. A magnet is slowly moved toward it. The object moves away from the magnet. The object is most likely -

A another magnet
B a piece of glass
C a copper coin
D an iron nail

16
Which will be attracted to a magnet?

A Plastic ruler
B Aluminum foil
C Copper penny
D Iron nail

17
What happens when two negatively charged particles are next to each other?

A The particles attract each other.
B The particles repel each other.
C One particle becomes uncharged.
D One particle becomes positively charged.

18
18
Each picture shows a battery, a bulb, and a switch. Which bulb will light when the switch is closed?


John has a red apple in his lunch. Why does the apple look red to him?

A Only red light waves are absorbed by the apple.
B John's eyes are only able to sense red light waves.
C Only red light waves are reflected by the apple.
D Red light waves travel faster so they reach John's eyes first.

20
A student places four T-shirts outside on a sunny day.
Which color shirt will reflect the most light?

A Red
B Black
C Green
D White

21
A force that slows down or stops the motion of a bicycle is -

A sound
B heat
C friction
D electricity

Pat found a wooden box in his grandparents' garage. The top was nailed shut. He used a crowbar to pry off the top. What type of simple machine did Pat use?

A Pulley
B Lever
C Inclined plane
D Wheel and axle

24


In this student's lunch bag, which item would decompose the quickest?

A Fruit can
B Apple core
C Plastic bag
D Wooden spoon

23
Which of these is a renewable resource?

A Wood, because trees grow again
B Coal, because more can be made in about 100 years
C Petroleum, because it can be refined into gasoline
D Gold, because more can be made very easily

25


This rock was brought to school. The class found fossils of water plants and shells in the rock. What does this tell us about the rock?

A The rock needs to be washed off.
B The rock was once at the bottom of the sea.
C The rock is heavier than most rocks.
D The rock is gray and brown.

26
How does freezing water cause the weathering of rocks?

A It holds them in place.
B It makes them longer.
C It cracks them.
D It makes them thicker.

27
Since stars give off their own light, they are like the -

A moon
B Earth
C planets
D sun

If all the planets started at the same time and circled the sun, which one would finish the trip last?

A Mercury
B Jupiter
C Uranus
D Saturn

29
Each year Earth moves once around -

A Mars
B Venus
C the sun
D the moon

30

## Common Lab Equipment



Which pieces of laboratory equipment are used for safety?

A 4 and 8
B 2 and 6
C 6 and 10
D 3 and 5

31
32


Which scientist invented the light bulb?


B


C


D


33
Which scientist discovered the laws of motion that describe how forces make objects move?

A Isaac Newton
B Sally Ride
C Thomas Edison
D Jane Goodall

Students were assigned to measure the length of the hallway outside their classroom in feet. Some tiles in the hall were $7 \frac{1}{2}$ inches wide and others were 8 inches wide. Which technique for measuring the hall is the most accurate?

A Counting the classrooms
B Using the students' feet
C Estimating the length
D Using yardsticks

35
What does the school nurse use to measure body temperature?

A Thermometer
B Ruler
C Stopwatch
D Balance

36
Which is a learned behavior?

A Being colorblind
B Riding a bicycle
C Having large hands
D Having brown hair

Science

## 37

Why is it so important for medical doctors to be able to use a microscope?

A Microscopes help doctors measure patients' blood pressure.
B Microscopes help doctors see organisms that cause disease.
C Microscopes help doctors look at distant objects.
D Microscopes help doctors sort through patients' medications.

38
Brent noticed that when he held a piece of cork under water and then let it go, the cork rose to the surface. This occurred because the cork is less dense than water. Which of these is most similar to what happened to the cork?

A Model rocket taking off
B Airplane taking off
C Hot-air balloon rising in the air
D Sun rising in the morning

39
Which of these survives harsh winters by traveling to a warmer climate?

A Monarch butterfly
B Gray squirrel
C Crow
D Red-tailed fox

40
Erin wants to make a tool that can be dipped into a bubble solution and used to blow bubbles. Which item would work best?

A A yardstick
B A wooden spoon
C A toothbrush
D A wire clothes hanger

41
Which is most similar to the skin of a human?

A Beak of a bird
B Scales of a fish
C Gills of a tadpole
D Teeth of a crocodile

42
Which would slow erosion?

A Building a hiking trail
B Putting up a wooden fence
C Cutting down older trees
D Planting grass along a hillside

Earth is the third planet from the sun. Which two planets are closer to the sun than Earth is?

A Mercury and Mars
B Neptune and Mars
C Mercury and Venus
D Neptune and Venus

Which shows the first step to safely clean up a liquid spill after a science experiment?

A Hang up the lab coats.
B Sweep the powders off the floor.
C Put on disposable gloves.
D Help put the goggles away.

Tonya's class is working on science fair projects. Which of these will all of the students' experiments share?

A They will include a photograph.
B They will follow the same procedure.
C They will use scientific methods.
D They will have the same hypothesis.

A student wrote down measurements that he collected from an experiment. What are these measurements called?

A Hypothesis
B Procedure
C Graph
D Data

On a hot summer day, which best describes what the water molecules in a pool of water are doing?

A They are moving very slowly.
B They are forming ice crystals.
C They are evaporating into the air.
D They are sinking to the bottom of the pool.

A teacher is heating a beaker of liquid for an experiment. Which should be used to remove the beaker from the source of heat?

A


B


C


D


Answer Key with Assessment Objectives Identified

| Item <br> Number | Correct Answer | Assessment Objective |
| :---: | :---: | :---: |
| 1 | C | 11.4.01 Understand how to design and perform simple experiments. |
| 2 | C | 11.4.02 Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data. |
| 3 | A | 11.4.02 Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data. |
| 4 | D | 11.4.02 Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data. |
| 5 | A | 11.4.05 Identify a design problem and identify possible solutions. Assess designs or plans to build a prototype. |
| 6 | D | 12.4.02 Identify the basic divisions of animals and their common characteristics (e.g., define mammal, fish, bird, reptile, amphibian, insect, arachnid; give examples of each). |
| 7 | B | 12.4.04 Identify the basic needs of living things: animals need air, water, food, and shelter; plants need air, water, nutrients, and light. |
| 8 | D | 12.4.05 Understand the functions of component parts of living things. |
| 9 | A | 12.4.07 Understand the concept of food chains and food webs and the related classifications of plants or animals (e.g., producers, decomposers, consumers, herbivores, carnivores). |
| 10 | B | 12.4.09 Understand that each plant or animal has different structures that serve different functions in its growth, survival, and reproduction. Understand the concept of animal camouflage and how it relates to the survival of living things. |
| 11 | B | 12.4.09 Understand that each plant or animal has different structures that serve different functions in its growth, survival, and reproduction. Understand the concept of animal camouflage and how it relates to the survival of living things. |
| 12 | B | 12.4.10 Identify the basic classifications of animals based on how they interact with their environment [e.g., (a) Some animals are active in the daytime (diurnal), others in the night time (nocturnal). (b) Some animals have a body temperature that stays the same regardless of significant temperature changes in their immediate environment (warm blooded), others have a body temperature that rises and falls with the temperature changes of their environment (cold blooded). (c) Some animals are herbivores, others are carnivores]. |


| Item Number | Correct Answer | Assessment Objective |
| :---: | :---: | :---: |
| 13 | D | 12.4.13 Understand that human activities can change the number of species in an area, whether by increasing it or decreasing it. |
| 14 | D | 12.4.14 Understand that matter is usually found in 3 states: liquid, solid, and gas and be able to identify the properties of each. Understand that water can be found in all three forms. |
| 15 | A | 12.4.19 Understand that objects of like charge repel each other and objects of opposite charge attract each other. |
| 16 | D | 12.4.17 Understand that a magnet attracts iron, but not plastic, paper, and other nonmetals; nor does it attract all metals (since it does not attract copper or aluminum). Identify conductors and insulators. |
| 17 | B | 12.4.19 Understand that objects of like charge repel each other and that objects of opposite charge attract each other. |
| 18 | B | 12.4.21 Understand that besides static electricity, there is also such a thing as current electricity. For example, given a battery, bulb, and wire, students will understand the proper configuration to make the bulb light. |
| 19 | C | 12.4.22 Understand that lighter colors reflect more light, darker absorb more, and that the color one sees depends on what kind of light is reflected (rather than absorbed) by the object seen. |
| 20 | D | 12.4.22 Understand that lighter colors reflect more light, darker absorb more, and that the color one sees depends on what kind of light is reflected (rather than absorbed) by the object seen. |
| 21 | C | 12.4.26 Identify the basic forces, such as friction, magnetism, and gravity. Identify which force is operative in a simple scenario. |
| 22 | B | 12.4.27 Identify simple machines (lever, inclined plane, pulley, screw, and wheel and axle) and understand how they function. Understand know how they apply forces with advantage, and identify which machine is suited for accomplishing a simple task. |
| 23 | A | 12.4.30 Understand that a natural resource is any material found on Earth that is used by people. Understand the difference between renewable and nonrenewable resources. Know that fossil fuels come from animals and plants, and that oil, coal, and natural gas are examples of fossil fuels. |
| 24 | B | 12.4.31 Identify which everyday materials decompose most slowly (e.g., plastics, glass and ceramics decompose slower than metals, wood, or food substances). |
| 25 | B | 12.4.33 Understand that some rocks contain plant and animal fossils. Know how they were formed. |


| Item Number | Correct Answer | Assessment Objective |
| :---: | :---: | :---: |
| 26 | C | 12.4.37 Understand that land formations (mountains, valleys, shorelines, and caves) change slowly over time, and identify the major natural causes of such changes: (a) Slow causes: erosion, caused by wind, rain, glaciers, water freezing inside cracks of rocks (which expands and splits the rocks), the growth of tree roots; (b) Sudden causes: rare catastrophes (e.g., earthquakes, volcanic activity, asteroid impacts, floods). |
| 27 | D | 12.4.45 Understand that moons and planets do not produce their own lightthe light we see when we look at them is the sunlight which they reflect. |
| 28 | C | 12.4.47 Identify the order of planets from the sun, and know that the further planets take longer to go around the sun. Understand that all planets in our solar system revolve around the sun. Because Earth revolves around the sun, objects (e.g., stars, planets, constellations) in the sky appear to change positions throughout the year. Know that it takes Earth $365 \frac{1}{4}$ days to revolve around the sun. |
| 29 | C | 12.4.47 Identify the order of planets from the sun, and know that the further planets take longer to go around the sun. Understand that all planets in our solar system revolve around the sun. Because Earth revolves around the sun, objects (e.g., stars, planets, constellations) in the sky appear to change positions throughout the year. Know that it takes Earth $365 \frac{1}{4}$ days to revolve around the sun. |
| 30 | D | 13.4.01 Identify the basic safety equipment used in science, (e.g., gloves, goggles, lab coats, tongs). |
| 31 | D | 13.4.08 Identify important contributions men and women have made to science and technology. |
| 32 | D | 13.4.08 Identify important contributions men and women have made to science and technology. |
| 33 | A | 13.4.08 Identify important contributions men and women have made to science and technology. |
| 34 | D | 13.4.14 Know that using measuring tools results in greater accuracy than making estimates. |
| 35 | A | 13.4.15 Identify basic scientific instruments and their functions (e.g., ruler, balance, graduated cylinder, clock, stopwatch, thermometer, microscope, telescope). |
| 36 | B | 12.4.06 Understand that some characteristics of living things are inherited from parents, such as the color of a flower in a plant, or the number of limbs on an animal. Understand that other features, however, are acquired by an organism through interactions with its environment (or learned) and cannot be passed down to the next generation merely through reproduction. |
| 37 | B | 13.4.15 Identify basic scientific instruments and their functions (e.g., ruler, balance, graduated cylinder, clock, stopwatch, thermometer, microscope, telescope). |


| Item <br> Number | Correct <br> Answer |  |
| :---: | :---: | :--- |
| 38 | C | 12.4.16 Understand that some substances will dissolve in water and some will <br> not. Understand the property of density. |
| 39 | A | 12.4.12 Understand that some animals survive winter by being fitted for an <br> active life during winter (e.g., penguins), others by hibernation (e.g., certain <br> bears), and others by migration (e.g., monarch butterflies). |
| 40 | D | 11.4.05 Identify a design problem and identify possible solutions. Assess <br> designs or plans to build a prototype. |
| 41 | B | 12.4.09 Understand that each plant or animal has different structures that <br> serve different functions in its growth, survival, and reproduction. Understand <br> the concept of animal camouflage and how it relates to the survival of living <br> things. |
| 42 | D | 12.4.32 Understand that the surface of the earth changes. Know that some <br> changes are due to slow processes (e.g., erosion, weathering), whereas others <br> are due to sudden events (e.g., landslides, volcanic eruptions, earthquakes, <br> asteroid impacts). |
| 43 | C | 12.4.47 Identify the order of planets from the sun, and know that the further <br> planets take longer to go around the sun. Understand that all planets in our <br> solar system revolve around the sun. Because Earth revolves around the <br> sun, objects (e.g., stars, planets, constellations) in the sky appear to change <br> positions throughout the year. Know that it takes Earth 365 '/4 days to revolve <br> around the sun. |
| 47 | C | C |

To view all the science assessment objectives, download the Illinois Science Assessment Framework for Grades 4 and 7 online at www.isbe.net/assessment/IAFindex.htm.


[^0]:    ${ }^{1}$ carousel - merry-go-round
    ${ }^{2}$ immigrant - a person who moves to another country
    ${ }^{3}$ naive - unknowing

[^1]:    ${ }^{4}$ ambassador - someone who is a representative or messenger

[^2]:    ${ }^{1}$ reservoir - a place where water is stored
    ${ }^{2}$ reserve - land set aside for the protection of animals

[^3]:    ${ }^{3}$ syringe - a needle used to give medicine

[^4]:    ${ }^{4}$ millet - grass grown for hay or seed

