Wisconsin Knowledge and Concepts Examinations
Criterion-Referenced Test

WI

Guide to

Grade 5

Released Item Books
In READING and MATHEMATICS

A QUALITY EDUCATION FOR EVERY CHILD

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Guide to Grade 5 Released Item Books in Reading and Mathematics

This document contains information for using, scoring, and interpreting the released items in reading and mathematics.

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Guide to Released Item Books

Please help us improve this document. We welcome your comments and questions. Please contact us at:

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Introduction

What are released items?

The items in the Reading and Mathematics released item books are actual items from the fall 2005 state assessment, the Wisconsin Knowledge and Concepts Examinations—Criterion-Referenced Test (WKCE-CRT). These items will not be used again on the state assessment and may, therefore, be used in Wisconsin for professional development, improving instruction, and student practice. The items in the released item books illustrate the formats and kinds of items that students will encounter on the WKCE-CRT.

How do I use the released item books and this guide?

Professional Development

Released items are useful as educators engage in conversations about what students are expected to know and be able to do to demonstrate proficiency on the state assessments relative to the state model academic standards. Released items can inform discussions about state and local standards, curriculum, instruction, and assessment.

This guide provides instructions for administering the released item books as practice tests and information for scoring the items, including scoring guides and anchor papers for the constructed-response items. The item information tables identify the answer key, what each item measures, depth of knowledge, and item difficulty. Item difficulty is presented as both the percentage of students who answered the item correctly and the scale score location of the item. The item's scale score location describes where the item functions along the ability scale. Items with higher scale score locations are considered more difficult than items with lower scale score locations. Students with scale scores above the scale score location of the item would have a greater probability of answering the item correctly than students with scale scores below the item's scale score location.

Improving Instruction

Teachers may use released items in classroom activities that help students understand how to:

- solve problems
- determine which answer choices are correct, which are incorrect, and why
- respond to constructed response items with complete, thoughtful answers
- approach long and/or multi-step tasks
- use good test-taking strategies.

Student Practice

Students may perform better and with less anxiety if they are familiar with the format of the test and with the types of items they will be required to answer. Note that a student's score on the practice test cannot be converted to a total scale score, used to predict performance on the operational WKCE-CRT, or used to make inferences about the student's learning.

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Reading

Sample Directions for Administering the Reading Test

Make sure each student has his or her own test book, a No. 2 pencil, an extra eraser, and scratch paper. Students' test books should be closed.

SAY **In this test, you will read some passages and answer both multiple-choice questions and short-answer questions about those passages. Multiple-choice questions are questions that ask you to choose the best answer. Remember, for the multiple-choice questions, you must fill in the circle completely and make your mark heavy and dark. If you want to change an answer, completely erase the mark you made before making a new mark. You must fill in only one circle for each multiple-choice question.**

Short-answer questions are questions that ask you to write your answer instead of filling in a circle. Write your answer on the lines in your test book. You may also write in the space under the lines, but your answer must stay inside the boxed area. Answers or parts of answers written outside the boxed area will not be scored. You may use scratch paper to help you plan your answer, but remember to write your answer in the boxed area in your test book. After you have written your answer, be sure to read it to make sure you have written your ideas clearly and completely.

For both the multiple-choice questions and the short-answer questions, remember to look back at the reading passages to help you answer the questions. For some questions, you may need to go back to two reading passages to find the answer. Be sure to look back at both reading passages to help you answer these questions.

You will have 40 minutes to do the test. Work until you come to the word "STOP" at the bottom of the page. You may go back and check your answers. When you have finished, sit quietly until everyone else has finished.

SAY **Are there any questions?**

When you are sure that all students understand the directions, continue.

SAY **Please open your test book to Page 2.**

Demonstrate. Check to be sure that all students are in the correct place in their test books.

SAY **You may begin.**

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Record the starting and stopping times.

Record the Starting Time:	Add 40 Minutes:	Record the Stopping Time:
_____	**+ 40**	_____

Check to be sure that students are marking their answers in the appropriate places in their test books.

At the stopping time,

SAY **Stop. This is the end of the test. Please close your test book.**

Collect all test materials. Use the information on the following pages to score the multiple-choice and constructed-response items.

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Reading Item Information

Item	Answer Key	Objective/ Subskill	Depth of Knowledge Level	2005 –06 Item Statistics SR: Percent of Students who Chose A, B, C, or D (*Indicates Correct Response). BCR: Percent of Students who Received 0, 1, 2, or 3 Points Format	A or 0	B or 1	C or 2	D or 3	Scale Score Location
1	A	3.1	3	SR	*70%	10%	6%	14%	471
2	C	2.1	1	SR	1%	2%	*95%	1%	390
3	A	1.2	2	SR	*79%	4%	3%	11%	443
4	B	2.3	2	SR	5%	*83%	9%	3%	443
5	D	1.1	2	SR	9%	3%	5%	*82%	440
6	D	3.1	2	SR	1%	1%	2%	*94%	399
7	B	2.1	2	SR	6%	*85%	5%	3%	460
8	D	3.3	3	SR	14%	30%	3%	*52%	509
9	A	1.3	2	SR	*78%	11%	6%	4%	453
10	A	2.1	1	SR	*92%	2%	2%	3%	423
11	B	3.3	4	SR	3%	*72%	14%	10%	460
12	C	4.1	3	SR	3%	8%	*84%	4%	445
13	C	4.1	3	SR	10%	4%	*79%	4%	468
14		4.1	3	BCR	8%	35%	47%	8%	441
15	D	3.1	2	SR	5%	47%	6%	*41%	581
16	C	4.3	3	SR	6%	3%	*84%	6%	422
17	B	3.3	2	SR	18%	*66%	10%	4%	494
18	B	2.1	1	SR	8%	*71%	2%	18%	481
19	B	3.3	2	SR	21%	*56%	20%	1%	531
20	A	1.1	2	SR	*74%	4%	17%	3%	466
21	C	3.1	3	SR	11%	24%	*58%	5%	504
22	C	4.1	3	SR	13%	17%	*46%	23%	546

Objective/Subskill and Depth of Knowledge Level information follows this table.
SR: selected response; BCR: brief constructed response.

Performance Category Scale Score Range

Minimal Performance	Basic	Proficient	Advanced
400 and below	401–443	444–496	497 and above

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Reading Objectives and Subskills

Types of Text

The grade 5 reading assessment presents a variety of grade-appropriate reading passages representing literary text, informational text, and everyday text. Passages may be up to 1,500 words long and some passages may be paired with other passages. Students may be asked to read and answer questions about texts such as these:

Literary	Informational	Everyday
Realistic fiction, poetry, drama, biography, autobiography, historical fiction, myths	Magazine, textbook, and newspaper articles, government documents	Charts, schedules, simple forms, applications (for example, camp), product labels, safety notices, simple instructions

Objectives, Subskills, and Descriptors

Objectives (labeled 1, 2, 3, and 4) and subskills (labeled 1.1, 1.2, etc.) denote general knowledge and skills that are assessed and reported on the WKCE-CRT. Bulleted descriptors are *examples* of specific knowledge or skills that may be included within each subskill. The subskills include knowledge and skills *such as, but not limited to* the descriptors.

1. Determine the meaning of words and phrases in context.

1.1. Use context clues to determine the meaning of words and phrases.

- Use context clues to determine the meaning of unfamiliar words.
- Understand the meaning of words and phrases used figuratively.
- Use context clues to determine the meaning of multiple-meaning words.
- Use knowledge of synonyms and antonyms to determine the meaning of words.
- Identify analogies to demonstrate understanding of word meaning.

1.2. Use knowledge of word structure to determine the meaning of words and phrases.

- Identify the meaning of contractions.
- Use knowledge of compound words to determine the meaning of a word.
- Identify how adding an affix changes the meaning of a word.
- Identify the meaning of a word with an affix.
- Use knowledge of root words to determine the meaning of a word.

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1.3. Use word reference materials to determine the meaning of words and phrases.

- Use an entry from a word reference to determine word meaning and pronunciation.

2. Understand text.

2.1. Demonstrate understanding of literal meaning by identifying stated information in literary text.

- Identify stated information about story elements.

2.2. Demonstrate understanding of literal meaning by identifying stated information in informational text.

- Identify stated information about main ideas and supporting details.
- Identify stated information provided through text features.

2.3. Demonstrate understanding of explicitly stated sequence of events in literary and informational text.

- Identify first, next, and last events.
- Follow steps in a process.

3. Analyze text.

3.1. Analyze literary text.

- Make inferences about story elements.
- Summarize important ideas and events.
- Analyze stated or implied theme, message, or main idea.
- Draw conclusions.
- Identify purpose.
- Make inferences based on text features or visuals.

3.2. Analyze informational text.

- Identify implied main ideas and supporting details.
- Identify implied relationships (such as cause/effect and compare/contrast).
- Summarize information.
- Identify purpose.
- Make inferences based on text features.
- Make inferences based on visual information.
- Make inferences about text structure.

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- Make inferences about the author's point of view.

3.3. Analyze author's use of language in literary and informational text.

- Analyze the use of literary devices.
- Recognize and distinguish among genres.
- Make inferences about the author's tone.
- Make inferences about the author's style.

4. Evaluate and extend text.

4.1. Evaluate and extend literary text.

- Extend themes and concepts to other situations.
- Make connections to text.
- Make predictions.
- Identify and evaluate the author's purpose, point of view, and effectiveness.

4.2. Evaluate and extend informational text.

- Make connections to text.
- Make predictions.
- Identify and evaluate the author's purpose, point of view, and effectiveness.
- Distinguish between facts and opinions.
- Evaluate the accuracy, currency, and credibility of information.

4.3. Evaluate and extend the author's use of language in literary and informational text.

- Evaluate the author's word choice and use of language.

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Reading Depth of Knowledge

These depth of knowledge levels are intended to reflect the level of cognitive demand placed on students by test items. As the level of cognitive demand increases, so does the mental effort and integration of information required to answer a test item successfully. Each level represents important cognitive skills, and each level requires the use of cognitive skills in lower levels. For example, a student who is asked to make connections between two texts (level 4) would also need to recall pertinent details from the texts (level 1), understand stated information in the texts (level 2), and make inferences and draw conclusions about each text (level 3). The levels assume grade-appropriate text, vocabulary, and tasks. Test items should represent a range of depth of knowledge levels, and items within each level may represent a range of difficulty as indicated by percentage of students who answered the item correctly or scale score location.

Level 1: Recognizing and Recalling

Students demonstrate a grade-appropriate ability to recognize or recall basic facts, terms, or definitions. For example, a student might be asked to identify an explicitly stated main idea in a text.

Level 2: Using Fundamental Concepts and Procedures

Students demonstrate a grade-appropriate ability to use basic facts, definitions, skills, or concepts. For example, a student might be asked to use information in a text to complete a graphic organizer.

Level 3: Concluding and Explaining

Students demonstrate understanding of grade-appropriate text by using stated and implied information and text elements to draw conclusions. Students explain and convey ideas effectively. For example, a student might be asked to provide details and examples from a text to support a conclusion.

Level 4: Evaluating, Extending, and Making Connections

Students demonstrate their knowledge of concepts when evaluating or interpreting grade-level text. Students make connections among texts, common experiences, and issues. For example, a student might be asked to evaluate an author's effectiveness in achieving an intended purpose.

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Reading Rubric for Constructed-Response Items

3 points

- The response demonstrates *thorough understanding* of the reading concept embodied in the task.
- The response is *accurate, complete, insightful, and fulfills all the requirements* of the task.
- Necessary support and/or examples are included.
- Information is clearly *text-based*.

2 points

- The response demonstrates *partial understanding* of the reading concept embodied in the task.
- The response is *accurate* and *fulfills most of the requirements* of the task.
- Necessary support and/or examples may not be complete or clearly text-based.

1 point

- The response demonstrates *an incomplete understanding* of the reading concept embodied in the task.
- The response provides *some information that is text-based*, but does not fulfill the requirements of the task.
- Information provided is *too general* or *too simplistic*.
- Necessary support and/or examples may be incomplete or omitted.

0 points

- The response demonstrates *no understanding* of the reading concept embodied in the task.
- The response is *inaccurate, confused*, or *irrelevant.*
- The student has *failed to respond to the task.*

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Reading Constructed-Response Item Scoring Guide

Forms: Public Release	Item #: 14	Item Type: BCR	TB Page #: 9	AB Page #: n/a
Reporting Category: Reading				Max Score Pts: 3
Objective: 4. Evaluates and Extends Text				
Subskill: 4.1. Evaluates and extends literary text				
Descriptor: Makes predictions (i.e. if the text were extended)				

Item Stem

Explain what might have happened if the old man had ignored the statues. Use details and examples from the passage to carefully support your answer. Write your answer on the lines below.

Responses should be evaluated according to the guidelines outlined below for each score point.

3 points

• The response **demonstrates a thorough understanding** of the reading concept embodied in the task by using text- based information to predict what might have happened if the old man had ignored the statues.

• The response **indicates understanding of the larger idea** of being rewarded for kindness or appreciating what one has.

• The student **clearly supports** the response with **highly relevant ideas and details** from the text. For example:

- The statues rewarded the old man for the kindness he showed toward them. Giving his own hat to the sixth statue was especially kind. If he had ignored the statues, he and his wife probably would not have received bags of food for New Year's Day.
- If the old man had not given his hats to the statues, he and his wife would probably have remained cold and hungry. But they still would have been thankful for what little they had. They showed this when they expressed thanks for the shelter of their home on the cold winter night.

2 points

• The response **demonstrates a partial understanding** of the passage and explains what might have happened if the old man had ignored the statues.

• The response **makes connections between relevant ideas in the text**, but may not indicate understanding of the larger idea of being rewarded for kindness or appreciating what one has.

• The student supports the response with **accurate details** from the text. For example:

- If the old man had not given his hats to the statues, the couple probably would have remained cold and hungry.
- The old man and his wife would not have received bags of food from the statues.

1 point

• The response **demonstrates an incomplete understanding** of the reading passage and does not fulfill all of the requirements of the task.

• The response refers to events in the passage but **does not make the connection** between the actions of the man and the actions of the statues.

• The student provides **limited or vague text-based details**. Text-based details may include ideas that are partial, too general, or too simplistic. For example:

- They would have been hungry. (vague; who are "they"?)
- The statues would be cold. (simplistic)

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Anchor Papers for Reading
Constructed-Response Item

Explain what might have happened if the old man had ignored the statues. Use details and examples from the passage to carefully support your answer. Write your answer on the lines below.

If the old man had ignored the statues they probably wouldn't have brought the 6 bags of rice and wheat, fish and beans, and wine and bean paste cakes to the old man's house for being so kind. Then, the old man and his wife wouldn't have had any food for the New Year's feast, or the rest of the year like they do now.

Score Point 3
>Response demonstrates a thorough understanding by using text-based information to predict what might have happened if the old man ignored the statues "they wouldn't have brought food" and clearly states the larger idea of being rewarded for kindness "being so kind"
>Student clearly supports the response with highly relevant ideas and details from the text "6 bags of rice and wheat....cakes," "no food for New Year's feast or rest of the year, like they do now"

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Explain what might have happened if the old man had ignored the statues. Use details and examples from the passage to carefully support your answer. Write your answer on the lines below.

If he had ignored the statues, supposedly as other villagers had. He and his wife would not have enjoyed New Years Eve and they could starve because they wouldn't have any food. If he hadn't been so kind and generous he and his wife wouldn't be able to eat anything, they'd starve.

Score Point 3
>Response demonstrates a thorough understanding by using text-based information to predict what might have happened if the old man ignored the statues "starve", and clearly states the larger idea of being rewarded for kindness "so kind and generous"
>Student clearly supports the response with highly relevant ideas and details from the text "ignored as other villagers had," "enjoyed New Year's"

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Explain what might have happened if the old man had ignored the statues. Use details and examples from the passage to carefully support your answer. Write your answer on the lines below.

What might have happened if the old man ignored the statues would be that they would have the reed hats to keep until somebody bought them and they wouldn't have gotten food from th Jizo statues. Then, if they didn't sell the hats soon enough they could die of staruation.

Score Point 2
>Response demonstrates an understanding of what might have happened if the old man ignored the statues "die of starvation" but fails to clearly state the larger idea of being rewarded for kindness
>Student supports the response with accurate ideas from the text "would have the reed hats until somebody bought them," "no food from Jizo statues"

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Explain what might have happened if the old man had ignored the statues. Use details and examples from the passage to carefully support your answer. Write your answer on the lines below.

The States wouldn't have come to life, and they wouldn't have gotten all of the food for their feast.

Score Point 2

>Response demonstrates a partial understanding and explains what might have happened if the old man ignored the statues "wouldn't have gotten food"

>Student makes connections between relevant ideas in the text, but does not indicate understanding of the larger idea of being rewarded for kindness

>Response contains accurate details from the text "statues wouldn't have come to life," "food for their feast"

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Explain what might have happened if the old man had ignored the statues. Use details and examples from the passage to carefully support your answer. Write your answer on the lines below.

They would not have food for new years.

Score Point 1
- >Response demonstrates an incomplete understanding and does not fulfill all of the requirements of the task
- >Student uses text-based material to predict what might have happened if the old man had ignored the statues, but makes no connection between relevant ideas in the text, and does not indicate understanding of the larger idea of being rewarded for kindness
- >Response provides limited text-based detail "no food for New Year's"

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Explain what might have happened if the old man had ignored the statues. Use details and examples from the passage to carefully support your answer. Write your answer on the lines below.

The old man might not think he's good at making the hats, the statues were supportive.

Score Point 0
>Response demonstrates no understanding of the reading concept embodied in the task
>Response contains irrelevant text-based details "not good at making the hats," "statues were supportive"

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Explain what might have happened if the old man had ignored the statues. Use details and examples from the passage to carefully support your answer. Write your answer on the lines below.

If the old man had ignored the statues he wouldn't have anything the statues are great love to help people.

Score Point 0
>Response contains text-based material, but with conclusions which are inaccurate "the man wouldn't have anything" and confused "statues are great love to help people"

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Mathematics

Sample Directions for Administering the Mathematics Test

Make sure each student has his or her own test book, a No. 2 pencil, an extra eraser, scratch paper, and the following manipulatives:

- ❑ Ruler
- ❑ Calculator for Session 2
  (4-function calculator required; use of scientific calculator is student preference)

NOTE: *The use of a calculator is not allowed to solve the problems in Session 1.*

Also required for the operational test, but not for this released item book:

- ❑ Pattern blocks, 1 set

Students' test books should be closed.

SAY **Remember to use only a No. 2 pencil in this test. In Session 1, you will be answering multiple-choice questions and short answer questions. Multiple-choice questions are questions that ask you to choose the best answer. For the multiple-choice questions, you must fill in the circle completely and make your mark heavy and dark. If you want to change an answer, completely erase the mark you made before making a new mark. You must fill in only one circle for each multiple-choice question.**

You may use scratch paper to work the multiple-choice questions, but remember to fill in the circle that goes with the answer you choose.

Short-answer questions are questions that ask you to write your answer instead of filling in a circle. Each short-answer question has a Step A and a Step B. Write your answers within the boxed area only, on the lines and/or in the space provided. Be sure to answer the question completely to show you clearly understand the question. Do not write outside the boxed area. The boxed area is your answer space. Only what you write in the answer space will be scored. You do not need to use the entire answer space.

For the short-answer questions, if you are asked to complete or draw a chart or figure, please do not use shading in your answer. If you need to erase, make sure you erase completely.

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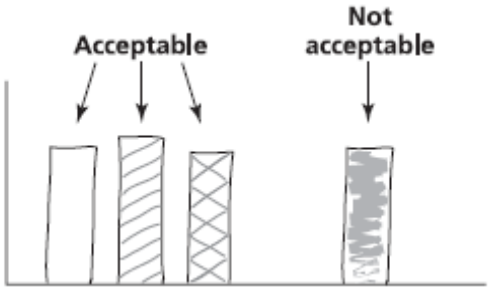
Demonstrate by drawing the illustration below on the board.



Now you will do Session 1 of the Mathematics test. Remember to read all of the directions and information in the test book. When you come to the word "STOP" at the bottom of the page, you have finished Session 1. You may go back and check your answers, but do not go on to Session 2 of the Mathematics test. When you have finished, sit quietly until everyone else has finished.

You will have 15 minutes to do Session 1. Make sure you stop at the end of Session 1.

Are there any questions?

When you are sure that all students understand the directions, continue.

SAY **Please open your test book to Page 2.**

Demonstrate. Check to be sure that all students are in the correct place in their test books.

SAY **You may begin.**

Record the starting and stopping times for Session 1.

Record the Starting Time:	Add 15 Minutes:	Record the Stopping Time:
_____	+ 15	_____

Check to be sure that students are marking and writing their answers in the appropriate places in their test books.

At the stopping time,

SAY **Stop. Put down your pencil and close your test book. This is the end of Session 1.**

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Pause to be sure that all students have closed their test books. Before proceeding to Session 2, make sure each student has a calculator. During an actual test administration, students would be required to clear their calculators' memories immediately before and after each calculator-allowed session.

SAY **Now, open your test book to the page labeled "Mathematics Session 2."**

In Session 2, you will be answering multiple-choice questions and short-answer questions. Multiple-choice questions are questions that ask you to choose the best answer. Remember, for the multiple-choice questions, you must fill in the circle completely and make your mark heavy and dark. If you want to change an answer, completely erase the mark you made before making a new mark. You must fill in only one circle for each multiple-choice question.

Short-answer questions are questions that ask you to write your answer instead of filling in a circle. Each short-answer question has a Step A and a Step B. Write your answers within the boxed area only, on the lines and/or in the space provided. Be sure to answer the question completely to show you clearly understand the question. Do not write outside the boxed area. The boxed area is your answer space. Only what you write in the answer space will be scored. You do not need to use the entire answer space.

Remember, for the short-answer questions, if you are asked to complete or draw a chart or figure, please do not use shading in your answer. If you need to erase, make sure you erase completely.

You will have 25 minutes to do Session 2. Remember to read all of the directions and information in this part of the test book. When you come to the word "STOP" at the bottom of the page, you have finished Session 2.

You may go back over Session 2 to check your answers, but do not go back to Session 1. When you have finished, sit quietly until everyone else has finished.

Are there any questions?

When you are sure that all students understand the directions, continue.

SAY **You may begin.**

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Record the starting and stopping times for Session 2.

Record the Starting Time:	Add 25 Minutes:	Record the Stopping Time:
_____	+ 25	_____

SAY **Stop. This is the end of Session 2. Please close your test book.**

Collect all test materials. Use the information on the following pages to score the multiple-choice and constructed-response items.

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Mathematics Item Information

Item	Answer Key	Calculator Allowed	Objective/ Subskill	Depth of Knowledge Level	2005–06 Item Statistics SR: Percent of Students who Chose A, B, C, or D (*Indicates Correct Response). BCR: Percent of Students who Received 0, 1, or 2 Points Format	A or 0	B or 1	C or 2	D	Scale Score Location
1	D	No	Fb	2	SR	8%	6%	9%	*77%	459
2	A	No	Bb	2	SR	*68%	18%	11%	2%	473
3	A	No	Bb	2	SR	*65%	31%	2%	2%	496
4	C	No	Fb	2	SR	8%	6%	*79%	4%	615
5	C	No	Bb	2	SR	7%	10%	75%	6%	457
6		No	Ba	2	A-BCR	17%	82%			434
6		No	Ab	3	B-BCR	13%	14%	72%		418
7	D	Yes	Fa	2	SR	7%	9%	6%	*77%	456
8	C	Yes	Ea	2	SR	10%	15%	*37%	36%	535
9	B	Yes	Fa	2	SR	8%	*46%	40%	4%	545
10	B	Yes	Db	2	SR	3%	*90%	3%	3%	388
11	C	Yes	Ca	2	SR	16%	20%	*37%	26%	546
12	C	Yes	Cc	2	SR	4%	4%	*90%	1%	405
13		Yes	Fb	2	A-BCR	47%	52%			486
13		Yes	Ad	3	B-BCR	22%	37%	39%		474
14	D	Yes	Ba	1	SR	29%	17%	5%	*47%	497
15	C	Yes	Da	1	SR	7%	9%	*72%	11%	452
16	B	Yes	Cb	2	SR	3%	*83%	1%	11%	445
17	B	Yes	Fa	3	SR	15%	*78%	4%	2%	457
18	B	Yes	Cb	1	SR	24%	*47%	16%	11%	521
19	C	Yes	Ea	2	SR	30%	18%	*33%	17%	560
20	C	Yes	Dc	3	SR	14%	2%	*70%	13%	470

Objective/Subskill and Depth of Knowledge Level information follows this table.
SR: selected response; A-BCR: brief constructed response, part A; B-BCR: brief constructed response, part B.

Performance Category Scale Score Range

Minimal Performance	Basic	Proficient	Advanced
444 and below	445–462	463–504	505 and above

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Mathematics Objectives and Subskills

Beginning of Grade 5

How to use the Framework

The mathematics assessment framework is an indication of the knowledge and skills that will be assessed on the November WKCE-CRT. ***This information does not replace your local curriculum***. However, you may wish to ensure that your local curriculum includes the knowledge and skills described in the framework.

This section of the framework describes the types of content that students may encounter on the WKCE-CRT

The knowledge and skills to be assessed are organized into objectives, subskills, and descriptors as shown below. WKCE-CRT results will be reported by objectives and subskill.

A. **Objective:** A group of cognitively related skills.
A.a. **Subskill:** A group of related knowledge and skills that ***may include, but is not limited to,*** the descriptors which follow.
- **Descriptor:** an example of a specific knowledge or skill that may be assessed.

Objectives, Subskills, and Descriptors

Objective A: **Mathematical Processes**

Students will effectively use mathematical knowledge, skills, and strategies related to reasoning, communication, connections, representation, and problem solving.

Descriptors, such as but not limited to

- Use reasoning and logic to:
  - Perceive patterns
  - Identify relationships
  - Formulate questions
  - Pose problems
  - Make conjectures
  - Justify strategies
  - Test reasonableness of results
- Communicate mathematical ideas and reasoning using the vocabulary of mathematics in a variety of ways (e.g., using words, numbers, symbols, pictures, charts, tables, diagrams, graphs, and models).
- Connect mathematics to the real world, as well as within mathematics.
- Create and use representations to organize, record, and communicate mathematical ideas.
- Solve and analyze routine and non-routine problems.

Objective B: **Number Operations and Relationships**

Subskill B.a.: **Concepts**

Descriptors, such as but not limited to

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- Recognize and apply place-value concepts to whole numbers less than 1,000,000.
- Read, write, and represent numbers using words, numerals, pictures (e.g., base ten blocks), number lines, arrays, expanded forms (243=200+40+3), and symbolic renaming (e.g., 243=250-7).

  Compare and order numbers less than 10,000 represented in numbers, arrays, symbols (<, >, =) and words.

- Use basic facts to determine the first ten multiples of 2-10 and determine factors for numbers up to 100.

  Recognize the divisibility potential of numbers (divisors of 2, 5, 10, 25)

  Count using whole numbers less than 10,000 and by any number 1-12 and 'friendly numbers' through 100 (e.g., 20, 25, etc.).
- Read, write, represent, count, compare, and order, and make change using a collection of coins and bills equal to and less than $20.00.
- Read, write, and identify equivalent fractions (1/4s, 1/2s, 1/8s, 1/10s, 1/16s)

  Represent fractions (1/4s, 1/2s, 1/8s, 1/10s, 1/16s) using numbers, pictures (e.g. drawings or base ten blocks), and number lines.

  Order and compare fractions (1/4s, 1/2s, 1/8s, 1/10s, 1/16s) represented numerically or as models (including parts of a set and parts of a whole)

  Rename improper fractions to mixed numbers.

Subskill B.b.: **Computation**

Descriptors, such as but not limited to

- Use all operations in everyday situations to solve single or multi-step word problems.
- Solve three-and four-digit addition and subtraction with regrouping; multiplication of two-digit by one-digit numbers; division with single-digit divisors and two-digit dividends and with two-step or mixed operation problems with single-digit numbers.

  Add and subtract decimals in the context of money.
- Solve problems using basic multiplication and division facts.
- Add and subtract fractions with like denominators.
- Estimate: multiplication of two-digit by one-digit problems, addition and subtraction of decimals using money, and division in context
- Determine reasonableness of answers.

Objective C: **Geometry**

Subskill C.a.: **Describe figures**

Descriptors, such as but not limited to

- Identify, describe, and compare properties of 2- and 3-dimensional figures, comparing sides, faces, vertices, and edges of regular figures including parallel and perpendicular lines and line segments.
- Determine the number of faces, edges, and vertices given an illustration of a 3-dimensional figure.

Subskill C.b.: **Spatial relationships and transformations**

Descriptors, such as but not limited to

- Use pattern blocks and dot paper (geoboards) to describe, model, and construct plane figures.

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- Identify cubes, rectangular and triangular prisms, and rectangular and triangular pyramids from simple nets (flat patterns).
- Use slides, flips, and turns on figures. Identify congruent shapes using figures that have been manipulated by one or two motions (slides, flips and turns).
- Discern a shape with one line of symmetry.
- Identify and describe 3-dimensional figures from multiple perspectives.

Subskill C.c.: **Coordinate systems**

Descriptors, such as but not limited to

- Use simple 2-dimensional coordinate systems to identify or plot locations on maps and to represent points and simple figures with coordinates using letters and numbers, (e.g., (E, 3)).
- Identify and use relationships among figures (e.g., location, position and intersection).

Objective D: **Measurement**

Subskill D.a.: **Measurable attributes**

Descriptors, such as but not limited to

- Identify appropriate units to measure length, liquid capacity, volume, weight/mass, time, and temperature. Units include: inches, feet, yards, miles, millimeters, centimeters, meters, kilometers, ounces, cups quarts, gallons, liters, seconds, minutes, hours, days, months, years, ounces, pounds, grams, kilograms, and degrees Fahrenheit/Celsius.
- Compare attributes of length and weight by direct observation or when given actual measurements.
- Make measurement conversions within a system between units (e.g., feet and yards; inches and feet; quarts and gallons; meters and centimeters; minutes and hours; hours and days; months and years).

Subskill D.b.: **Direct measurement**

Descriptors, such as but not limited to

- Read, interpret, and use measuring instruments to determine the measurement of objects with non- standard and standard units to the nearest ¼- inch or centimeter.
- Read thermometers to the nearest five degrees F/C and read a scale to the nearest ounce or five grams.
- Translate time on an analog clock to a digital clock and vice versa.
- Determine and compare elapsed time in problem-solving situations.

Subskill D.c.: **Indirect Measurement**

Descriptors, such as but not limited to

- Estimate measurement using U.S. customary and metric measurements.
- Determine perimeter and area of regular shapes and the area of plane rectangular shapes. Determine perimeter and area of irregular shapes when given a reference tool such as a grid.

Objective E: **Statistics and Probability**

Subskill E.a.: **Data analysis and statistics**

Descriptors, such as but not limited to

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- Formulate questions to collect, organize, and display data.
- Collect, organize, and display data in appropriate graphs or charts.
- Draw reasonable conclusions based on contextual data.
- Use data to predict outcomes or trends from graph or table.
- Read and interpret information from single bar graphs, line plots, picture graphs, and Venn diagrams.
- Describe a given set of data of seven items/numbers or fewer using the terms range, mode and median in problems with and without context.

Subskill E.b.: **Probability**

Descriptors, such as but not limited to

- Determine if future events are more, less, or equally likely, impossible or certain to occur.
- Choose or design an event that is fair or unfair.
- Predict the outcomes of a simple event using words to describe probability and test predictions using data from a variety of sources.
- Describe and determine the number of combinations for choosing 2 out of 4 items (e.g., What are the possible combinations when selecting 2 items from a menu of 4 items (chips, cookie, pizza, banana, etc.))?

Objective F: **Algebraic Relationships**

Subskill F.a.: **Patterns, relations and functions**

Descriptors, such as but not limited to

- Recognize, extend, describe, create, and replicate a variety of patterns including attribute, numeric, and geometric patterns.
- Represent patterns and relationships with pictures, tables, and charts.
- Describe a rule that explains a functional relationship or pattern using addition, subtraction, or multiplication rules.
- Determine a future event in a pattern up to the eighth item when given the first five.

Subskill F.b.: **Expressions, equations and inequalities**

Descriptors, such as but not limited to

- Solve simple one-step open sentences involving all operations in context.
- Demonstrate a basic understanding of equality and inequality using symbols (<, >, =) with all operations.
- Solve simple one-step open sentences including missing factor in problems with and without context (e.g., “box” or letter variable and whole number coefficients).
- Represent problem situations with one-step equations involving multiplication and division with simple open sentences.
- Represent problem situations with one-step equations or expressions using one of the four operations.

Subskill F.c.: **Properties**

Descriptors, such as but not limited to

- Use the commutative property of multiplication with positive single digits.
- Use the inverse relationship of division and multiplication with single digit, whole numbers.
- Demonstrate understanding of order of operations by solving two-step open sentences involving all operations.

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Mathematics Depth of Knowledge

The representative examples for the following depth of knowledge categories are intended to reflect student performance expectations with regard to the level of mental effort and amount of information integrated by the student. Items are targeted at one of four levels of cognitive demand. Each level of demand is represented by items with a range of difficulty, as indicated by the percentage of students who answered the item correctly or by scale score value. Assuming grade-appropriate vocabulary and test items, these levels are viable and useful across all grades.

Level 1: Recognizing and Recalling

Students recognize and recall basic facts, terms, concepts, and definitions of the content and processes of mathematics. For example, students may be required to do computation with whole numbers, fractions, decimals, and integers.

Level 2: Using Fundamental Concepts and Procedures

Students describe or apply basic facts, terms, rules, concepts and definitions of the content and processes of mathematics.

Level 3: Concluding and Explaining

Students demonstrate an understanding of complex ideas, draw conclusions based on this understanding, and communicate ideas and conclusions effectively.

Level 4: Evaluating, Extending, and Making Connections

Students synthesize skills and techniques from various concepts of mathematics to solve multifaceted problems, and justify conclusions using mathematical definitions, properties, and principles. For example, students may be required to support mathematical arguments with definitions, properties, and principles.

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Mathematics Rubric for Constructed-Response Items

Step B of the constructed-response items is scored using a generic rubric.

2 points The student demonstrates a thorough understanding of the mathematical concepts and/or procedures represented in the problem. The student uses appropriate mathematical procedures and/or concepts to explain or justify the response to Step A, and provides clear and complete explanations and interpretations containing words, calculations, or symbols, unless otherwise specified in the item stem.

The response may contain minor flaws that do not detract from the demonstration of a thorough understanding of the problem.

1 point The student demonstrates only a partial understanding of the mathematical concepts and/or procedures represented in the problem. The response lacks an essential understanding of the underlying mathematical concepts used to provide the response to Step A.

The response contains errors related to the misinterpretation of important aspects of the problem, misuse of mathematical procedures and/or concepts, or misinterpretation of results.

0 points The student provides a completely incorrect explanation or justification, or one that cannot be interpreted, or no response at all.

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Mathematics Constructed-Response Item Scoring Guides

Form: Public Release	Item #: 6	Item Type: BCR	TB Page #: 5	AB Page #: n/a
Objective for Step A: B. Number Operations & Relationships				Max Score Pts: Step A: 0–1 Step B: 0–2
Subskill: B.a. Number Concepts				
Objective for Step B: A. Mathematical Processes				

Step A: Response is limited to correct answer or range below

$4.25

Step B: Responses <u>may</u> include, but may <u>not be limited to</u>, the Answer Cues below

2 points The student indicates a correct and mathematically detailed process for determining change (e.g. $5.00 - $0.75 = $4.25)

1 point <u>One</u> of the following applies:

- The student indicates a correct but incomplete process for determining the amount of change (e.g. "I subtracted")
- The student indicates a correct and complete process, but makes a computational error. (See Note below.)

0 points The student provides a completely incorrect explanation or justification, or one that cannot be interpreted.

Note: If an arithmetic error leads to loss of credit for Step A, and the process is otherwise correct, award full credit for Step B.

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Form: Public Release	Item #: 13	Item Type: BCR	TB Page #: 10	AB Page #: n/a
Objective for Step A: F. Algebraic Relationships				Max Score Pts: Step A: 0–1 Step B: 0–2
Subskill: F.b. Expressions, Equations, and Inequalities				
Objective for Step B: A. Mathematical Processes				

Step A: Response is limited to correct answer or range below

Either of the following:

- $6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 = 54$
- $9 \times 6 = 54$

Step B: Responses <u>may</u> include, but may <u>not be limited to</u>, the Answer Cues below

2 points <u>Both</u> of the following tasks are accomplished:

- The student uses addition or multiplication or division in an appropriate way. (See Note 1 below.)
- The student either uses words to explain the terms in the number sentence, or gives an alternative mathematical representation. (See Note 2 below.)

1 point <u>One</u> of the following applies:

- The student accomplishes only the first of the above tasks.
- The student accomplishes both of the above tasks, but with a computational error. (See Note 3 below.)

0 points The student provides a completely incorrect explanation or justification, or one that cannot be interpreted.

Note 1: Give 1 point credit even if the student only repeats the number sentence.

Note 2: Give full credit to a response including a drawing of nine circles divided into 6 pieces each, or for one that uses repeated addition to explain multiplication.

Note 3: If an arithmetic error leads to loss of credit for Step A, and the process is otherwise correct, award full credit for Step B.

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Anchor Papers for Mathematics
Constructed-Response Items

Item 6

Kathy gave the cashier $5.00 for a soda that cost $0.75.

Step A

How much change did Kathy receive?

Answer: $ 4.25

Step B

Explain how you found the amount of change that Kathy received. Use words and/or numbers in your answer.

I subtracted $0.75 from $5.00 and I got $4.25.

Step A
- Score Point 1
- > Correct answer

Step B
- Score Point 2
- > Correct and complete response:
  demonstrates subtraction verbally/numerically

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Item 6

Kathy gave the cashier $5.00 for a soda that cost $0.75.

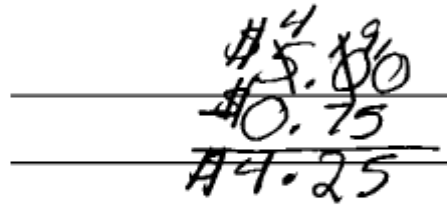
Step A

How much change did Kathy receive?

Answer: $ $4.25

Step B

Explain how you found the amount of change that Kathy received. Use words and/or numbers in your answer.



Step A
Score Point 1
> Correct answer
Step B
Score Point 2
> Correct and complete response:
demonstrates subtraction numerically

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Item 6

Kathy gave the cashier $5.00 for a soda that cost $0.75.

Step A

How much change did Kathy receive?

Answer: $ 4.25

Step B

Explain how you found the amount of change that Kathy received. Use words and/or numbers in your answer.

You have to minus them.

Step A
- Score Point 1
- > Correct answer

Step B
- Score Point 1
- > Correct process: "minus"
- < [incomplete response: "them" is ambiguous]

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Item 6

Kathy gave the cashier $5.00 for a soda that cost $0.75.

Step A

How much change did Kathy receive?

Answer: $ 4.25

Step B

Explain how you found the amount of change that Kathy received. Use words and/or numbers in your answer.

I got the answer from paper

Step A
Score Point 1
> Correct answer
Step B
Score Point 0
< [inadequate process]

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Item 6

Kathy gave the cashier $5.00 for a soda that cost $0.75.

Step A

How much change did Kathy receive?

Answer: $ 5.15

Step B

Explain how you found the amount of change that Kathy received. Use words and/or numbers in your answer.

I found the amount of change that she receved by taking $5.00 and minusing $0.75.

Step A
- Score Point 0
- < [incorrect answer]

Step B
- Score Point 2
- > Correct and complete response using subtraction:
  "taking $5.00 and minusing $0.75"

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Item 6

Kathy gave the cashier $5.00 for a soda that cost $0.75.

Step A

How much change did Kathy receive?

Answer: $ 3.75

Step B

Explain how you found the amount of change that Kathy received. Use words and/or numbers in your answer.

I did in my head by subtracting.

Step A
- Score Point 0
- < [incorrect answer]

Step B
- Score Point 1
- > Correct method: subtraction
- < [incomplete response]

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Item 6

Kathy gave the cashier $5.00 for a soda that cost $0.75.

Step A

How much change did Kathy receive?

Answer: $ 5.75

Step B

Explain how you found the amount of change that Kathy received. Use words and/or numbers in your answer.

because I add the numbers.

Step A
Score Point 0
< [incorrect answer]
Step B
Score Point 0
< [incorrect process: "I add..."]

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Item 13

Mr. Lee's class made a fruit salad. They cut 9 apples into 6 pieces each.

Step A

Write a number sentence that shows the total number of apple pieces that Mr. Lee's class used.

Answer: 9 x 6 = 54

Step B

Explain why the number sentence you wrote shows the number of apple pieces Mr. Lee's class used. Use words and/or numbers in your answer.

If there's 9 apples and each is cut into 6, you need to know how many slices. You could do it another way: 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 = 54.

Step A
Score Point 1
Step B
Score Point 2
> The student understands the process of repeated addition
> The student has correctly used a second number sentence to explain the first number sentence

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Item 13

Mr. Lee's class made a fruit salad. They cut 9 apples into 6 pieces each.

Step A

Write a number sentence that shows the total number of apple pieces that Mr. Lee's class used.

Answer: 9 X 6 = 54

Step B

Explain why the number sentence you wrote shows the number of apple pieces Mr. Lee's class used. Use words and/or numbers in your answer.

9 X 6 = 54

Step A
  Score Point 1
Step B
  Score Point 1
  > The student shows understanding of multiplication (repeats number sentence)
  < [the student does not explain the number sentence]

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Item 13

Mr. Lee's class made a fruit salad. They cut 9 apples into 6 pieces each.

Step A

Write a number sentence that shows the total number of apple pieces that Mr. Lee's class used.

Answer: 9 * 6 = 54

Step B

Explain why the number sentence you wrote shows the number of apple pieces Mr. Lee's class used. Use words and/or numbers in your answer.

Because then if you ÷ it will take the answer.

Step A
  Score Point 1
Step B
  Score Point 0
  < [the student doesn't demonstrate understanding of multiplication or division]
  < [the student doesn't explain the terms in the number sentence]

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Item 13

Mr. Lee's class made a fruit salad. They cut 9 apples into 6 pieces each.

Step A

Write a number sentence that shows the total number of apple pieces that Mr. Lee's class used.

Answer: 54

Step B

Explain why the number sentence you wrote shows the number of apple pieces Mr. Lee's class used. Use words and/or numbers in your answer.

Because there were 9 apples and 6 pieces from each apple so I did 6 x 9 = 54

Step A
Score Point 0
Step B
Score Point 2
> The student understands the process of multiplication
> The student uses words to explain the terms in the number sentence (given in Step B)

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Item 13

Mr. Lee's class made a fruit salad. They cut 9 apples into 6 pieces each.

Step A

Write a number sentence that shows the total number of apple pieces that Mr. Lee's class used.

Answer: 54

Step B

Explain why the number sentence you wrote shows the number of apple pieces Mr. Lee's class used. Use words and/or numbers in your answer.

9x6=54

Step A
  Score Point 0
Step B
  Score Point 1
  > The student shows understanding of multiplication
    (repeats number sentence)
  < [the student does not explain the number sentence]

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Item 13

Mr. Lee's class made a fruit salad. They cut 9 apples into 6 pieces each.

Step A

Write a number sentence that shows the total number of apple pieces that Mr. Lee's class used.

Answer: 9+6= 15

Step B

Explain why the number sentence you wrote shows the number of apple pieces Mr. Lee's class used. Use words and/or numbers in your answer.

I got my answer by adding 9+6=15.

Step A
  Score Point 0
Step B
  Score Point 0
  < [the student doesn't demonstrate appropriate understanding]
  < [the student doesn't explain the terms in the number sentence]

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Guide to Grade 5 Released Item Books
In READING and MATHEMATICS

Wisconsin Department of Public Instruction
Elizabeth Burmaster, State Superintendent