

# Mississippi Testing Accommodations Manual

Revised January 2013



Mississippi Statewide Assessment System  
Office of Student Assessment  
Mississippi Department of Education

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# Overview

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The list of accommodations shows the numeric codes to be entered in the designated areas on student answer documents or test booklets. **The accommodations that are allowable on each of the statewide tests vary.** A list of allowable and non-allowable accommodations for each test is located in this document.

The **General Accommodations** are allowable and may be used by all students on each of the statewide tests. These accommodations do not have to be entered on the student's answer document. Any accommodation utilized for the assessment of students must be used during the student's routine classroom instruction, including classroom assessment.

All eligible students may utilize appropriate assessment accommodations when participating in the statewide assessments. Any accommodation utilized for the assessment of students must be

- based upon the learning needs of the individual student through decisions made and officially documented on the **IEP/504 Plan** prior to the test administration, or
- based on the student's **temporary physical disability**, and
- used during the student's **routine** classroom instruction, to include classroom assessment.

All **English Language Learner** students may utilize appropriate assessment accommodations when participating in the statewide assessments. Any accommodation utilized for the assessment of individual students must be:

- based upon the individual student's learning needs,
- based upon decisions made prior to the test administration, and
- used during the student's routine classroom instruction, to include classroom assessment.

		GEN	ELL		CPAS	MCT2			SATP2					MWAP3	MST
#	ACCOMMODATION	General (ALL students)	SATP2, CPAS, MCT2, MST, MWAP	ACCESS for ELLs®	Vocational Education	L.A. - Reading	L.A. - Writing	Mathematics	Algebra I	Biology I	Eng. II MC-Read. / Vocab.	Eng. II MC-Writing/Grammar	U.S. History	Writing Assessment English II	Science 5 & 8
Sitting	1	At the front of the room	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	2	Facing test administrator while directions given	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	3	In a small group	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	4	Individually to accommodate specific disability	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	5	In a familiar room	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	6	With a familiar teacher	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	7	At home (only for homebound students)	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	8	In a study carrel	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	9	With special lighting	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	10	Specialized table to fit a student's wheelchair	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	11	Secure paper to work area with magnets/tape	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Timing/Sc	21	With scheduled rest breaks	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	22	At time of day to accommodate student's disability	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	23	Until, in test administrator's judgment, the pupil can no longer continue the activity	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	24	Administer the test over several sessions, specifying the duration of each session. (MDE prior approval required) <b>REFER TO NOTE 4</b>	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	25	Administer the test over several days, specifying the duration of each day's session. (MDE prior approval required) <b>REFER TO NOTES 4 &amp; 16</b>	N	Y	Note 16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	40	Large print	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	41	Braille <b>REFER TO NOTE 5</b>	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	42	Hearing aids	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	43	Auditory trainers	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	44	Transparent color overlays	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

		GEN	ELL		CPAS	MCT2			SATP2					MWAP3	MST
#	ACCOMMODATION	General (ALL students)	SATP2, CPAS, MCT2, MST, MWAP	ACCESS for ELLs®	Vocational Education	L.A. - Reading	L.A. - Writing	Mathematics	Algebra I	Biology I	Eng. II MC - Read. / Vocab.	Eng. II MC - Writing/Grammar	U.S. History	Writing Assessment English II	Science 5 & 8
Prese	45	Magnifying glasses/magnifying equipment	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	46	Templates to reduce visible print	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	47	Provide cues (e.g., arrows and stop signs) on answer form in <u>pencil</u> <b>REFER TO NOTE 6</b>	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	48	Use of memory aids, fact charts, resource sheets, and/or abacus <b>REFER TO NOTE 7</b>	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	49	Clue student to stay on task	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	50	Highlight key words/phrases in directions (e.g., complete sentences, show your work) by the teacher	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	53	Read test directions (but <b>not</b> test items) to student or group-repeating and/or paraphrasing directions if needed <b>REFER TO NOTES 8 &amp; 9</b>	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	55	Read test directions and test items to individual students or the group - repeating directions/items, but <b>not</b> paraphrasing <b>REFER TO NOTES 8 &amp; 9</b>	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y
	58	Read test directions and test items to individual students or a group--repeating and/or paraphrasing <b>only</b> the directions if needed. <b>REFER TO NOTES 8 &amp; 9</b>	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y
	60	Use of highlighter (yellow only) by student in test booklet	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
61	Calculator (MCT2 Mathematics: Allowable only in grades 7 and 8.) <b>REFER TO NOTE 15</b>	N	Note 15	N	N	N	N	Note 15	Y	N	N	N	N	N	
70	Dictation of answers to test administrator/proctor (scribe) <b>REFER TO NOTE 10</b>	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

	#	ACCOMMODATION	GEN	ELL		CPAS	MCT2			SATP2				MWAP3	MST
			General (ALL students)	SATP2, CPAS, MCT2, MST, MWAP	ACCESS for ELLs®	Vocational Education	L.A. - Reading	L.A. - Writing	Mathematics	Algebra I	Biology I	Eng. II MC - Read. / Vocab.	Eng. II MC - Writing/Grammar	U.S. History	Writing Assessment English II
Res o se	72	Allow marking of answers in booklet and transferring of answers from test booklet/answer document to answer document by test administrator (i.e., large print) <b>REFER TO NOTE 11</b>	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	73	Tape record responses for later verbatim translation <b>REFER TO NOTE 12</b>	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	74	Provide copying assistance between drafts <b>REFER TO NOTES 10 &amp; 11</b>	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	75	Braille	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	76	Communication board	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	77	Augmentative communicative device	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	78	Computer/word processor ( <b>without</b> grammar/syntax checker & <b>without</b> work completion/prediction feature) <b>REFER TO NOTE 13</b>	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	79	Computer/word processor ( <b>without</b> grammar/syntax checker, <b>with</b> completion/prediction activated)	N	N	N	Y	Y	Y	Y	Y	Y	N	Y	N	Y
	80	Adapted keyboards	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	81	Native language dictionaries for ELL students (i.e. dictionaries that translate English words into the native language - no definitions are given in either language. <b>REFER TO NOTE 14</b> )	N	Y	N	N	N	N	N	N	N	N	N	N	N
	82	Spelling dictionaries (dictionaries show correct spelling of English words; do not give definitions).	N	N	N	N	N	N	Y	Y	Y	N	N	Y	N
98	Other <b>allowable</b> accommodation	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
99	Other <b>non-allowable</b> accommodation	N	N	N	N	N	N	N	N	N	N	N	N	N	N

## Important Notes

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**In the Testing Accommodations Chart specific accommodations have a tag reading, “REFER TO NOTE \_\_\_”. These notes are listed below by number.**

**NOTE 1:** *A test administrator and proctor must be present during the entire test administration for all students tested.*

**NOTE 2:** *It should be noted that some accommodations used routinely in the classroom may not be allowable for statewide tests. The test results of students who use non-allowable accommodations are invalid and must be excluded from summary statistics. Any student with an invalid score is considered not tested. Allowable accommodations may change the method in which test items are presented and the method of the student’s response to test items but will not interfere with what the test purports to measure. An unallowable accommodation provides an unfair advantage to the student and interferes with what the test purports to measure.*

**NOTE 3:** *Approval must be granted by the Office of Student Assessment (OSA) four (4) weeks prior to the use of accommodations that are not included in this list. Please complete the Accommodation Request Form and submit it to OSA. It is the responsibility of the OSA to determine whether the use of such accommodation(s) will affect the validity of the assessment.*

**NOTE 4:** *Accommodations **24** and **25** relate to administering the test over several sessions and/or days and must be approved by the Office of Student Assessment four (4) weeks prior to their use on statewide assessments. However, the entire assessment must be completed within the testing window. Any extension that exceeds or goes beyond the day the test administration is scheduled must be pre-arranged, the procedure must be documented, and on file with the District Test Coordinator. If the student is testing over several days, he/she is not allowed to change responses to questions answered during the previous testing sessions or preview questions that will be administered in a future session.*

**NOTE 5:** *If the responses are too open-ended or constructed response items, the responses must be transcribed verbatim. The Braille test administrator may review Braille test material prior to test administration, but the review must be*

*authorized by the district test coordinator and must take place in a controlled, secure environment.*

**NOTE 6:** *Accommodation 47 relates to cueing. Cueing is assisting the student in focusing his/her attention. Cueing strategies include, but are not limited to, arrows, lines, space, contrasting colors, position or focal point, underlining, labeling, size, and shading. Cues may be used only in test directions and in test questions. Cues may not be used in the answer choices. Cues provided on answer booklets/documents must be erased before they are returned for scoring. Cues provided on test books do not have to be erased since test books are non-scorable documents.*

**NOTE 7:** *Accommodation 48 relates to the use of memory aids. A memory aid, fact chart, and/or resource sheet is something that helps a student remember how to find the answer; it should not give him/her the answer. This accommodation cannot interfere with what the test purports to measure. For example, if the test measures computation skills, a multiplication fact chart is a non-allowable accommodation since it gives the answer or a portion of the answer to the item assessing multiplication skills.*

*The compilation of allowable and non-allowable materials is by no means exhaustive. Prior approval is not required for the memory aids, fact charts, and/or resource sheets labeled allowable. All other material requires prior approval from the Office of Student Assessment (OSA). You must complete the Accommodation Request Form. Submissions may be sent any time during the school year but no later than four (4) weeks prior to the test administration for which the use of memory aid is intended. The memory aids, fact charts, and/or resource sheets for state assessments must be limited to 1-3 pages per content area.*

*Only a student who is visually-impaired may use the abacus to solve mathematics problems. No prior approval is required for use of the abacus by these students.*

**NOTE 8:** *Paraphrasing is re-stating the text and does not include providing definitions or detailed explanations. Only directions may be paraphrased. Items, including sample questions, may not be paraphrased as part of a presentation accommodation.*

**NOTE 9:** *Accommodations 53, 55, and 58 relate to the presentation of test directions and test items (questions and answer choices) to students. In addition*



*to reading, these accommodations may involve writing the material on a blackboard, using sign language, using a text scanner with voice synthesizer, or using other appropriate technology.*

*Using accommodations 53, 55, and 58 for passages or items in the reading sections of the MCT2 (MCT2 – Reading) or the SATP (English II Multiple Choice – Vocabulary/Reading [and Reading Comprehension for “old framework” re-testers]) is not allowed.*

*For the WIDA ACCESS for ELLs® test, accommodations 55 and 58 are not allowed, as these accommodations interfere with what the test purports to measure.*

*When preparing to administer the test(s) to students who are deaf or hard of hearing or to students who are blind or visually impaired, test administrators may review eligible test material (i.e., math, science, or history test books; scripted directions for reading tests; non-reading portions of language arts tests) prior to test administration. The review must be authorized by the district test coordinator and must take place in a controlled, secure environment. A signed Confidentiality Agreement is required and must be on file when test administrators preview test items prior to the test administration. Test administrators should be familiar with specific symbols or abbreviations particular to the content area being assessed.*

*When working with a student who has limited English proficiency, consideration needs to be given to whether the assessment should be explained to the student in his or her native language or other mode of communication unless it is clearly not feasible to do so.*

*Students for whom American Sign Language (ASL) is the primary language may have directions and/or items signed to them, except for the reading sections of MCT2 – Reading and English II Multiple Choice – Vocabulary/Reading, where the signing of items is not allowed. Other allowable signing systems are Signing Exact English (SEE), Signed English (SE), Sign Supported English (SSE or CASE), or Contact Sign (i.e., Pidgin Sign English [PSE]). Sign languages from other countries (i.e., Auslan, BSL, LSF) or non-standard sign systems (i.e., home sign) are not permitted to be used.*

**NOTE 10:** *The scribe must write exactly what the student says as dictated. The scribe may not edit or alter the student’s dictation in any way. The student is responsible for all capitalization, punctuation, and spelling. The student should review the draft composition and make any necessary edits, including edits to*

*capital letters and punctuation. A scribe may not assist the student during the editing process. The scribe transfers verbatim the student's responses to an answer document.*

**NOTE 11:** *The dictation process and transfer of answers must occur under secure conditions with at least two persons present.*

**NOTE 12:** *Accommodation 73 - Tape record responses for later verbatim translation*

- A. Dictating a response at any grade is very tedious for both the student and the scribe.
- B. Students must spell each word and note every punctuation mark as they dictate.
- C. Please consider using a tape recorder for a student's "draft."
- D. The tape can be played back to the student, who can stop and start the tape as necessary, spelling and punctuating the response more easily as dictation to the scribe takes place. The student must also note indentation or skipped lines during the dictation.
- E. The taped version, of course, can also be edited by the student.
- F. The taped "draft" must not be written for the student to review until the dictation with spelling and punctuation has occurred. The student must also note indentation or skipped lines during the dictation.
- G. The student may be given the dictated response to review and may make revisions at that point.
- H. The dictation process must occur under secure conditions with at least two persons present.
- I. The response must be transcribed on the pre-ID Final Response Insert Page, if available, with appropriate Prompt Number gridded or in a blank Final Response Insert Page with appropriate Prompt Number gridded and the MSIS number written on the front cover of the Final Response Insert Page.
- J. If this method is used, the tape must be erased after the transcription has been completed.
- K. This process, if used, should be added as an addendum to the school test security plan.
- L. All persons (TA, Proctor, Scribe) involved in this process must sign Confidentiality Agreements.

**NOTE 13:** *Accommodation 78 - Typewriter or word processor (without grammar/syntax checker and without word completion/prediction feature)*

- A. All tools for spelling, grammar check, and syntax must be turned off. Additionally, the device (e.g., NEO) must have the extra features disabled (e.g., Google Docs, linked files, Write On! Lessons, etc.).
- B. The student may not have access to the Internet.
- C. Typed responses are not to be submitted to the vendor; these typed responses must be transcribed under secure conditions with at least two persons present.
- D. The person transcribing must duplicate exactly what the student wrote, including exact spelling, punctuation, indentation, skipped lines, etc.
- E. The response must be transcribed on the pre-ID Final Response Insert Page, if available, with appropriate Prompt Number gridded or in a blank Final Response Insert Page with appropriate Prompt Number gridded and the MSIS number written on the front cover of the Final Response Insert Page.
- F. The typed response must be erased from the assistive technology.
- G. The typed response must include the student's name and MSIS number. The student's typed response is considered secure material and must be returned with all scorable testing material.
- H. This process, if used, should be added as an addendum to the school test security plan.
- I. All persons (TA, Proctor, Scribe) involved in this process must sign Confidentiality Agreements.

**NOTE 14:** *Electronic word-to-word translating dictionaries may be used with the audio/speaker function turned off. In addition the test administrator must ensure that electronic dictionaries are not connected to the internet or any additional software. Refer to the Suggested List of Bilingual Dictionaries for ELL Students for word-to-word glossaries.*

**NOTE 15:** *For accommodation 52, calculators are allowable only in grades 7 and 8 for MCT2 Mathematics and for the SATP2 Algebra 1. Beginning with the 2011-2012 academic year,*

1. All formulas, applications, and/or programs (including, but not limited to, Zoom Math/Zoom Algebra) **must be disabled or removed** from the calculators to be used by

- students during the MCT2 Mathematics, Grades 7-8 exams and the SATP2, Algebra I exam.
2. School districts must outline in their District Test Security Plan the processes and/or procedures to be used to ensure the NO calculators used by students during a state assessment administration for the tests listed above have any stored formulas, applications, and/or programs.
  3. Students may use personal calculators. However, the District Test Security Plan must address the processes and/or procedures to be used to ensure that NO personal calculators used by the students during a state assessment administration have any stored formulas, applications, and/or programs.
  4. School districts will be given the authority to allow **retesters** who participated in the SATP2 Algebra I test administration **prior to 2011-2012** to continue to use graphing calculators with formulas, applications, and/or programs.
    - Districts **must** test these students in a room separate from any testing room that is used for first-time test takers in 2011-2012 and thereafter.
    - Districts **must** address these procedures for retesters in the District and School Test Security Plans.

*The complete memorandum from the state Superintendent of Education regarding calculator use on the MCT2 Mathematics (grades 7 and 8) and Algebra I can be read at the following*

*link: <http://www.mde.k12.ms.us/ACAD/osa/pdfs/20110406-Calculator-Guidance-Memo.pdf>*

**NOTE 16:** *For the ELL student, accommodation **25** is non-allowable on the Speaking component of the ACCESS for ELLs® Test.*

# **Accommodation 48**

## **LANGUAGE ARTS**

### **ALLOWABLE**

## **Allowable Memory Aid**

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### **Topic**

Introduction

### **Body**

Paragraph 1

Paragraph 2

Paragraph 3

Conclusion

## Allowable Memory Aid

A B C D E F G H I J  
K L M N O P Q R S T  
U V W X Y Z

a b c d e f g h i j k l m n o  
p q r s t u v w x y z

1 2 3 4 5 6 7 8 9 10

## **Allowable Memory Aid**

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### **Proofreading Checklist**

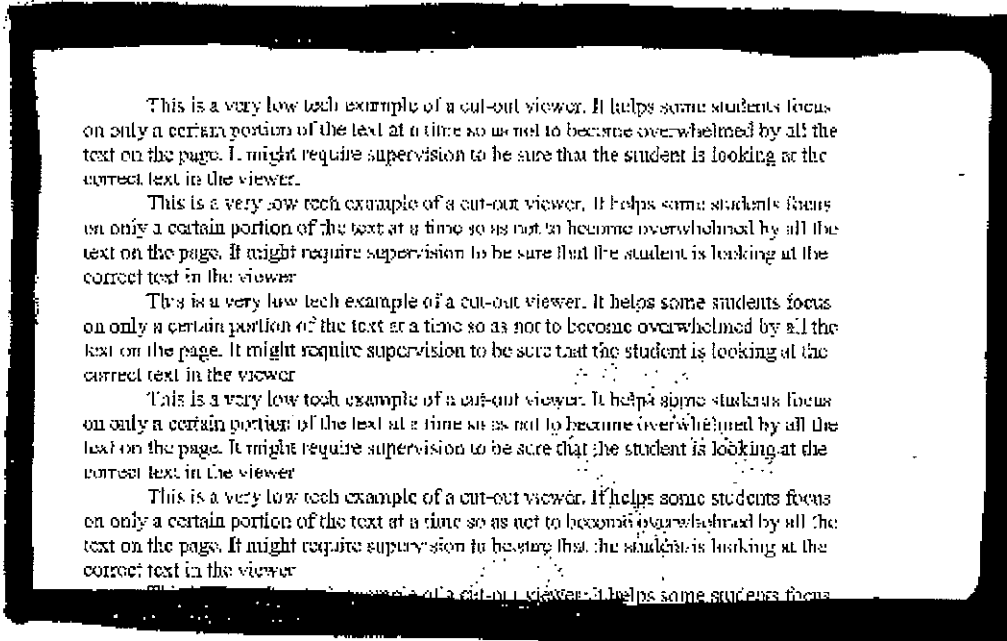
Read each question below. Then check your paper. Correct any mistakes that you find. After you have corrected them, put a checkmark in the box next to the questions.

- 1. Did I spell all the words correctly?
- 2. Does each sentence state a complete thought?
- 3. Are there any run-on sentences or fragments?
- 4. Did I capitalize all proper nouns?
- 5. Did I end each sentence with the correct end mark?
- 6. Did I use commas, apostrophes, and quotation marks correctly?



## Allowable Memory Aid

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*viewing text*

# **Accommodation 48**

**LANGUAGE ARTS**

**NON-ALLOWABLE**

A **friendly letter** has five parts. They are the heading (1), greeting (2), body (3), closing (4), and signature (5). Match each number with the letter part below.

(1)  
234 Mississippi Street  
Anywhere, Mississippi 54545  
Date, Year

(2)  
Dear Sam,

(3)  
I am so glad that you are moving to Mississippi. I think you will really like the fact that it does not get so cold in the winter. It does get cold, just not as cold as it gets in Denver.

Have you started packing yet? Be sure you bring all of your cards so we can trade. It will really be fun to have you living so close to my house. We can play every day!

Let me know what day you are supposed to get here. I can hardly wait!

(4)  
Your friend,  
(5)  
Dimitri

NON-AVAILABLE

Words	Rules	Examples
bad badly	<i>Bad</i> is an adjective. It can be used after linking verbs like look and feel. <i>Badly</i> is an adverb.	This was a <u>bad</u> day. I feel <u>bad</u> .  I play <u>badly</u> .
borrow lend	<i>Borrow</i> means "to take." <i>Lend</i> means "to give."	You may <u>borrow</u> my pen. I will <u>lend</u> it to you for the day.
can may	<i>Can</i> means "to be able to do something." <i>May</i> means "to be allowed or permitted."	Nellie <u>can</u> read quickly.  <u>May</u> I borrow your book?
good well	<i>Good</i> is an adjective. <i>Well</i> is usually an adverb. It is an adjective only when it refers to health.	The weather looks <u>good</u> . She sings <u>well</u> . Do you feel <u>well</u> ?
in into	<i>In</i> means "located within." <i>Into</i> means "movement from the outside to the inside."	Your lunch is <u>in</u> that bag. He jumped <u>into</u> the pool.
its it's	<i>Its</i> is a possessive pronoun. <i>It's</i> is a contraction of <i>it is</i> .	The dog wagged <u>its</u> tail. <u>It's</u> cold today.
let leave	<i>Let</i> means "to permit or allow." <i>Leave</i> means "to go away from" or "to let remain in place."	Please <u>let</u> me go swimming. I will <u>leave</u> soon. <u>Leave</u> it on my desk.
lie lay	<i>Lie</i> means "to rest or recline." <i>Lay</i> means "to put or place something."	The dog <u>lies</u> in its bed. Please <u>lay</u> the books there.
sit set	<i>Sit</i> means "to rest in one place." <i>Set</i> means "to place or put."	Please <u>sit</u> in this chair. <u>Set</u> the vase on the table.
teach learn	<i>Teach</i> means "to give instruction." <i>Learn</i> means "to receive instruction."	He <u>teaches</u> us how to dance. I <u>learned</u> about history.
their there they're	<i>Their</i> is a possessive pronoun. <i>There</i> is an adverb. It may also begin a sentence. <i>They're</i> is a contraction of <i>they are</i> .	<u>Their</u> coats are on the bed. Is Carlos <u>there</u> ? <u>There</u> is my book. <u>They're</u> going to the store.
two to too	<i>Two</i> is a number. <i>To</i> means "in the direction of." <i>Too</i> means "more than enough" and "also."	I bought <u>two</u> shirts. A squirrel ran <u>to</u> the tree. May we go <u>too</u> ?

**Topic**

1. Attention getter:
2. Information:
3. Thesis statement:

Paragraph 1	Paragraph 2	Paragraph 3
Reasons/Facts/Examples	Reasons/Facts/Examples	Reasons/Facts/Examples

**Conclusion**

Thesis restated.
Opinion/Prediction/Question:


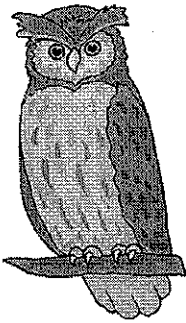
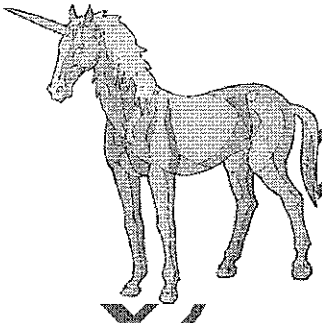

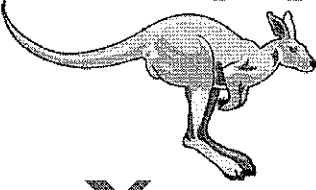
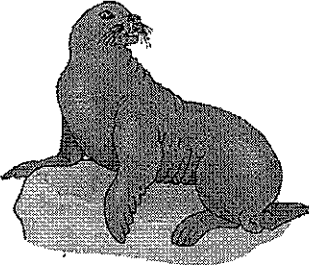
Plot: What is the story about?
Mood: What is the feeling of the story?
Setting: Where does this story take place?
Characters: Who is the story about?

**NON-ALLOWABLE**

<p><b><u>Contractions</u></b>          he'll - he will          can't - cannot          she's - she is -</p>	<p><b><u>Synonyms- same</u></b>          little - small          big - huge          shut - close          hop - jump</p>								
<p><b><u>Vowel Sounds</u></b>          ee -feel          ea - peach          oa - boat          ai - sail</p>	<p><b><u>Antonyms – opposite</u></b>          cold – hot          in – out          up - down</p>								
<p><b><u>Homophones</u></b>          their they're there          doe dough          to too two</p>	<p><b><u>Compare – Contrast</u></b></p> <table border="1" data-bbox="787 1018 1242 1249"> <tr> <td>apples</td> <td>bananas</td> </tr> <tr> <td>red</td> <td>yellow</td> </tr> <tr> <td>round</td> <td>long</td> </tr> <tr> <td>fruit</td> <td>fruit</td> </tr> </table>	apples	bananas	red	yellow	round	long	fruit	fruit
apples	bananas								
red	yellow								
round	long								
fruit	fruit								

NON-ALLOWABLE

# Sample Phonetic Aids -- Not Inclusive

 <p>i i_e igh _y</p>	 <p>ow ou</p>	 <p>u u_e _ue ew</p>
 <p>j ge gi_ dge</p>	 <p>k c _ck</p>	 <p>s ce ci_</p>

NON-ALPHABETIC



<b>Symbol</b>	<b>Action</b>
^	Insert a missing word, letter or punctuation mark.
/	Use a lower case letter.
=	Capitalize a lower case letter.
√	Check spelling.
¶	Start a new paragraph.

NON-ALLOWABLE

<b>Punctuation Mark:</b>	<b>When to use:</b>	<b>Example:</b>
comma ,	to separate items in a series	In our garden we planted corn, peas, beans, and carrots.
apostrophe ´	to show ownership	My teacher's book is red.
question mark ?	to show that a question is being asked	How far is it to Jackson?
exclamation point !	to show a strong emotion	I won the prize!
hyphen -	to separate a word at the end of a line	Miles ran quickly down the trail.
colon :	to separate the hour from the minute	It is 12:45 p.m.
period .	at the end of a sentence	The state bird of Mississippi is the mockingbird.

NON-AVAILABLE

## Brainstorming

- Quickly generate a list of ideas to write about.

## Prewriting

- Create a method for organizing your ideas such as a semantic web, an outline, or other graphic organizer.

## Drafting

- Write your first copy.

## Revising

- Rework your writing for ideas, style, voice, organization, and word choice.

## Editing

- Fix any errors in punctuation, capitalization, or usage.

## Polishing and Publishing

- Write a final draft that is free of errors. Share your writing with others.

- 1. Interrogative – Asks a question. Use a “?”**  
Would you share your cookies?
- 2. Declarative – Makes a Statement. Use a “.”**  
I will not share my cookies.
- 3. Imperative – Makes a command. Use a “.”**  
Share your cookies with me.
- 4. Exclamatory – Communicates strong emotion or surprise. Use an “!”**  
I cannot believe you ate 27 cookies!

NON-ALLOWABLE

## \*Example: Dolch Sight List List 5

from	want	put	every
good	don't	too	pretty
any	how	got	jump
about	know	take	green
around	right	where	four

\* No sight word vocabulary, word walls, or content vocabulary should be displayed.

NON-ALLOWABLE

# **Accommodation 48**

**MATHEMATICS**

**ALLOWABLE**

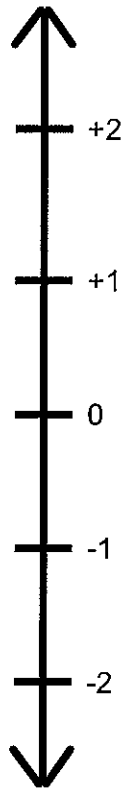
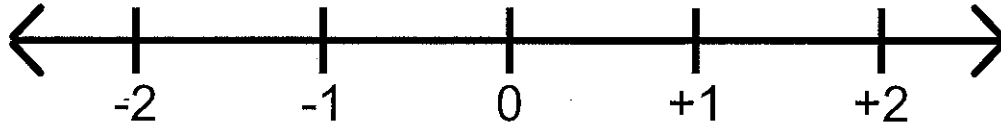
## **Allowable Memory Aid**

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Less Than | Greater Than

# Allowable Memory Aid

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# Allowable Memory Aid

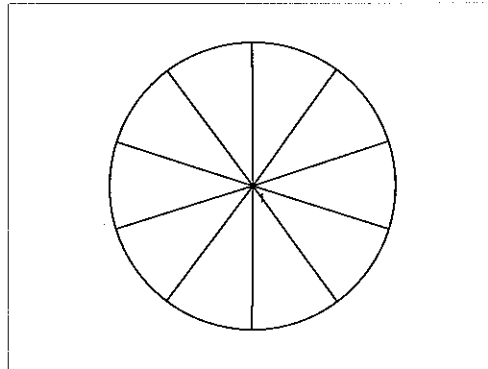
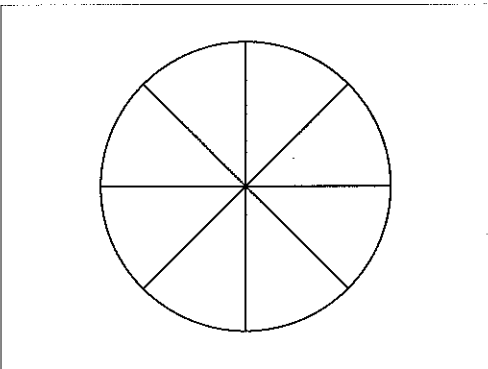
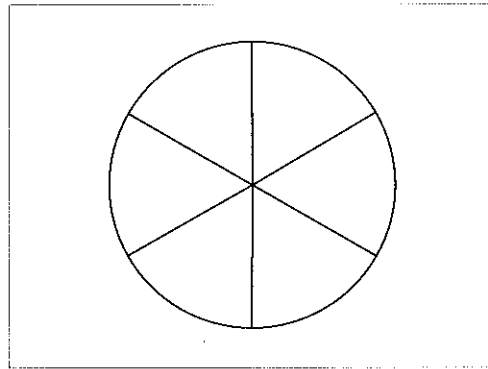
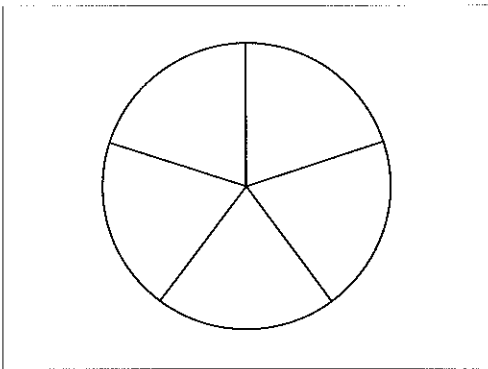
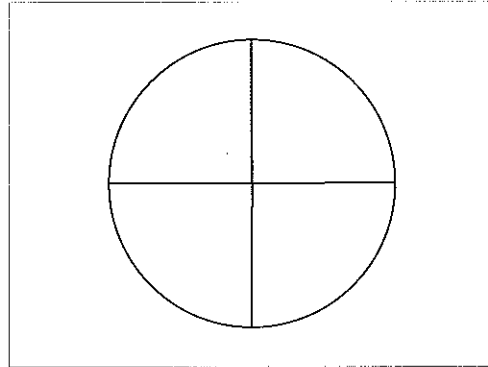
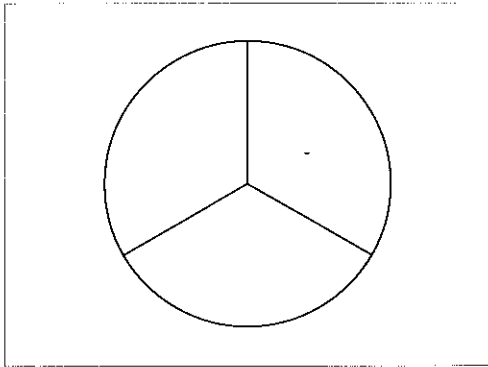
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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday



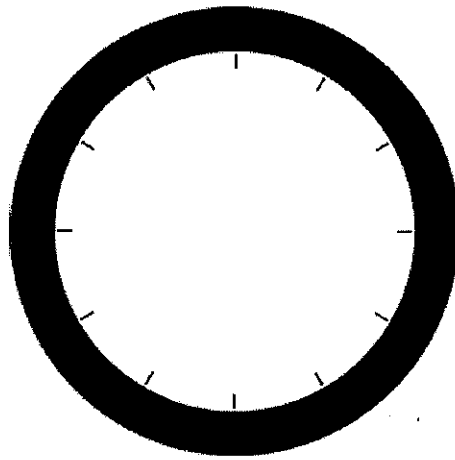
# Allowable Memory Aid

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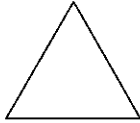

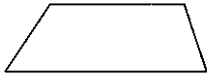
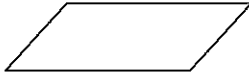
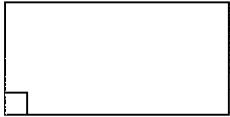
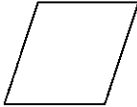

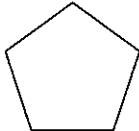
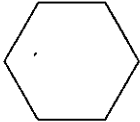
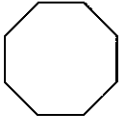
## **Allowable Memory Aid**

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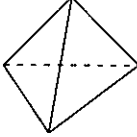
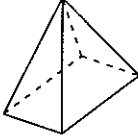
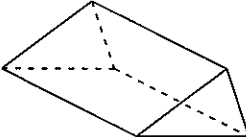
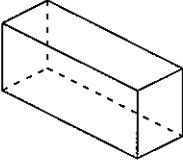
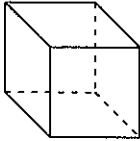
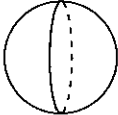
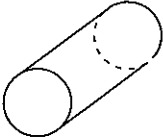

# Allowable Memory Aid

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# Allowable Memory Aid

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# Allowable Memory Aid

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## **Allowable Memory Aid**

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### **WORD BANK**

HEXAGON  
OCTAGON  
PARALLELOGRAM  
PENTAGON  
QUADRILATERAL  
RECTANGLE  
RHOMBUS  
SQUARE  
TRAPEZOID  
TRIANGLE

CONE  
CUBE  
CYLINDER  
RECTANGULAR PRISM  
RECTANGULAR PYRAMID  
SPHERE  
TRIANGULAR PRISM  
TRIANGULAR PYRAMID



## **Allowable Memory Aid**

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<b>DMSCB</b>	<b>Does McDonalds Sell Cheese Burgers?</b>
<b>PEMDAS</b>	<b>Please Excuse My Dear Aunt Sally</b>
<b>BEDMAS</b>	<b>Big Elephants Destroy Mice And Snails</b>
<b>PEDMAS</b>	<b>Pink Elephants Destroy Mice And Snails</b>
<b>KHDmdcm</b>	<b>King Henry Died Monday Drinking Chocolate Milk</b>

# **Accommodation 48**

## **MATHEMATICS**

### **NON-ALLOWABLE**

## Time

a.m. – between midnight and noon  
p.m. – between noon and midnight

midnight – 12:00 a.m.  
noon – 12:00 p.m.

---

1 minute = 60 seconds	1 year = 365 days
1 hour = 60 minutes	1 leap year = 366 days
1 day = 24 hours	1 decade = 10 years
1 week = 7 days	1 century = 100 years
1 year = 12 months	
1 year = 52 weeks + 1 day	

---

### Days in Each Month

1 <u>J</u> anuary 31	7 <u>J</u> uly 31
2 <u>F</u> ebruary 28	8 <u>A</u> ugust 31
3 <u>M</u> arch 31	9 <u>S</u> eptember 30
4 <u>A</u> pril 30	10 <u>O</u> ctober 31
5 <u>M</u> ay 31	11 <u>N</u> ovember 30
6 <u>J</u> une 30	12 <u>D</u> ecember 31

---

Season	Begins	Goes through	Ends
Spring	Mar. 20, 21	April – May	June 21, 22
Summer	June 21, 22	July – August	Sept. 21, 22, 23
Fall	Sept. 21, 22, 23	Oct. – Nov.	Dec. 21, 22
Winter	Dec. 21, 22	Jan. – Feb.	Mar. 20, 21

---

## Number Words

1	one	11	eleven	20	twenty
2	two	12	twelve	30	thirty
3	three	13	thirteen	40	forty
4	four	14	fourteen	50	fifty
5	five	15	fifteen	60	sixty
6	six	16	sixteen	70	seventy
7	seven	17	seventeen	80	eighty
8	eight	18	eighteen	90	ninety
9	nine	19	nineteen	100	one hundred
10	ten			1000	one thousand
				1,000,000	one million
		21	twenty-one		
		31	thirty-one		
		46	forty-six		
		58	fifty-eight		
		67	sixty-seven		
		73	seventy-three		
		85	eighty-five		
		94	ninety-four		

## Addition Chart

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

## Multiplication Chart

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144
13	13	26	39	52	65	78	91	104	117	130	143	156
14	14	28	42	56	70	84	98	112	126	140	154	168

## Miscellaneous

### Odd/Even

Odd numbers: 1, 3, 5, 7, 9, ...

Even numbers: 0, 2, 4, 6, 8, ...

### Counts

1 dozen = 12 items

### Less Than/Greater Than

15 < 50    50 > 15

little < big    big > little

## ORDER OF OPERATION/SYMBOLS

Do operations within parentheses.	( )
Do powers (exponents) and roots.	$^2$ $\sqrt{\quad}$
Do multiplication and division in order from left to right.	$\times$ $\div$
Do addition and subtraction in order from left to right.	$+$ $-$



### OPERATIONS

Parenttheses	$( )$
Powers (exponents)	$^2$
Roots	$\sqrt{\quad}$
Multiplication	$\times$
Division	$\div$
Addition	$+$
Subtraction	$-$

NON-ALLOWABLE

## COMPARISONS

$<$  Is smaller than

---

$>$  Is greater than

---

$=$  Is equal to

---

$\approx$  Approximate

---

$\leq$  Is smaller or equal to

---

$\geq$  Is greater or equal to

---

$\frac{3}{5}$  - numerator  
5 - denominator

### FRACTIONS

the number above the line in a fraction  
the number below the line in a fraction

NON-AVAILABLE

## OPERATIONS WITH FRACTIONS

To **add** or **subtract** different fractions, first obtain a common denominator.

$$\frac{1}{3} + \frac{2}{5} = \frac{5}{15} + \frac{6}{15} = \frac{11}{15}$$

To **multiply**, multiply the numerators and multiply the denominators:

$$\frac{1}{3} \times \frac{2}{5} = \frac{1 \times 2}{3 \times 5} = \frac{2}{15}$$

To **divide**, multiply the first with the reciprocal of the second fraction:

$$\frac{2}{3} \div \frac{1}{6} = \frac{2}{3} \times \frac{6}{1} = \frac{12}{3} = 4$$

## FRACTIONS, DECIMALS, PERCENTS – common equivalents

$$1 = 1.0 = 100\%$$

$$\frac{1}{2} = 0.5 = 50\%$$

$$\frac{1}{3} = 0.\bar{3} = 33.\bar{3}\%$$

$$\frac{1}{4} = 0.25 = 25\%$$

$$\frac{1}{5} = 0.2 = 20\%$$

$$\frac{1}{6} = 0.1\bar{6} = 16.\bar{6}\%$$

$$\frac{1}{8} = 0.125 = 12.5\%$$

$$\frac{1}{9} = 0.\bar{1} = 11.\bar{1}\%$$



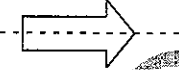


$$\frac{1}{10} = 0.1 = 10\%$$

$$\frac{1}{12} = 0.08\bar{3} = 8.\bar{3}\%$$

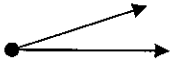


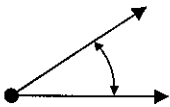

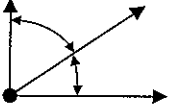
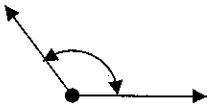
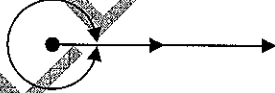
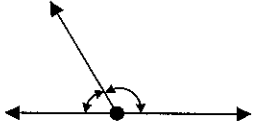
$$\frac{2}{3} = 0.\bar{6} = 66.\bar{6}\%$$

$$\frac{3}{4} = 0.75 = 75\%$$


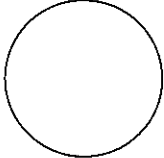


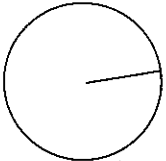
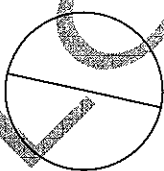
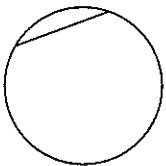
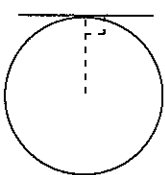
### LINES

 LINE	 RAY	 LINE OF SYMMETRY	 PARALLEL LINES	 LINE SEGMENT
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### ANGLES

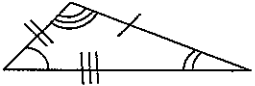
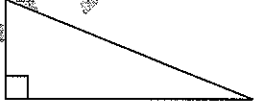

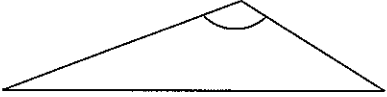
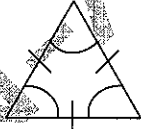
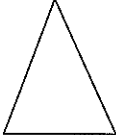
 <p>ANGLE / VERTEX</p>	 <p>0 DEGREE</p>	 <p>90° RIGHT ANGLE</p>
 <p>ACUTE less than 90°</p>	 <p>STRAIGHT 180°</p>	 <p>COMPLEMENTARY add up to 90°</p>
 <p>OBTUSE greater than 90° less than 180°</p>	 <p>COMPLETE 360°</p>	 <p>SUPPLEMENTARY add up to 180°</p>

### CIRCLES

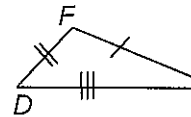
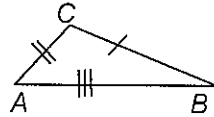
 ARC	 CIRCLE	 ELLIPSE		
 SEMICIRCLE	 RADIUS	 DIAMETER	 CHORD	 TANGENT



## TRIANGLES

 <p>SCALENE TRIANGLE</p>	 <p>RIGHT TRIANGLE</p>
 <p>ISOSCELES TRIANGLE</p>	 <p>OBTUSE TRIANGLE</p>
 <p>EQUILATERAL TRIANGLE</p>	 <p>ACUTE TRIANGLE</p>

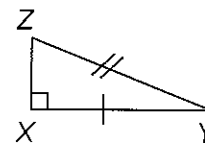
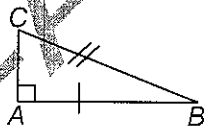
## CONGRUENT TRIANGLES



$$\triangle ABC \cong \triangle DEF$$

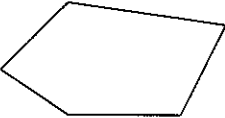
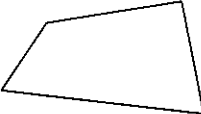





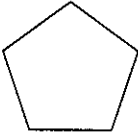
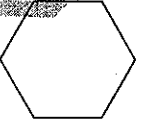
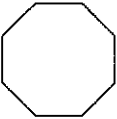
### 4 CONGRUENCY CASES

1. side, side, side      SSS
2. side, angle, side    SAS
3. angle, side, angle    ASA
4. hypotenuse, side    HyS

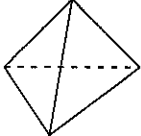
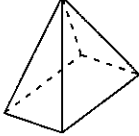
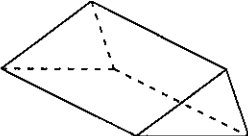
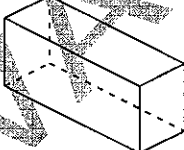
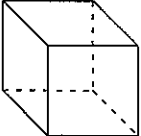
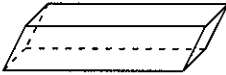
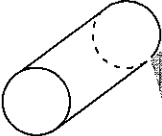

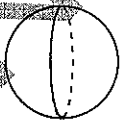



$$\triangle ABC \cong \triangle XYZ$$

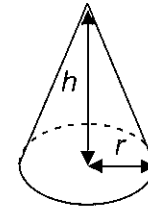
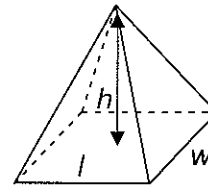
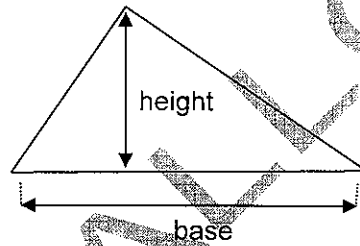
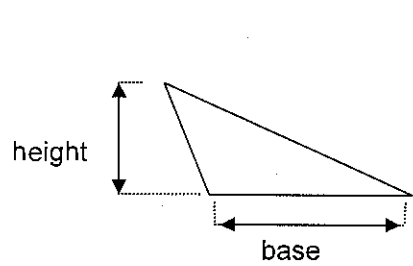
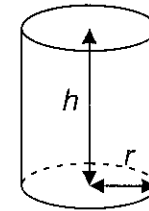
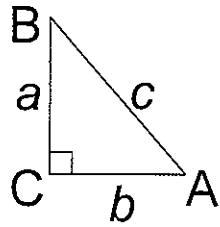
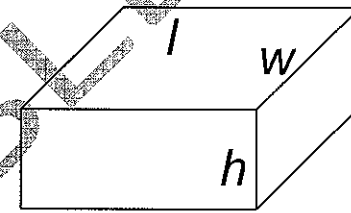
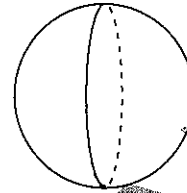
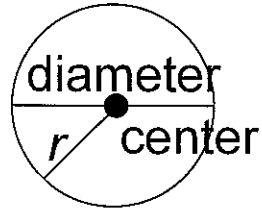
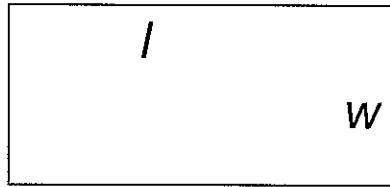
# POLYGONS

 POLYGON	 QUADRILATERAL
 TRAPEZOID	 PARALLELOGRAM
 RECTANGLE	 RHOMBUS
 SQUARE	 REGULAR PENTAGON
 REGULAR HEXAGON	 REGULAR OCTAGON

## SOLIDS

 <b>TRIANGULAR PYRAMID</b>	 <b>RECTANGULAR PYRAMID</b>
 <b>TRIANGULAR PRISM</b>	 <b>RECTANGULAR PRISM</b>
 <b>CUBE</b>	 <b>PARALLELEPIPED</b>
 <b>CYLINDER</b>	 <b>CONE</b>
 <b>SPHERE</b>	 <b>ELLIPSOID</b>

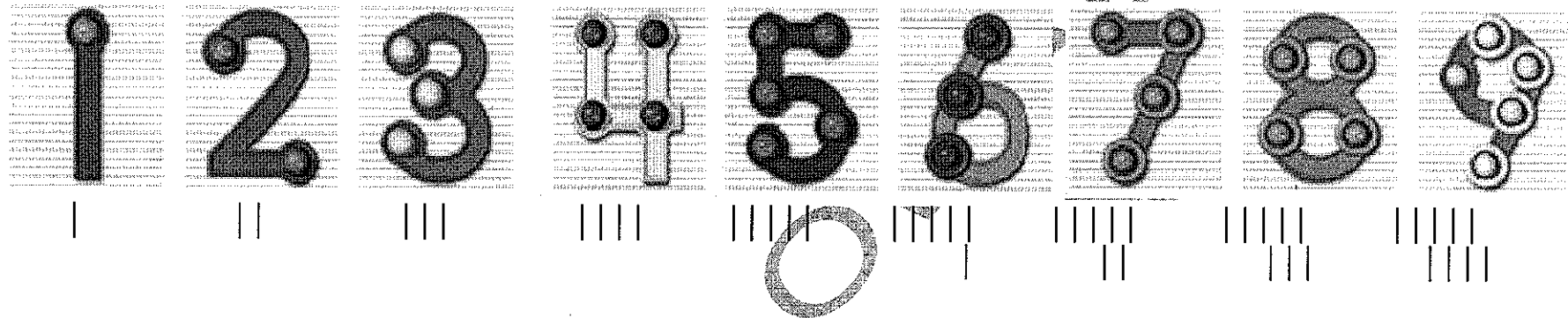
# GEOMETRIC LABELS



## MULTIPLICATION TABLES

$1 \times 1 = 1$	$2 \times 1 = 2$	$3 \times 1 = 3$	$4 \times 1 = 4$	$5 \times 1 = 5$	$6 \times 1 = 6$
$1 \times 2 = 2$	$2 \times 2 = 4$	$3 \times 2 = 6$	$4 \times 2 = 8$	$5 \times 2 = 10$	$6 \times 2 = 12$
$1 \times 3 = 3$	$2 \times 3 = 6$	$3 \times 3 = 9$	$4 \times 3 = 12$	$5 \times 3 = 15$	$6 \times 3 = 18$
$1 \times 4 = 4$	$2 \times 4 = 8$	$3 \times 4 = 12$	$4 \times 4 = 16$	$5 \times 4 = 20$	$6 \times 4 = 24$
$1 \times 5 = 5$	$2 \times 5 = 10$	$3 \times 5 = 15$	$4 \times 5 = 20$	$5 \times 5 = 25$	$6 \times 5 = 30$
$1 \times 6 = 6$	$2 \times 6 = 12$	$3 \times 6 = 18$	$4 \times 6 = 24$	$5 \times 6 = 30$	$6 \times 6 = 36$
$1 \times 7 = 7$	$2 \times 7 = 14$	$3 \times 7 = 21$	$4 \times 7 = 28$	$5 \times 7 = 35$	$6 \times 7 = 42$
$1 \times 8 = 8$	$2 \times 8 = 16$	$3 \times 8 = 24$	$4 \times 8 = 32$	$5 \times 8 = 40$	$6 \times 8 = 48$
$1 \times 9 = 9$	$2 \times 9 = 18$	$3 \times 9 = 27$	$4 \times 9 = 36$	$5 \times 9 = 45$	$6 \times 9 = 54$
$1 \times 10 = 10$	$2 \times 10 = 20$	$3 \times 10 = 30$	$4 \times 10 = 40$	$5 \times 10 = 50$	$6 \times 10 = 60$
$1 \times 11 = 11$	$2 \times 11 = 22$	$3 \times 11 = 33$	$4 \times 11 = 44$	$5 \times 11 = 55$	$6 \times 11 = 66$
$1 \times 12 = 12$	$2 \times 12 = 24$	$3 \times 12 = 36$	$4 \times 12 = 48$	$5 \times 12 = 60$	$6 \times 12 = 72$
$7 \times 1 = 7$	$8 \times 1 = 8$	$9 \times 1 = 9$	$10 \times 1 = 10$	$11 \times 1 = 11$	$12 \times 1 = 12$
$7 \times 2 = 14$	$8 \times 2 = 16$	$9 \times 2 = 18$	$10 \times 2 = 20$	$11 \times 2 = 22$	$12 \times 2 = 24$
$7 \times 3 = 21$	$8 \times 3 = 24$	$9 \times 3 = 27$	$10 \times 3 = 30$	$11 \times 3 = 33$	$12 \times 3 = 36$
$7 \times 4 = 28$	$8 \times 4 = 32$	$9 \times 4 = 36$	$10 \times 4 = 40$	$11 \times 4 = 44$	$12 \times 4 = 48$
$7 \times 5 = 35$	$8 \times 5 = 40$	$9 \times 5 = 45$	$10 \times 5 = 50$	$11 \times 5 = 55$	$12 \times 5 = 60$
$7 \times 6 = 42$	$8 \times 6 = 48$	$9 \times 6 = 54$	$10 \times 6 = 60$	$11 \times 6 = 66$	$12 \times 6 = 72$
$7 \times 7 = 49$	$8 \times 7 = 56$	$9 \times 7 = 63$	$10 \times 7 = 70$	$11 \times 7 = 77$	$12 \times 7 = 84$
$7 \times 8 = 56$	$8 \times 8 = 64$	$9 \times 8 = 72$	$10 \times 8 = 80$	$11 \times 8 = 88$	$12 \times 8 = 96$
$7 \times 9 = 63$	$8 \times 9 = 72$	$9 \times 9 = 81$	$10 \times 9 = 90$	$11 \times 9 = 99$	$12 \times 9 = 108$
$7 \times 10 = 70$	$8 \times 10 = 80$	$9 \times 10 = 90$	$10 \times 10 = 100$	$11 \times 10 = 110$	$12 \times 10 = 120$
$7 \times 11 = 77$	$8 \times 11 = 88$	$9 \times 11 = 99$	$10 \times 11 = 110$	$11 \times 11 = 121$	$12 \times 11 = 132$
$7 \times 12 = 84$	$8 \times 12 = 96$	$9 \times 12 = 108$	$10 \times 12 = 120$	$11 \times 12 = 132$	$12 \times 12 = 144$

# TOUCH-POINT NUMBERS



adapted from <https://www.touchmath.com/index.cfm?fuseaction=products.welcome&Cid=2&Pid=109>

## COIN REPRESENTATIONS

Penny

1¢ = \$0.01

1 cent



Nickel

5¢ = \$0.05

5 cents



Dime

10¢ = \$0.10

10 cents



Quarter

25¢ = \$0.25

25 cents





# PARTS OF A DOLLAR

Dollar  
100¢ = \$1.00  
1 dollar



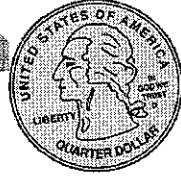
\$1.00



75¢



50¢



25¢

## PROPERTIES OF ADDITION AND MULTIPLICATION

Commutative property  
of addition

$$a + b = b + a$$

Commutative property  
of multiplication

$$ab = ba$$

Associative property  
of addition

$$a + (b + c) = (a + b) + c$$

Associative property  
of multiplication

$$a(bc) = (ab)c$$

Distributive property  
of multiplication over addition

$$a(b + c) = ab + ac$$

Distributive property  
of multiplication over subtraction

$$a(b - c) = ab - ac$$

### METRIC SYSTEM

kilo	hecto	deca		deci	centi	milli
------	-------	------	--	------	-------	-------

NON-AVAILABLE

### METRIC SYSTEM CONVERSIONS

1000	100	10	1	0.1	0.01	0.001
kilo	hecto	deca		deci	centi	milli
km	hm	dam	m	dm	cm	mm
kg	hg	dag	g	dg	cg	mg
kl	hl	dal	l	dl	cl	ml

## COMMON UNITS used with the International System

### UNITS OF MEAS. ABBREV. RELATION

meter	m	length
hectare	ha	area
ton	t	mass
kilogram	kg	mass
nautical mile	M	distance (navigation)
knot	kn	speed (navigation)
liter	L	volume or Capacity
second	s	time
hertz	Hz	frequency
candela	cd	luminous intensity
degree Celsius	°C	temperature
kelvin	K	thermodynamic temperature
pascal	Pa	pressure, stress
joule	J	energy, work
newton	N	force
watt	W	power, radiant flux
ampere	A	electric current
volt	V	electric potential
ohm	Ω	electric resistance
coulomb	C	electric charge

## MEASUREMENT CONVERSIONS

LENGTH / AREA			WEIGHT / CAPACITY		
to go from	to	multiply by	to go from	to	multiply by
cm	→ in	0.3937	g	→ oz	0.0353
in	→ cm	2.54	oz	→ g	28.35
m	→ ft	3.2808	kg	→ lbs	2.2046
km	→ mi	0.6214	t	→ T	1.1023
mi	→ km	1.609	T	→ t	0.9072
m <sup>2</sup>	→ ft <sup>2</sup>	10.76	ml	→ fl oz	0.0338
ft <sup>2</sup>	→ m <sup>2</sup>	0.0929	fl oz	→ ml	29.575
km <sup>2</sup>	→ mi <sup>2</sup>	0.3861	L	→ US gal	0.2642
mi <sup>2</sup>	→ km <sup>2</sup>	2.59	US gal	→ L	3.785

**METRIC SYSTEM**

$$1 \text{ m}^2 = 10,000 \text{ cm}^2$$

$$1 \text{ hectare (ha)} = 10,000 \text{ m}^2$$

$$1 \text{ km}^2 = 100 \text{ ha}$$

$$1 \text{ metric ton (t)} = 1,000 \text{ kg}$$

## ENGLISH SYSTEM

### Length

1 foot (ft)	= 12 inches (in)	= 1'	
1 yard (yd)	= 3 feet	= 36 inches	= 12"
1 mile (mi)	= 1,760 yards	= 5,280 feet	

### Liquid

1 tablespoon (T)	= 3 teaspoons (t)		
1 cup (c)	= 16 T	= 8 fluid ounces (fl oz)	
1 pint (pt)	= 2 c		
1 quart (qt)	= 2 pt	= 4 c	= 32 fl oz
1 gallon (gal)	= 4 qt		

### Weight

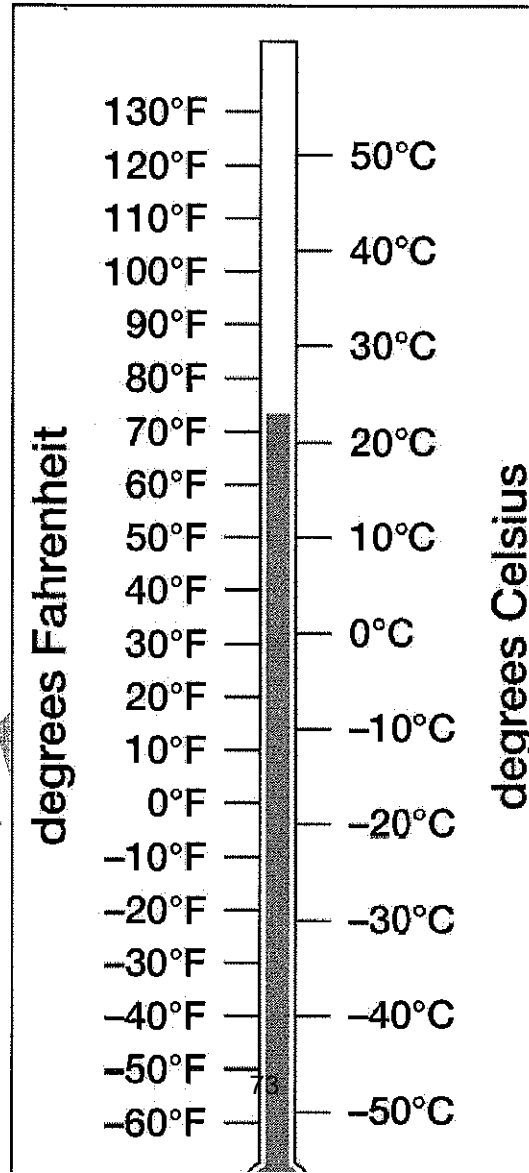
1 pound (lb)	= 16 ounces (oz)
1 ton (t)	= 2000 pounds

### Area

1 ft <sup>2</sup>	= 144 in <sup>2</sup>
1 yd <sup>2</sup>	= 9 ft <sup>2</sup>
1 acre	= 4,840 yd <sup>2</sup>



# TEMPERATURE



## TEMPERATURE CONVERSIONS

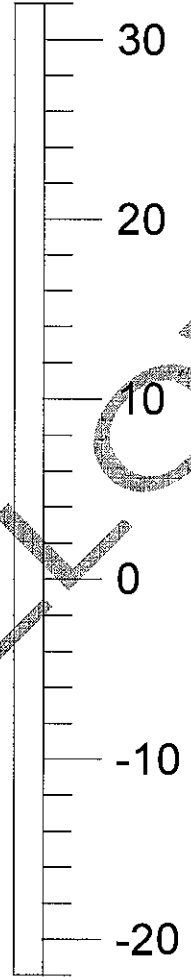
$^{\circ}\text{C} \rightarrow ^{\circ}\text{F}$

$n \times 1.8$ ; add 32

$^{\circ}\text{F} \rightarrow ^{\circ}\text{C}$

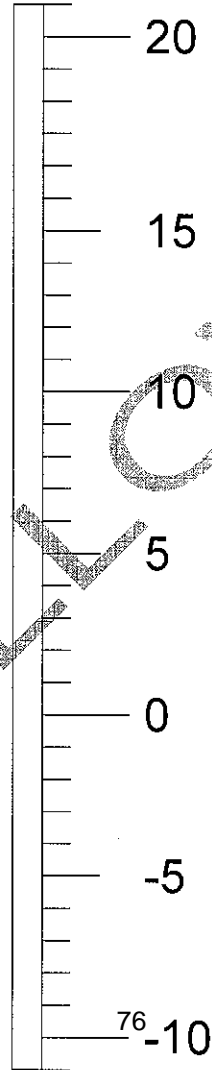
$n - 32$ ; multiply by 0.5555

### TEMPERATURE



NON-ALLOWABLE

### TEMPERATURE

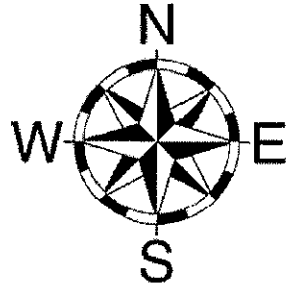


### PLACE VALUE

hundred millions ten millions millions
hundred thousands ten thousands thousands
hundreds tens ones
tenths hundredths thousandths

NON-AVAILABLE

## COMPASS



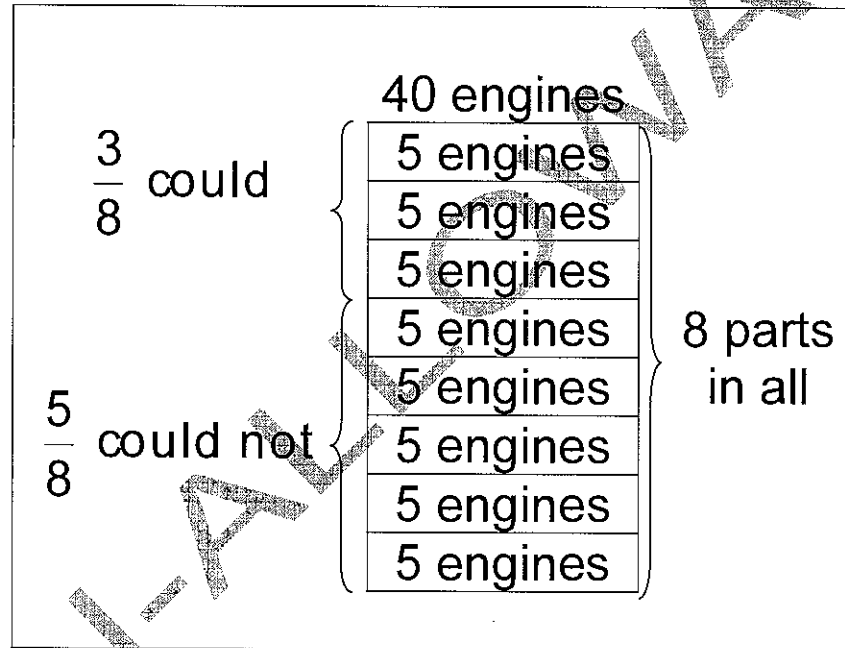
The sun rises in the east  
and sets in the west.

NON-ALLOWABLE

## **HALF OF A NUMBER**

To find half of a number,  
divide by two.

$\frac{3}{8}$  OF THE 40 ENGINES COULD





## FIND THE MISSING NUMBERS

(Word Problem Thinking Patterns: Sketch the pattern. Record the information.)

SOME, SOME MORE	Some ← If missing, subtract. <u>+ Some more</u> ← If missing, subtract. Total ← If missing, add.
SOME WENT AWAY	Some ← If missing, add. <u>- Some went away</u> ← If missing, subtract. What's left ← If missing, subtract.
LARGER, SMALLER, DIFFERENCE	Larger ← If missing, add. <u>- Smaller</u> ← If missing, subtract. Difference ← If missing, subtract.
LATER, EARLIER, DIFFERENCE	Later ← If missing, add. <u>- Earlier</u> ← If missing, subtract. Difference ← If missing, subtract.
EQUAL GROUPS	Number in each group ← If missing, divide. <u>× Number of groups</u> ← If missing, divide. How many ← If missing, multiply.

## PRIME NUMBERS

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

## DIVISIBILITY RULES

A whole number is divisible by...

2	if the last digit is 0,2,4,6,8.	6	if the number is divisible by both 2 and 3.
3	if the sum of the digits is divisible by 3.	9	if the sum of the digits is divisible by 9.
5	if the last digit is 5 or 0.	10	if the last digit is 0.

## SYMBOLS

Addition	+	Equal	=	Percent	%
Angle	$\angle$	Greater than	>	Perpendicular	$\perp$
Arc	$\frown$	Less than	<	Pi	$\pi$
Decimal point	.	Line segment	—	Ray	$\overrightarrow{\quad}$
Degree	$^\circ$	Multiplication	$\times$	Right Angle	$\llcorner$
Division	$\div$	Number	#	Set	{ }
Dollar	\$	Parallel		Subtraction	-

## NUMBERS

<b>Prime Number:</b>	A whole number which has only two factors, itself and 1.	Examples: 2, 3, 7, 11, 13, 17.
<b>Common Factor:</b>	A number that is a factor of two or more numbers.	Examples: 1, 2, and 4 are common factors of 12 and 16.
<b>Greatest Common Factor:</b>	The greatest number that is a factor of two or more numbers	Example: 4 is the greatest common factor of 12 and 16.
<b>Least Common Multiple:</b>	The smallest number that is a multiple of two or more numbers.	Example: 12 is the least common multiple of 2, 3, 4, and 6.

## METRIC SYSTEM

Length	1 centimeter (cm)	= 10 millimeters (mm)
	1 decimeter (dm)	= 100 millimeters
	1 decimeter	= 10 centimeters
	1 meter (m)	= 1000 millimeters
	1 meter	= 100 centimeters
	1 meter	= 10 decimeters
	1 decameter (dkm)	= 10 meters
	1 kilometer (km)	= 1000 meters
	Liquid	1 liter (L)
Weight	1 gram (g)	= 1000 milligrams (mg)
	1 kilogram (kg)	= 1000 grams

## ROMAN NUMERALS

I	=	1
V	=	5
X	=	10
L	=	50
C	=	100
D	=	500
M	=	1000

### CONVERSIONS

Small to Large	Multiply
Large to Small	Divide



## COMMON SQUARES AND SQUARE ROOTS

$n$	$n^2$	$\sqrt{n}$	$n$	$n^2$	$\sqrt{n}$
1	1	1	15	225	3.873
2	4	1.414			
3	9	1.732	20	400	4.472
4	16	2			
5	25	2.236	25	625	5
6	36	2.449			
7	49	2.646	100	10000	10
8	64	2.828			
9	81	3	1/2	1/4	0.707
10	100	3.162	1/4	1/16	1/2
11	121	3.317			
12	144	3.464			

## PROBLEM SOLVING STEPS

1	UNDERSTAND & EXPLORE	First things first: find out what the real problem is.
2	GUESS & CHECK	Make a reasonable guess and check it out; try again if necessary.
3	SOLVE THE PROBLEM	Sort out all the information, draw a picture, graph or table, and write it out in math. Sometimes it may help to work backward!
4	CHECK YOUR ANSWER	Think logically... does your solution make sense? Try it out if you can.

$$a(b+c) = ab + ac$$

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

$$a^2 - b^2 = (a+b)(a-b)$$

$$a^2 + 2ab + b^2 = (a+b)^2$$

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

## EXPANDING

$$(a+b)(c+d) = ac + ad + bc + bd$$

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

## FACTORING

$$a^3b - ab = ab(a^2 - 1) = ab(a+1)(a-1)$$

$$a^2 - 2ab + b^2 = (a-b)^2$$

$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

## QUADRATIC FORMULA

The solution for a quadratic equation

$$ax^2+bx+c=0$$

is given by the

quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

## PROPERTIES OF EXPONENTS

If  $a, b \in \mathbb{R}$ ,  $a, b \geq 0$ , and  $p, q, r, s \in \mathbb{Q}$ , then:

1	$a^r a^s = a^{r+s}$	$\left. \begin{array}{l} a^p a^q \\ a^r \end{array} \right\} = a^{p+q-r}$	5	$\left(\frac{a}{b}\right)^r = \frac{a^r}{b^r} \quad (b \neq 0)$
2	$\frac{a^r}{a^s} = a^{r-s}$		6	$a^0 = 1 \quad (a \neq 0)$
3	$(a^r)^s = a^{rs}$	7	$a^{-r} = \frac{1}{a^r} \quad (a \neq 0)$	
4	$(ab)^r = a^r b^r$	8	$a^{\frac{r}{s}} = \sqrt[s]{a^r} \quad a^{\frac{1}{2}} = \sqrt{a} \quad a^{\frac{1}{3}} = \sqrt[3]{a}$	

## PROPERTIES OF LOGARITHMS

$\log(xy) = \log x + \log y$	$\log\left(\frac{x}{y}\right) = \log x - \log y$
$\log y^r = r \log x$	
$\log x = n \leftrightarrow x = 10^n$ (common log)	$\pi \approx 3.14159265$
$\log_a x = n \leftrightarrow x = a^n$ (log to the base a)	$e \approx 2.71828183$
$\ln x = n \leftrightarrow x = e^n$ (natural log)	

**Directions:** Complete the information below and circle the accommodations for each assessment in which the student will participate.

School: \_\_\_\_\_ Grade: \_\_\_\_\_ Age: \_\_\_\_\_ Student Name: \_\_\_\_\_

Form Completed by (print name): \_\_\_\_\_ Initial Review Date: \_\_\_\_\_

Teacher's Signature: \_\_\_\_\_ Subsequent Review Date: \_\_\_\_\_

Circle one: IEP      504 Plan      General      ELL

	#	ACCOMMODATION	GEN	ELL		CPAS	MCT2			SATP2				MWAP3	MST
			General (ALL students)	SATP2, CPAS, MCT2, MST, MWAP	ACCESS for ELLs®	Vocational Education	L.A. - Reading	L.A. - Writing	Mathematics	Algebra I	Biology I	Eng. II MC-Read. / Vocab.	Eng. II MC-Writing/Grammar	U.S. History	Writing Assessment English II
S	1	At the front of the room	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	2	Facing test administrator while directions given	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	3	In a small group	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	4	Individually to accommodate specific disability	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	5	In a familiar room	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	6	With a familiar teacher	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	7	At home (only for homebound students)	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	8	In a study carrel	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	9	With special lighting	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	10	Specialized table to fit a student's wheelchair	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	11	Secure paper to work area with magnets/tape	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sche	21	With scheduled rest breaks	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	22	At time of day to accommodate student's disability	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	23	Until, in test administrator's judgment, the pupil can no longer continue the activity	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

		GEN	ELL		CPAS	MCT2			SATP2					MWAP3	MST
#	ACCOMMODATION	General (ALL students)	SATP2, CPAS, MCT2, MST, MWAP	ACCESS for ELLs®	Vocational Education	L.A. - Reading	L.A. - Writing	Mathematics	Algebra I	Biology I	Eng. II MC - Read. / Vocab.	Eng. II MC - Writing/Grammar	U.S. History	Writing Assessment English II	Science 5 & 8
Timing	24	Administer the test over several sessions, specifying the duration of each session (MDE prior approval required) <b>REFER TO NOTE 4</b>	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	25	Administer the test over several days, specifying the duration of each day's session (MDE prior approval required) <b>REFER TO NOTES 4 &amp; 16</b>	N	Y	Note 16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	40	Large print	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	41	Braille <b>REFER TO NOTE 5</b>	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	42	Hearing aids	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	43	Auditory trainers	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	44	Transparent color overlays	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	45	Magnifying glasses/magnifying equipment	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	46	Templates to reduce visible print	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	47	Provide cues (e.g., arrows and stop signs) on answer form in pencil <b>REFER TO NOTE 6</b>	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	48	Use of memory aids, fact charts, resource sheets, and/or abacus <b>REFER TO NOTE 7</b>	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	49	Clue student to stay on task	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	50	Highlight key words/phrases in directions (e.g., complete sentences, show your work) by the teacher	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	53	Read test directions (but <b>not</b> test items) to individual students or a group -- repeating and/or paraphrasing directions if needed <b>REFER TO NOTE 8 &amp; 9</b>	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
55	Read test directions and test items to individual students or a group -- repeating directions/items, but <b>not</b> paraphrasing <b>REFER TO NOTES 8 &amp; 9</b>	N	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	



		GEN	ELL		CPAS	MCT2			SATP2					MWAP3	MST	
#	ACCOMMODATION	General (ALL students)	SATP2, CPAS, MCT2, MST, MWAP	ACCESS for ELLs®	Vocational Education	L.A. - Reading	L.A. - Writing	Mathematics	Algebra I	Biology I	Eng. II MC - Read. / Vocab.	Eng. II MC - Writing/Grammar	U.S. History	Writing Assessment English II	Science 5 & 8	
Present	58	Read test directions and test items to individual students or a group -- repeating and/or paraphrasing <b>only</b> the directions if needed <b>REFER TO NOTES 8 &amp; 9</b>														
	60	Use of highlighter (yellow only) by student in test booklet														
	61	Calculator (MCT2 Mathematics: Allowable only in grades 7 and 8) <b>REFER TO NOTE 15</b>														
se	70	Dictation of answers to test administrator/proctor (scribe) <b>REFER TO NOTE 10</b>														
	72	Allow marking of answers in booklet and transferring of answers from test booklet/answer document to answer document by test administrator (i.e., large print) <b>REFER TO NOTE 11</b>														
	73	Tape record responses for later verbatim translation <b>REFER TO NOTE 12</b>														
	74	Provide copying assistance between drafts <b>REFER TO NOTES 10 &amp; 11</b>														
	75	Braille														
	76	Communication board														
	77	Augmentative communicative device														
78	Computer / word processor ( <b>without</b> grammar/syntax checker & <b>without</b> work completion/prediction feature) <b>REFER TO NOTE 13</b>															

		GEN	ELL		CPAS	MCT2			SATP2					MWAP3	MST	
#	ACCOMMODATION	General (ALL students)	SATP2, CPAS, MCT2, MST, MWAP	ACCESS for ELLs®	Vocational Education	L.A. - Reading	L.A. - Writing	Mathematics	Algebra I	Biology I	Eng. II MC - Read. / Vocab.	Eng. II MC - Writing/Grammar	U.S. History	Writing Assessment English II	Science 5 & 8	
Response	79	Computer / word processor ( <b>without</b> grammar/syntax checker, <b>with</b> completion/prediction activated)	N	N	N	Y	Y	Y	Y	Y	Y	N	Y	N	Y	
	80	Adapted keyboards	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	81	Native language dictionaries for ELL students (i.e. dictionaries that translate English words into the native language - no definitions are given in either language <b>REFER TO NOTE 14</b> )	N	Y	N	N	N	N	N	N	N	N	N	N	N	
	82	Spelling dictionaries (dictionaries show correct spelling of English words; do not give definitions).	N	N	N	N	N	N	Y	Y	Y	N	N	Y	N	Y
	98	Other <b>allowable</b> accommodation	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	99	Other <b>non-allowable</b> accommodation	N	N	N	N	N	N	N	N	N	N	N	N	N	N

# Mississippi Testing Accommodations

## Manual

Revised (October 2016)



## Mississippi Statewide Assessment System

Office of Student Assessment

Mississippi Department of Education

October 2016

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## **I. Overview**

The list of accommodations shows the numeric codes to be entered in the designated areas on student answer documents or test booklets. **The accommodations that are allowable on each of the statewide tests vary.** A list of allowable and non-allowable accommodations for each test is located in this document.

The **General Accommodations** are allowable and may be used by all students on each of the statewide tests. These accommodations do not have to be entered on the student's answer documents. Any accommodation utilized for the assessment of students must be used during the student's routine classroom instruction, including classroom assessment.

All eligible students may utilize appropriate assessment accommodations when participating in the statewide assessments. Any accommodation utilized for the assessment of students must be:

- based on the learning needs of the individual student through decisions made and officially documented on the **IEP/504 Plan** prior to the test administration, or
- based on the student's **temporary physical disability**, and
- used during the student's **routine** classroom instruction, to include classroom assessment.

All English Learner students may utilize appropriate assessment accommodations when participating in the statewide assessments. Any accommodation utilized for the assessment of individual students must be:

- based upon the individual student's learning needs,
- based upon decisions made prior to the test administration, and
- used during the student's routine classroom instruction, to include classroom assessment.

The manual also contains other guides and resources, such as questions, recommendations, and checklists to guide you in determining appropriate accommodations.



### **III. Important Notes**

In the Testing Accommodations Chart (p. 18), specific accommodations have a tag reading, “REFER TO NOTE \_\_\_\_”. The notes are listed below by number.

For all state assessments, a test administrator and a proctor must be present during the entire test administration for all students tested.

#### **NOTE 1:**

- A. ACT-Approved: The use of ACT-Approved accommodations must be requested from ACT via official request forms. These are determined by ACT in compliance with the Americans with Disabilities Act (ADA) and the Diagnostic and Statistical Manual of Mental Disorders, 4th or 5th Edition. ACT-Approved Accommodations that result in ACT scores are fully reportable to colleges, scholarship agencies, the NCAA and other entities in addition to being used for state testing purposes.
- B. Locally Approved: These are determined by the Testing Accommodations Coordinator (TAC) and the Testing Coordinator (TC) following specific ACT policy.
- C. Non-college Reportable: These are determined by the Testing Accommodations Coordinator (TAC) following state or district guidelines. The use of a State-Allowed accommodation, after its use has been officially denied by ACT as an ACT-Approved accommodation, will render the student’s score as not reportable to colleges, scholarship agencies, the NCAA and other entities; rather, they can only be used for state purposes.

NOTE 2: It should be noted that some accommodations used routinely in the classroom may not be allowable for statewide tests. The test results of students who use non-allowable accommodations are invalid and must be excluded from summary statistics. Any student with an invalid score is considered not tested. Allowable accommodations may change the method in which test items are presented and the method of the student’s response to test items but will not interfere with what the test purports to measure. An unallowable accommodation provides an unfair advantage to the student and interferes with what the test purports to measure.

NOTE 3: Approval must be granted by the Office of Student Assessment (OSA) **four (4) weeks prior** to the use of accommodations that are not included in this list. Please complete the Accommodation Request Form and submit it to OSA. It is the

responsibility of the OSA to determine whether the use of such accommodation(s) will affect the validity of the assessment.

**NOTE 4:**

A. Accommodations 24 and 25 relate to administering the test over several sessions and no longer must be approved by the Office of Student Assessment. However, the entire assessment must be completed within the testing window. If an extension that exceeds or goes beyond the day the test administration is scheduled, the procedure must be documented and on file with the District Test Coordinator. If the student is testing over several days, he/she is not allowed to change responses to questions answered during the previous testing sessions or preview questions that will be administered in a future session.

B. Timing codes are assigned by ACT.

C. LAS Links is an untimed assessment.

D. For the Kindergarten Readiness Assessment, clicking [Resume Later] allows students to resume their test at a later time, starting on the same question number at which the test was paused but a different item. The STAR monitor password is required. Note: A different password can be set for each STAR class; be sure to enter the password for the class in which the student is testing. The test can be paused and resumed as many times as needed, but it can only be resumed within 8 days of when it was originally started. Closing the test window during a test will also allow a student to resume from where he or she left off, although this is not recommended.

If the student clicks [Stop Test] and the monitor password is entered, the test is over and the student will need to begin a new test. The incomplete test will not be scored.

For the Kindergarten Readiness Assessment, all students will have 90 seconds to answer each item. Extended time is currently unavailable for this assessment.

E. For the Third Grade Reading Summative Assessment, MKAS2 Make-up, students with disabilities (SWDs) and English learners (ELs) can click [Resume Later] to allow students to resume their test at a later time, starting on the same question number at which the test was paused but a different item. The STAR monitor password is required. Note: A different password can be set for each STAR class; be sure to enter the password for the class in which the student is testing. The test can be paused and resumed as many



times as needed, but it can only be resumed within 8 days of when it was originally started. Closing the test window during a test will also allow a student to resume from where he or she left off, although this is not recommended.

If the student clicks [Stop Test] and the monitor password is entered, the test is over and the student will need to begin a new test. The incomplete test will not be scored.

- F. For the **Third Grade Reading Summative Assessment**, the General Education students, English learners, and students with disabilities will have a maximum of 270 seconds to answer each item.
- G. For the **Third Grade Reading Summative Assessment**, students with disabilities (SWDs) and English learners (ELs) can have a maximum of 20 minutes to answer each question; however, the test must be completed by 3:00 p.m. or the end of the student's school day, whichever occurs first. The extended time accommodation must be listed in the student's IEP or Section 504 Plan and specified for this assessment area.
- H. On the MAP, MST2, and SATP2 tests, Accommodations 24 and 25 are available to English Learners.

**NOTE 5:**

- A. For the **Kindergarten Readiness Assessment**, all students can test at a specific time of day if necessary.
- B. For the **Third Grade Reading Summative Assessment**, students with disabilities (SWDs) and English learners (ELs) can test at a specific time of day, if this accommodation (#22) is listed in the student's IEP or Section 504 Plan and specified for this assessment area.

**NOTE 6:**

- A. For the **Kindergarten Readiness Assessment**, if, in the Test Administrator's professional judgment, a student is unable to continue the assessment, the Test Administrator can stop the test. When the student is prepared to continue the test, the assessment must be resumed on the same day from the point at which it was stopped.
- B. For the **Third Grade Reading Summative Assessment**, if, in the Test Administrator's professional judgment, a student with a disability (SWD) or an English learner (EL) is unable to continue the assessment, the Test Administrator can stop the test. When the student is prepared to continue

the test, the assessment must be resumed on the same day from the point at which it was stopped.

**NOTE 7:** Paraphrasing is re-stating the text and does not include providing definitions or detailed explanations. Only directions may be paraphrased. Items, including sample questions, may not be paraphrased as part of a presentation accommodation.

**NOTE 8:**

- A. Accommodations 53, 55, and 58 relate to the presentation of test directions and test items (questions and answer choices) to students. In addition to reading, these accommodations may involve writing the material on a blackboard, using sign language, using a text scanner with voice synthesizer, or using other appropriate technology.
- B. For the English Language Proficiency Test, accommodations 55 and 58 are not allowed, as these accommodations interfere with what the test purports to measure.
- C. When preparing to administer the test(s) to students who are deaf or hard of hearing or to students who are blind or visually impaired, test administrators may review eligible test material (i.e., math, science, or history test books; scripted directions for reading tests; non-reading portions of language arts tests) prior to test administration. The review must be authorized by the District Test Coordinator and must take place in a controlled, secure environment. A signed Confidentiality Agreement is required and must be on file when test administrators preview test items prior to the test administration. Test administrators should be familiar with specific symbols or abbreviations particular to the content area being assessed.
- D. When working with a student who has limited English proficiency, consideration needs to be given as to whether the assessment should be explained to the student in his or her native language or other mode of communication unless it is clearly not feasible to do so.
- E. Students for whom American Sign Language (ASL) is the primary language may have directions and/or items signed to them, except for the reading sections of MAP. Other allowable signing systems are Signing Exact English (SEE), Signed English (SE), Sign Supported English (SSE or CASE), or Contact Sign (i.e., Pidgin Sign English [PSE]). Sign languages

from other countries (i.e., Auslan, BSL, LSF) or non-standard sign systems (i.e., home sign) are not permitted to be used.

- F. For the ACT, Accommodations 53, 55, and 58 must be done individually and NOT as a group.
- G. Guidance for the **Read-aloud Accommodations** on the MAP for Students with an Individualized Education Program (IEP), Section 504 Plan, or Language Service Plan (LSP) who have this testing accommodation specified for this subject area

ELA/English II

- A53 - For grades 3-8 and English II, the directions can be read to the students throughout the assessment.
- A55 and A58 – For grades 3-8 and English II, the directions and the questions and answer choices can be read aloud, but the reading passages cannot be read to the student. **Beginning with the 2016-2017 academic year, the read-aloud accommodation will be non-allowable for students in third grade. Reading the Writing Prompt is allowable.**

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Math/Algebra I

- A53 - For grades 3-8 and Algebra I, the directions can be read to the students throughout the assessment.
- A55 and A58 – For grades 3-8 and Algebra I, the directions and the questions and answer choices can be read aloud to the student.

**NOTE 9:**

- A. The Scribe (Accommodation #70) must write exactly what the student says as dictated. The Scribe may not edit or alter the student’s dictation in any way. The student is responsible for all capitalization, punctuation, and spelling (must spell out each word). The student should review the draft composition and make any necessary edits, including edits to capital letters and punctuation. A Scribe may not assist the student during the editing process. The Scribe transfers verbatim the student’s responses to an answer document.
- B. The dictation process and transfer of answers must occur under secure conditions with at least two persons present.
- C. For the ACT, the term “scribe” refers to the Test Supervisor.
- D. For the **Kindergarten Readiness Assessment**, students can dictate or gesture answers to a Scribe, and the Scribe will mark answers directly into online test system in the presence of the Test Administrator and Proctor.

- E. For the **Kindergarten Readiness Assessment**, students with disabilities (SWDs) and English learners (ELs) can dictate or gesture answers to a Scribe, and the Scribe will mark answers directly into the online test system in the presence of the Test Administrator. For children who receive homebound services or community-based services (e.g., children with disabilities attending Head Start or other childcare center), the Proctor may also serve as a Scribe, if one is needed.
- F. For the **Third Grade Reading Summative Assessment, MKAS2**, students with disabilities (SWDs) can dictate or gesture answers to a Scribe, and the Scribe will mark answers directly into the online test system in the presence of the Test Administrator and Proctor.

**NOTE 10:** Accommodation 47 relates to cueing. Cueing is assisting the student in focusing his/her attention. Cueing strategies include, but are not limited to, arrows, lines, space, contrasting colors, position or focal point, underlining, labeling, size, and shading. Cues may be used only in test directions and in test questions. Cues may not be used in the answer choices. Cues provided on answer booklets/documents must be erased before they are returned for scoring. Cues provided on test books do not have to be erased since test books are non-scorable documents.

**NOTE 11:**

- A. Accommodation 48 relates to the use of memory aids. A memory aid, fact chart, and/or resource sheet is something that helps a student remember how to find the answer; it should not give him/her the answer. This accommodation cannot interfere with what the test purports to measure. For example, if the test measures computation skills, a multiplication fact chart is a non-allowable accommodation since it gives the answer or a portion of the answer to the item assessing multiplication skills.
- B. The compilation of allowable and non-allowable materials is by no means exhaustive. Prior approval is not required for the memory aids, fact charts, and/or resource sheets labeled allowable. All other material requires prior approval from the Office of Student Assessment (OSA). You must complete the Accommodation Request Form. Submissions may be sent any time during the school year, but no later than four (4) weeks prior to the test administration for which the use of the memory aid is intended. The

memory aids, fact charts, and/or resource sheets for state assessments must be limited to 1-3 pages per content area.

- C. Only a student who is visually-impaired may use the abacus to solve mathematics problems. No prior approval is required for use of the abacus by students with visual impairments.
- D. For the ACT, an abacus (as listed in A48 and A98) must be requested as an accommodation from ACT.

**NOTE 12:** For accommodation 61, calculators are allowable only in specified Calculator Sections for MAP Mathematics grades 6-8 and Questar Algebra I. Beginning with the 2011-2012 academic year,

- i. all formulas, applications, and/or programs (including, but not limited to, Zoom Math/Zoom Algebra) **must be disabled or removed** from the calculators to be used by students during the MAP Mathematics Grades 6-8 exams and Algebra I exam.
  - ii. school districts must outline in their District Test Security Plan the processes and/or procedures to be used to ensure that the calculators used by students during a state assessment administration for the tests listed above do not have any stored formulas, applications, and/or programs.
  - iii. students may use personal calculators. However, the District Test Security Plan must address the processes and/or procedures to be used to ensure that personal calculators used by the students during a state assessment administration do not have any stored formulas, applications, and/or programs.
- A. The calculator policy can be viewed at the following link:  
[MDE Calculator Policy](#)
  - B. Calculators may be used on any MS-CPAS2 test. The MDE's guidelines for calculator use on standardized tests state that if using OSA approved graphing calculators, any formulas, applications, and / or programs must be cleared from the calculators before the assessment. Procedures for how to handle this issue should be outlined in the District Test Security Plan as this has been the policy since the 2011-2012 school year. Documentation

related to specific calculators can be found at the MDE Website. The RCU recommends that districts not allow students to use the calculators built in to the operating systems on most computers as this is a test security issue.

- C. Refer to the list of approved calculators as listed in the ACT materials and on the ACT website. [http://www.actstudent.org/faq/calculator.html?\\_ga=1.28160380.1154439628.1413234207](http://www.actstudent.org/faq/calculator.html?_ga=1.28160380.1154439628.1413234207)

**NOTE 13: Accommodation 73 - Tape record responses for later verbatim translation**

- i. Students must spell each word and note every punctuation mark as they dictate.
- ii. Please consider using a tape recorder for a student's "draft."
- iii. The tape can be played back to the student, who can stop and start the tape as necessary, spelling and punctuating the response more easily as dictation to the scribe takes place. The student must also note indentation or skipped lines during the dictation.
- iv. The taped version can also be edited by the student.
- v. The taped "draft" must not be written for the student to review until the dictation with spelling and punctuation has occurred. The student must also note indentation or skipped lines during the dictation.
- vi. The student may be given the dictated response to review and may make revisions at that point.
- vii. The dictation process must occur under secure conditions with at least two persons present.
- viii. The response must be transcribed to the appropriate document or computer platform, if available, with appropriate Prompt Number gridded or in a blank Final Response Insert Page with appropriate Prompt Number gridded and the MSIS number written on the front cover of the Final Response Insert Page.
- ix. If this method is used, the tape must be erased after the transcription has been completed.
- x. This process, if used, should be added as an addendum to the School Test Security Plan.
- xi. All persons (TA, Proctor, Scribe) involved in this process must sign Confidentiality Agreements.

**NOTE 14:** *Accommodation 78 - Typewriter or word processor (without grammar/syntax checker and without word completion/prediction feature)*

- i. All tools for spelling, grammar check, and syntax must be turned off. Additionally, the device (e.g., NEO) must have the extra features disabled (e.g., Google Docs, linked files, Write On! Lessons, etc.).
- ii. The student may not have access to the Internet.
- iii. Typed responses are not to be submitted to the vendor; these typed responses must be transcribed under secure conditions with at least two persons present.
- iv. The person transcribing must duplicate exactly what the student wrote, including exact spelling, punctuation, indentation, skipped lines, etc.
- v. The response must be transcribed to the appropriate document or computer platform, if available, with appropriate Prompt Number gridded or in a blank Final Response Insert Page with appropriate Prompt Number gridded and the MSIS number written on the front cover of the Final Response Insert Page.
- vi. The typed response must be erased from the assistive technology.
- vii. The typed response must include the student's name and MSIS number. The student's typed response is considered secure material and must be returned with all scorable testing material.
- viii. This process, if used, should be added as an addendum to the School Test Security Plan.
- ix. All persons (TA, Proctor, Scribe) involved in this process must sign Confidentiality Agreements.

**NOTE 15:** *Electronic word-to-word translating dictionaries may be used with the audio/speaker function turned off. In addition, the test administrator must ensure that electronic dictionaries are not connected to the Internet or any additional software. Refer to the Suggested List of Bilingual Dictionaries for EL Students for word-to-word glossaries.*

**NOTE 16:** *The Braille test administrator may review Braille test material prior to test administration, but the review must be authorized by the District Test Coordinator and must take place in a controlled, secure environment.*

#### **IV. Questions to Guide Evaluation of Accommodation Use on State Assessments at the School Level**

1. Are there policies in place to ensure ethical testing practices, the standardized administration of assessments, and that test security practices are followed before, during, and after testing?
2. Are there procedures in place to ensure test administration procedures are not compromised with the provision of accommodations?
3. Are students receiving accommodations as documented in their IEPs/504 Plans?
4. Are there procedures in place to ensure that test administrators adhere to directions for the implementation of accommodations?
5. How many students with IEPs/504 Plans are receiving accommodations?
6. What types of accommodations are provided and are some used more than others?
7. Are students provided accommodations tailored to their individualized needs or are all students receiving the same accommodations?
8. How well do students who receive accommodations perform on classroom tests, local assessments, and state assessments? If students are not meeting the expected level of performance, is it due to the students not having had access to the necessary instruction, not receiving the accommodation, or using accommodations that were not effective?

Student-level questions need to be considered by the IEP Team/504 Committee/EL Committee to evaluate the use of accommodations. It is critical to continually evaluate the use of accommodations to ensure that the most appropriate and successful accommodations are being used.

#### **Questions to Guide Evaluation of Accommodation Use on State Assessments at the Student Level**

1. What accommodations are used by the student during instruction and on classroom assessments?
2. What are the results of classroom assignments and classroom tests when accommodations are used versus when accommodations are not used? If a student did not meet the expected level of performance, is it due to not having access to the necessary instruction, not receiving the appropriate accommodations, or ineffective use of accommodations?
3. What accommodations are used by the student during state assessments?
4. What are the results of state assessments when accommodations are used? Does this performance mirror performance on classroom tests? If a student did not meet the expected level of performance, is it due to lack of access to the necessary instruction, not receiving the appropriate accommodations, or ineffective use of accommodations?
5. What is the student's perception of how well the accommodation worked?
6. Which accommodations seemed to be least effective or ineffective?
7. What combinations of accommodations seem to be effective?
8. What are the difficulties encountered in the use of accommodations?
9. What are the perceptions of teachers and others about how the accommodation appears to be working?

School-level questions should be addressed by a committee responsible for continuous improvement efforts. It is critical to stress that evaluation is not the responsibility of just one individual. The entire IEP/504 Committee should contribute to the information gathering and decision-making processes.



## **V. Guidelines for Administering Specific Accommodations**

This information must be used by the test administrator in providing these accommodations on state assessments. If questions arise regarding the use of accommodations or these guidelines, contact your STC (Site Testing Coordinator).

### **Reading Accommodation**

Test administrators providing a reading accommodation must ensure that all students understand what is expected of them when receiving a reading accommodation. However, test administrators cannot answer questions about specific test items. When reading test items aloud, test administrators must be careful not to inadvertently give clues that indicate the correct answer or help eliminate some answer choices. Test administrators should use even inflection so that the student does not receive any cues by the way the information is read. It is important for test administrators to read test items/questions, answer choices, and graphics (tables, charts, graphs, and illustrations) verbatim (word-for-word), exactly as written. Test administrators may not clarify, elaborate, or provide assistance to students. It is recommended that a proctor be used in the setting for a reading accommodation. At no time may a proctor provide a reading accommodation or a reading accommodation be recorded.

### **Sign Language or Native Language Interpreter**

When using either a sign language or native language interpreter during the time oral instruction is given to the student, the interpreter may only interpret the directions for the student.

For students who are provided a sign language interpreter as a reading accommodation, the interpreter must sign verbatim the individual test items and answer choices. When signing the individual test items and answer choices the interpreter must not clarify, elaborate, paraphrase, or provide assistance with the meaning of words.

### **Marking Answers in Test Booklet**

Students may mark multiple-choice and gridded answers in the test booklet instead of marking the answers on an answer document. Answers to open-ended responses must be written in the answer document or recorded by a scribe (proctor or assistant). Two certified individuals must transcribe the answers verbatim to a regular test booklet containing the student's demographic information.

### **Dictation to a Scribe (Proctor or Assistant)**

Scribes may be provided for students with disabilities who are significantly impacted in the area of written expression or who have a physical disability that impedes their motor process or ability to write. Scribes should be impartial and must write exactly what the student dictates. Scribes should not affect the outcome of a test in any way. Scribes are not allowed to elaborate on what is being written. They cannot answer or explain anything to the student during testing and must be careful not to give hints of any type. The student must be allowed to review and edit what the scribe has written.

### **Extended Time**

Students who are regularly given extended time on classroom activities, classroom assignments, and classroom tests may qualify for a specified amount of extended or additional time on selected state assessments. Extended or additional time varies depending on the particular state assessment. Decisions should be made on a case-by- case basis, keeping in mind all the accommodations being provided and the nature of the assessment. For example, if a read-aloud accommodation or scribe is being used, extended time may not be necessary.

### **Large Print**

Students who regularly use large-print materials in the classroom may qualify for large-print materials on state assessments. The use of a large-print answer document for students testing with a large-print test booklet is required on selected state assessments. Two certified individuals must transcribe the answers verbatim to a regular test booklet containing the student’s demographic information.

### **Braille**

Students who regularly use braille materials in the classroom qualify for braille materials on selected state assessments. Two certified individuals must transcribe the answers verbatim to a regular test booklet containing the student’s demographic information.

### **Templates**

Templates are used by students to aid in reading or writing. A template is not a graphic organizer. Templates are the size of an index card or larger with a “cut out” area to allow the student to see or write one word, multiple words, or a line of print at a time. The template may also be used on the answer document to aid the student in gridding one answer choice for each test question. The template is moved down the page or answer document as the student reads, writes, or works.

**Administered by a Specific Teacher**

There are situations where it is appropriate for the IEP/504 Committee to specify a teacher to serve as the student’s test administrator. Care, however, should be given in selecting this accommodation. There are situations where it is impossible to provide this accommodation (e.g., when the decision for an individual administration by the student’s special education teacher has been selected for five different students in the same teacher’s classroom).

**Assistive Technology/Communication Device**

The use of Assistive Technology/Communication Device must be appropriate so that it does not invalidate a state assessment or supplant the skill that the state assessment is designed to measure. Extreme caution must be taken to ensure that when using any type of Assistive Technology/Communication Device the cognition is performed entirely by the student unless the device is allowed on a state assessment. (e.g., the use of a calculator). MDE Approval is required for all communication devices prior to the student taking a state assessment.

**With Other Accommodations Needed Due to the Nature of the Disability or the Level of Language Proficiency**

The accommodations checklists although not exhaustive, have been provided to identify approved accommodations available to students for use on state assessments. In the event that an accommodation used during instruction and on classroom tests is requested for use on a state assessment, and the accommodation is not listed on the accommodations checklist, the accommodation may be requested by using selecting the “With other accommodations needed due to the nature of the disability and the nature of the assessment”.

When this accommodation is selected, the LEA completes the “Form Requesting Testing Accommodations Needing MDE Approval”. The form is completed in its entirety and submitted by the STC to the MDE no later than four weeks prior to the assessment to be administered. Additional documentation (prior practice documentation in the IEP/504 Plan, proof of prior practice in the classroom on a regular basis, and proof of success of the accommodation) must be provided.

## VI. Accommodations Chart for Online and Paper-Pencil Administrations

Mississippi Assessment Program (MAP) for Grades 3-8  
Mississippi Assessment Program Alternate (MAP-A) Grades 3-8  
Mississippi Science Test (MST2) Grades 5 and 8  
Students with Current IEPs

#	ACCOMMODATION	ELA Reading	ELA Writing	Mathematics	Science
4	<u>Individually to accommodate specific disability</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
7	<u>At home (only for homebound students)</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
8	<u>In a study carrel</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
9	<u>With special lighting</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
10	<u>Specialized table to fit a student's wheelchair</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
11	<u>Secure paper to work area with magnets/tape</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
21	<u>With scheduled rest breaks</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
22	<u>At time of day to accommodate student's disability. Refer to Note 5</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
23	<u>Until, in test administrator's judgment, the pupil can no longer continue test administration</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
24	<u>Administer the test over several sessions and/or days, specifying the duration each session (Testing must be completed within testing window) Refer to Note 4</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
25	<u>Administer the test over several days, specifying the duration of each session (Testing must be completed within testing window) Not allowable for speaking component of the LAS Links Test for EL) Refer to Note 4</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>

#	<u>ACCOMMODATION</u>	<u>ELA Reading</u>	<u>ELA Writing</u>	<u>Mathematics</u>	<u>Science</u>
40	<u>Large print</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
41	<u>Braille (responses must be transcribed verbatim) Refer to Note 16</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
42	<u>Hearing aids</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
43	<u>Auditory trainers</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
44	<u>Transparent color overlays</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
45	<u>Magnifying glasses/magnifying equipment</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
47	<u>Provide cues on answer form in pencil (e.g., arrows, lines, space, contrasting colors, position or focal point, underlining, labeling, size, shading and stop signs) (Cues may only be used in test directions and test questions. Cues may not be used in answer choices.) Refer to Note 10</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
48	<u>Use of memory aids, fact charts, resource sheets, and/or abacus (Only a student who is visually-impaired may use the abacus to solve mathematics problems.) Refer to Note 11</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
50	<u>Highlight key words/phrases in directions (e.g., complete sentences, show your work) by the test administrator</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
53*	<u>Read test directions (but NOT test items) to student or group-repeating and/or paraphrasing directions if needed (Paraphrasing is re-stating the text and does NOT include providing definitions or detailed explanations, using sign language, using a text scanner with voice synthesizer, or using other appropriate technology) Refer to Notes 7 &amp; 8</u>  <u>___ human reader via book (e.g., paper-pencil, writing)</u>  <u>___ human reader via online (MAP ELA and MKAS2 text never read aloud)</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>

#	<u>ACCOMMODATION</u>	<u>ELA Reading</u>	<u>ELA Writing</u>	<u>Mathematics</u>	<u>Science</u>
<u>55*</u>	<p><u>Read test directions and test items (questions and answer choices) to individual students or the group-repeating directions/items but NOT paraphrasing Refer to Notes 7 &amp; 8</u></p> <p><u>    </u> human reader via book (e.g., paper-pencil, writing)</p> <p><u>    </u> screen reader online</p>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>58*</u>	<p><u>Read test directions and test items (questions and answer choices) to individual students or a group-repeating and/or paraphrasing ONLY the directions, NOT test items, if needed Refer to Notes 8</u></p> <p><u>    </u> human reader via book (e.g., paper-pencil, writing)</p> <p><u>    </u> human reader via online</p>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<b>* —</b>	<b><u>ONLY choose one: 53, 55, or 58</u></b>				
<u>61</u>	<u>Calculator for Mathematics Allowable ONLY Grades 6-8 Refer to Note 12</u>	<u>No</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>
<u>70</u>	<u>Dictation of answers to test administrator/proctor (scribe) (Must be written exactly as the student dictates. Editing or altering in any way is prohibited. The student is responsible for capitalization, punctuation, and spelling. The student should review the draft for revision without prompting or assistance) Refer to Note 9</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>72</u>	<u>Allow marking of answers in test booklet and transferring of answers from test booklet to answer document by test administrator (i.e., large print) (The dictation process AND transfer of answers must occur under secure conditions with at least two persons present) Refer to Note 9</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>

#	<u>ACCOMMODATION</u>	<u>ELA Reading</u>	<u>ELA Writing</u>	<u>Mathematics</u>	<u>Science</u>
<u>73</u>	<u>Tape record responses for later verbatim translation Refer to Note 13</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>74</u>	<u>Provide copying assistance between drafts Refer to Notes 10 &amp; 11</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>75</u>	<u>Braille</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>76</u>	<u>Communication board</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>77</u>	<u>Augmentative communication device</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>78</u>	<u>Computer/word processor/NEO (WITHOUT grammar/syntax checker or work completion/prediction features) Refer to Note 14</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>79</u>	<u>Computer/word processor/NEO (WITHOUT grammar/syntax checker, WITH work completion/prediction feature)</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>80</u>	<u>Adapted keyboards</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>82</u>	<u>Spelling dictionaries (dictionaries show correct spelling of English words, do NOT give definitions)</u>	<u>No</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>
<u>98</u>	<u>Extended Time</u> <u>___ Time and a half (i.e., 50% more time)</u> <u>___ End of the school day (i.e., 100% of the day, until end of the school day)</u> <u>Other allowable accommodation</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>99</u>	<u>Other non-allowable accommodation</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>

**Accommodations Chart for Online and Paper-Pencil Administrations**  
**Mississippi Subject Area Testing Program 2 for**  
**Students with Current IEPs**

#	ACCOMMODATION	Algebra 1	Biology 1	English II Read/Voc	English II Writing/ Grammar	U. S. History
4	<u>Individually to accommodate specific disability</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
7	<u>At home (only for homebound students)</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
8	<u>In a study carrel</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
9	<u>With special lighting</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
10	<u>Specialized table to fit a student's wheelchair</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
11	<u>Secure paper to work area with magnets/tape</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
21	<u>With scheduled rest breaks</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
22	<u>At time of day to accommodate student's disability. Refer to Note 5</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
23	<u>Until, in test administrator's judgment, the pupil can no longer continue test administration</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
24	<u>Administer the test over several sessions and/or days, specifying the duration each session (Testing must be completed within testing window) Refer to Note 4</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>



#	<u>ACCOMMODATION</u>	<u>Algebra 1</u>	<u>Biology 1</u>	<u>English II Read/Voc</u>	<u>English II Writing/ Grammar</u>	<u>U. S. History</u>
<u>25</u>	<u>Administer the test over several days, specifying the duration of each session (Testing must be completed within testing window) Not allowable for speaking component of the LAS Links Test for EL. Refer to Notes 4</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>40</u>	<u>Large print</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>41</u>	<u>Braille (responses must be transcribed verbatim) REFER TO NOTE 16</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>42</u>	<u>Hearing aids</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>43</u>	<u>Auditory trainers</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>44</u>	<u>Transparent color overlays</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>45</u>	<u>Magnifying glasses/magnifying equipment</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>47</u>	<u>Provide cues on answer form in pencil (e.g., arrows, lines, space, contrasting colors, position or focal point, underlining, labeling, size, shading and stop signs) (Cues may only be used in test directions and test questions. Cues may not be used in answer choices.) Refer to Note 10</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>48</u>	<u>Use of memory aids, fact charts, resource sheets, and/or abacus (Only a student who is visually-impaired may use the abacus to solve mathematics problems.) Refer to Note 11</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>

#	<u>ACCOMMODATION</u>	<u>Algebra 1</u>	<u>Biology 1</u>	<u>English II Read/Voc</u>	<u>English II Writing/Grammar</u>	<u>U. S. History</u>
<u>50</u>	<u>Highlight key words/phrases in directions (e.g., complete sentences, show your work) by the test administrator</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>53*</u>	<u>Read test directions (but NOT test items) to student or group-repeating and/or paraphrasing directions if needed (Paraphrasing is re-stating the text and does NOT include providing definitions or detailed explanations; may involve writing the material on a board, using sign language, using a text scanner with voice synthesizer, or using other appropriate technology) Refer to Notes 7 &amp; 8 ___ human reader via book (e.g., paper-pencil, writing) ___ human reader via online</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>55*</u>	<u>Read test directions and test items (questions and answer choices) to individual students or the group-repeating directions/items but NOT paraphrasing Refer to Notes 7 &amp; 8 ___ human reader via book (e.g., paper-pencil, writing) ___ screen reader online</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>
<u>58*</u>	<u>Read test directions and test items (questions and answer choices) to individual students or a group-repeating and/or paraphrasing ONLY the directions, NOT test items, if needed Refer to Notes 7 &amp; 8 ___ human reader via book (e.g., paper-pencil, writing) ___ human reader via online</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>
<u>*</u>	<b><u>ONLY choose one: 53, 55, or 58</u></b>					

#	<u>ACCOMMODATION</u>	<u>Algebra 1</u>	<u>Biology 1</u>	<u>English II Read/Voc</u>	<u>English II Writing/Grammar</u>	<u>U. S. History</u>
<u>61</u>	<u>Calculator for Mathematics</u> <u>Allowable ONLY Grades 6-8</u> <u>Refer to Note 12</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>
<u>70</u>	<u>Dictation of answers to test administrator/proctor (scribe) (Must be written exactly as the student dictates. Editing or altering in any way is prohibited. The student is responsible for capitalization, punctuation, and spelling. The student should review the draft for revision without prompting or assistance)</u> <u>Refer to Note 9</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>72</u>	<u>Allow marking of answers in test booklet and transferring of answers from test booklet to answer document by test administrator (i.e., large print) (The dictation process AND transfer of answers must occur under secure conditions with at least two persons present)</u> <u>Refer to Note 9</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>73</u>	<u>Tape record responses for later verbatim translation</u> <u>Refer to Note 13</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>74</u>	<u>Provide copying assistance between drafts</u> <u>Refer to Notes 10 &amp; 11</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>75</u>	<u>Braille</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>76</u>	<u>Communication board</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>77</u>	<u>Augmentative communication device</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>

#	<u>ACCOMMODATION</u>	<u>Algebra 1</u>	<u>Biology 1</u>	<u>English II Read/Voc</u>	<u>English II Writing/Grammar</u>	<u>U. S. History</u>
<u>78</u>	<u>Computer/word processor/NEO (WITHOUT grammar/syntax checker or work completion/prediction features) Refer to Note 14</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>79</u>	<u>Computer/word processor/NEO (WITHOUT grammar/syntax checker, WITH work completion/prediction feature)</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
<u>80</u>	<u>Adapted keyboards</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>82</u>	<u>Spelling dictionaries (dictionaries show correct spelling of English words, do NOT give definitions)</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>Yes</u>
<u>98</u>	<u>Extended Time</u> <u>___ Time and a half (i.e., 50% more time)</u> <u>___ End of the school day (i.e., 100% of the day, until end of the school day)</u> <u>Other allowable accommodation</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>99</u>	<u>Other non-allowable accommodation</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>Yes</u>	<u>No</u>

## VI. General Education Assessment Accessibility Features for ALL STUDENTS

<u>#</u>	<u>Feature</u>	<u>Allowable</u>
<u>1</u>	<u>At the front of the room</u>	<u>Yes</u>
<u>2</u>	<u>Facing test administrator while directions are given</u>	<u>Yes</u>
<u>3</u>	<u>In a small group (<i>14 students or less</i>)</u>	<u>Yes</u>
<u>5</u>	<u>In a familiar room</u>	<u>Yes</u>
<u>6</u>	<u>With a familiar teacher</u>	<u>Yes</u>
<u>10</u>	<u>Specialized table to fit a student's wheelchair</u>	<u>Yes</u>
<u>44</u>	<u>Transparent color overlays</u>	<u>Yes</u>
<u>46</u>	<u>Templates to reduce visible print</u>	<u>Yes</u>
<u>49</u>	<u>Cue student to stay on task</u>	<u>Yes</u>
<u>60</u>	<u>Use of highlighter (<i>yellow only</i>) by student in test booklet</u>	<u>Yes</u>
<u>98</u>	<u>Other <b>allowable</b> accommodation</u>	<u>Yes</u>
<u>100</u>	<u>Use of a computer mouse</u>	<u>Yes</u>

## VII. Do's and Don'ts When Selecting Accommodations

Accommodations should enable the students to participate more fully in instruction and assessments and to better demonstrate their knowledge and skills. They must be aligned with and be part of daily instruction; accommodations must not be introduced for the first time during the testing of a student.

<u>Do...make accommodation decisions based on individualized needs.</u>	<u>Don't...make accommodation decisions based on whatever is easiest to do (e.g., preferential seating).</u>
<u>Do...refer to state accommodation policies and understand implications of selections.</u>	<u>Don't...select every accommodation possible on a checklist simply to be "safe".</u>
<u>Do...get input about accommodations from teachers, parents, and students, and use it to make decisions at the IEP/504 planning meeting.</u>	<u>Don't...make decisions about instructional and state assessment accommodations alone.</u>
<u>Do...select instructional and state assessment accommodations based on specific individual needs in each content area.</u>	<u>Don't...assume certain accommodations, such as extra time, are appropriate for every student in every content area.</u>
<u>Do...provide opportunities for students to practice built in online accommodations throughout the year.</u>	<u>Don't...introduce an online accommodation to the student the day of the test.</u>
<u>Do...be familiar with the types of accommodations that can be used as both instructional and assessment accommodations.</u>	<u>Don't...assume that all instructional accommodations are appropriate for use on state assessments.</u>
<u>Do...evaluate accommodations used by the student.</u>	<u>Don't...assume the same accommodations remain appropriate year after year.</u>
<u>Do...be certain to document instructional and state assessment accommodation(s) in the IEP/504 Plan.</u>	<u>Don't...use an accommodation that has not been documented in the IEP/504 Plan.</u>
<u>Do...select accommodations that reduce the effect of the disability to access instruction and demonstrate learning.</u>	<u>Don't...select accommodations unrelated to documented student learning needs or those intended to give students an unfair advantage.</u>

## VIII. List of Abbreviations and Acronyms

<u>ADA</u>	<u>Americans with Disabilities Act</u>
<u>ADD; AD/HD; ADHD; ADD/In</u>	<u>Attention-Deficit/Hyperactivity Disorder; ADD Inattentive</u>
<u>AT</u>	<u>Assistive Technology</u>
<u>AU</u>	<u>Autism</u>
<u>BIP</u>	<u>Behavior Intervention Plan</u>
<u>DB</u>	<u>Deafness/Deaf Blind</u>
<u>DD</u>	<u>Developmental Delayed</u>
<u>EmD</u>	<u>Emotional Disability</u>
<u>FBA</u>	<u>Functional Behavioral Assessment</u>
<u>FAPE</u>	<u>Free and Appropriate Public Education</u>
<u>HI</u>	<u>Hearing Impaired</u>
<u>ID</u>	<u>Intellectual Disabilities</u>
<u>IDEA</u>	<u>Individuals with Disabilities Education Act</u>
<u>IEP</u>	<u>Individualized Education Program</u>
<u>LRE</u>	<u>Least Restrictive Environment</u>
<u>LS</u>	<u>Language Speech</u>
<u>OHI</u>	<u>Other Health Impairment</u>
<u>OI</u>	<u>Orthopedic Impairment</u>
<u>MD</u>	<u>Multiple Disabilities</u>
<u>MDR</u>	<u>Manifestation Determination Review</u>
<u>PLAAFP</u>	<u>Present Levels of Academic Achievement and Functional Performance</u>
<u>RS</u>	<u>Related Services</u>
<u>RTI</u>	<u>Response to Intervention</u>
<u>SLD</u>	<u>Specific Learning Disability</u>
<u>SLI</u>	<u>Speech Language Impairment</u>
<u>SC</u>	<u>Self-Contained</u>
<u>TBI</u>	<u>Traumatic Brain Injury</u>
<u>VI</u>	<u>Visual Impairment</u>

# Mississippi Testing Accommodations Manual

*Reference Guide: Allowable and Non-Allowable Accommodations*

Revised (October 2016)



Mississippi Statewide Assessment System

Office of Student Assessment

Mississippi Department of Education



## **Accommodation 48**

### **LANGUAGE ARTS – ALLOWABLE**

**Allowable Memory Aid**

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**Topic**

Introduction

**Body**

Paragraph 1

Paragraph 2

Paragraph 3

Conclusion

**Allowable Memory Aid**

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A B C D E F G H I J  
K L M N O P Q R S T  
U V W X Y Z

a b c d e f g h i j k l m n o  
p q r s t u v w x y z

1 2 3 4 5 6 7 8 9 10

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## **Allowable Memory Aid**

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### **Proofreading Checklist**

Read each question below. Then check your paper. Correct any mistakes that you find. After you have corrected them, put a checkmark in the box next to the questions.

- 1. Did I spell all the words correctly?
- 2. Does each sentence state a complete thought?
- 3. Are there any run-on sentences or fragments?
- 4. Did I capitalize all proper nouns?
- 5. Did I end each sentence with the correct end mark?
- 6. Did I use commas, apostrophes, and quotation marks correctly?

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## Allowable Memory Aid

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This is a very low tech example of a cut-out viewer. It helps some students focus on only a certain portion of the text at a time so as not to become overwhelmed by all the text on the page. It might require supervision to be sure that the student is looking at the correct text in the viewer.

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## **Accommodation 48**

### **LANGUAGE ARTS - NON-ALLOWABLE**

A **friendly letter** has five parts. They are the heading (1), greeting (2), body (3), closing (4), and signature (5). Match each number with the letter part below.

(1)  
234 Mississippi Street  
Anywhere, Mississippi 54545  
Date, Year

(2)  
Dear Sam,

(3)  
I am so glad that you are moving to Mississippi. I think you will really like the fact that it does not get so cold in the winter. It does get cold, just not as cold as it gets in Denver.

Have you started packing yet? Be sure you bring all of your cards so we can trade. It will really be fun to have you living so close to my house. We can play every day!

Let me know what day you are supposed to get here. I can hardly wait!

(4)  
Your friend,  
(5)  
Dimitri

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Words	Rules	Examples
bad badly	<i>Bad</i> is an adjective. It can be used after linking verbs like look and feel. <i>Badly</i> is an adverb.	This was a <u>bad</u> day. I feel <u>bad</u> .  I play <u>badly</u> .
borrow lend	<i>Borrow</i> means "to take." <i>Lend</i> means "to give."	You may <u>borrow</u> my pen. I will <u>lend</u> it to you for the day.
can may	<i>Can</i> means "to be able to do something." <i>May</i> means "to be allowed or permitted."	Nellie <u>can</u> read quickly.  <u>May</u> I borrow your book?
good well	<i>Good</i> is an adjective. <i>Well</i> is usually an adverb. It is an adjective only when it refers to health.	The weather looks <u>good</u> . She sings <u>well</u> . Do you feel <u>well</u> ?
in into	<i>In</i> means "located within." <i>Into</i> means "movement from the outside to the inside."	Your lunch is <u>in</u> that bag. He jumped <u>into</u> the pool.
its it's	<i>Its</i> is a possessive pronoun. <i>It's</i> is a contraction of <i>it is</i> .	The dog wagged <u>its</u> tail. <u>It's</u> cold today.
let leave	<i>Let</i> means "to permit or allow." <i>Leave</i> means "to go away from" or "to let remain in place."	Please <u>let</u> me go swimming. I will <u>leave</u> soon. <u>Leave</u> it on my desk.
lie lay	<i>Lie</i> means "to rest or recline." <i>Lay</i> means "to put or place something."	The dog <u>lies</u> in its bed. Please <u>lay</u> the books there.
sit set	<i>Sit</i> means "to rest in one place." <i>Set</i> means "to place or put."	Please <u>sit</u> in this chair. <u>Set</u> the vase on the table.
teach learn	<i>Teach</i> means "to give instruction." <i>Learn</i> means "to receive instruction."	He <u>teaches</u> us how to dance. I <u>learned</u> about history.
their there they're	<i>Their</i> is a possessive pronoun. <i>There</i> is an adverb. It may also begin a sentence. <i>They're</i> is a contraction of <i>they are</i> .	<u>Their</u> coats are on the bed. Is Carlos <u>there</u> ? <u>There</u> is my book. <u>They're</u> going to the store.
two to too	<i>Two</i> is a number. <i>To</i> means "in the direction of." <i>Too</i> means "more than enough" and "also."	I bought <u>two</u> shirts. A squirrel ran <u>to</u> the tree. May we go <u>too</u> ?



**Topic**

1. Attention getter:

2. Information:

3. Thesis statement:

Paragraph 1	Paragraph 2	Paragraph 3
Reasons/Facts/Examples	Reasons/Facts/Examples	Reasons/Facts/Examples

**Conclusion**

Thesis restated:

Opinion/Prediction/Question:

Plot: What is the story about?
Mood: What is the feeling of the story?
Setting: Where does this story take place?
Characters: Who is the story about?



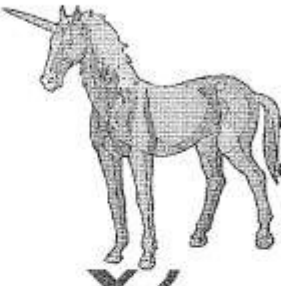

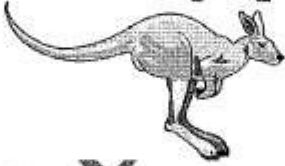

NON-ALLOWABLE

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<p><b><u>Contractions</u></b>            he'll - he will            can't - cannot            she's - she is</p>	<p><b><u>Synonyms- same</u></b>            little - small            big - huge            shut - close            hop - jump</p>								
<p><b><u>Vowel Sounds</u></b>            ee -feel            ea - peach            oa - boat            ai - sail</p>	<p><b><u>Antonyms – opposite</u></b>            cold – hot            in – out            up - down</p>								
<p><b><u>Homophones</u></b>            their they're there            doe dough            to too two</p>	<p><b><u>Compare – Contrast</u></b></p> <table border="1" data-bbox="792 982 1195 1186"> <tbody> <tr> <td>apples</td> <td>bananas</td> </tr> <tr> <td>red</td> <td>yellow</td> </tr> <tr> <td>round</td> <td>long</td> </tr> <tr> <td>fruit</td> <td>fruit</td> </tr> </tbody> </table>	apples	bananas	red	yellow	round	long	fruit	fruit
apples	bananas								
red	yellow								
round	long								
fruit	fruit								

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### Sample Phonetic Aids -- Not Inclusive

 <p>i i_e igh _y</p>	 <p>ow ou</p>	 <p>u u_e _ue ew</p>
 <p>j ge gi_ dge</p>	 <p>k c _ck</p>	 <p>s ce ci_</p>

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<b>Symbol</b>	<b>Action</b>
^	Insert a missing word, letter or punctuation mark.
/	Use a lower case letter.
=	Capitalize a lower case letter.
√	Check spelling.
¶	Start a new paragraph.

**NON-ALLOWABLE**

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<b>Punctuation Mark:</b>	<b>When to use:</b>	<b>Example:</b>
comma ,	to separate items in a series	In our garden we planted corn, peas, beans, and carrots.
apostrophe '	to show ownership	My teacher's book is red.
question mark ?	to show that a question is being asked	How far is it to Jackson?
exclamation point !	to show a strong emotion	I won the prize!
hyphen -	to separate a word at the end of a line	Miles ran quickly down the trail.
colon :	to separate the hour from the minute	It is 12:45 p.m.
period .	at the end of a sentence	The state bird of Mississippi is the mockingbird.

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## Brainstorming

- Quickly generate a list of ideas to write about.

## Prewriting

- Create a method for organizing your ideas such as a semantic web, an outline, or other graphic organizer.

## Drafting

- Write your first copy.

## Revising

- Rework your writing for ideas, style, voice, organization, and word choice.

## Editing

- Fix any errors in punctuation, capitalization, or usage.

## Polishing and Publishing

- Write a final draft that is free of errors. Share your writing with others.

**1. Interrogative – Asks a question. Use a “?”**

Would you share your cookies?

**2. Declarative – Makes a Statement. Use a “.”**

I will not share my cookies.

**3. Imperative – Makes a command. Use a “.”**

Share your cookies with me.

**4. Exclamatory – Communicates strong emotion or surprise. Use an “!”**

I cannot believe you ate 27 cookies!

NON-ALLOWABLE



**\*Example: Dolch Sight List  
List 5**

from	want	put	every
good	don't	too	pretty
any	how	got	jump
about	know	take	green
around	right	where	four

\* No sight word vocabulary, word walls, or content vocabulary should be displayed.

**NON-ALLOWABLE**

## **Accommodation 48**

### **MATHEMATICS – ALLOWABLE**

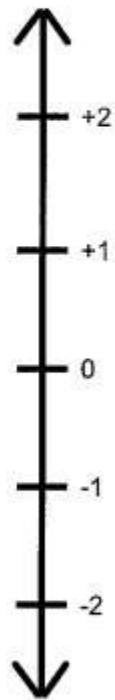
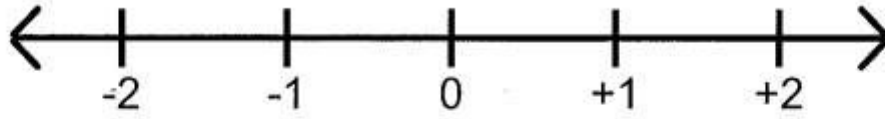
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Less Than | Greater Than

### Allowable Memory Aid

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## **Allowable Memory Aid**

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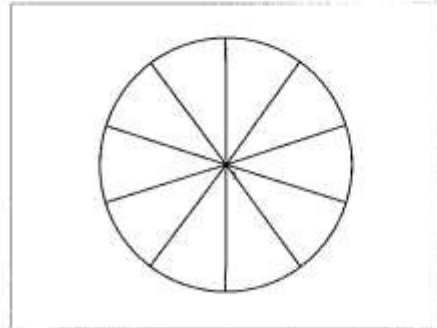
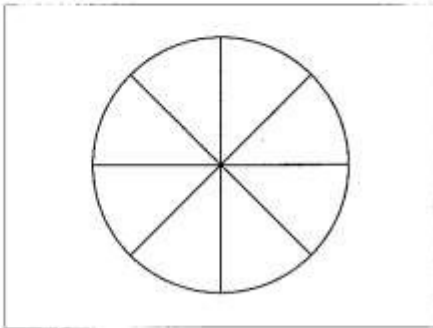
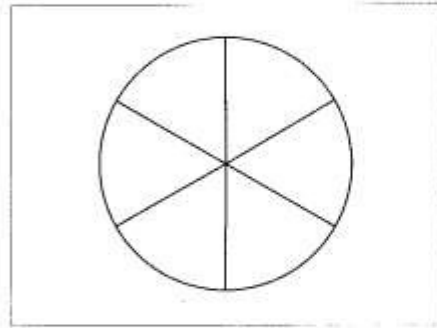
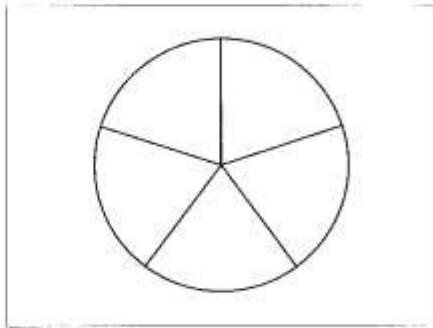
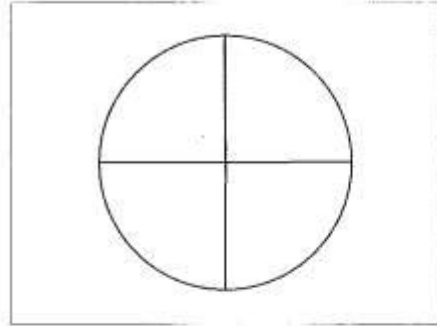
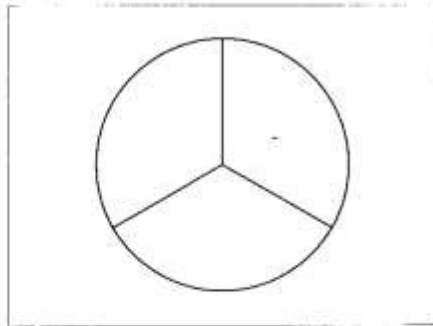
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## Allowable Memory Aid

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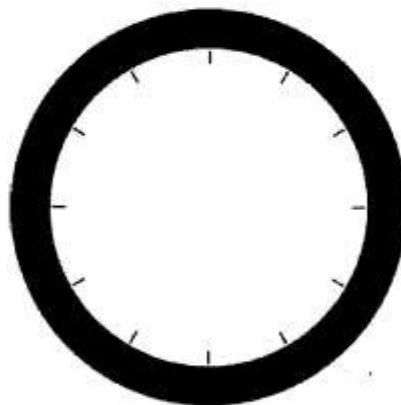

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## Allowable Memory Aid

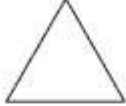
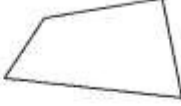




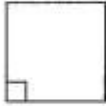

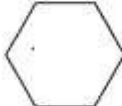

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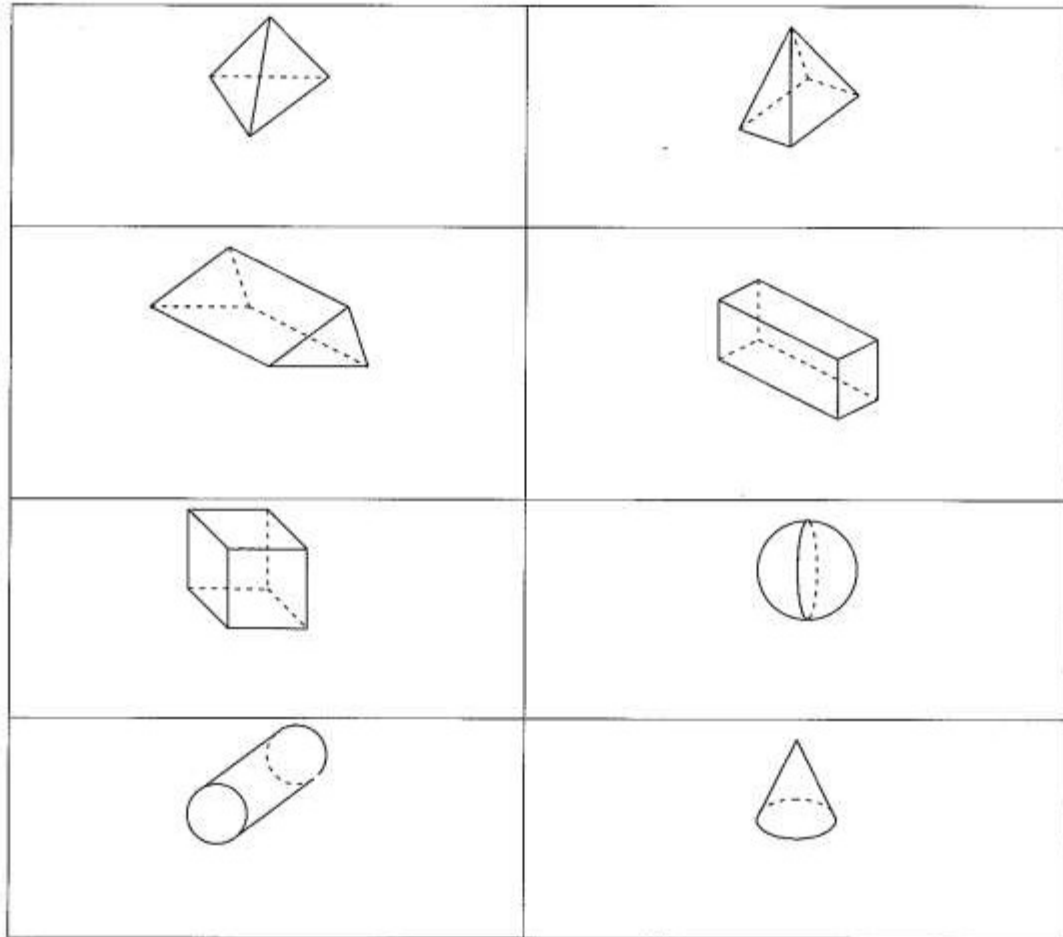
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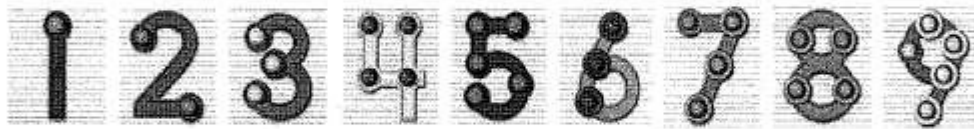
### Allowable Memory Aid

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## Allowable Memory Aid

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## **Allowable Memory Aid**

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### **WORD BANK**

HEXAGON  
OCTAGON  
PARALLELOGRAM  
PENTAGON  
QUADRILATERAL  
RECTANGLE  
RHOMBUS  
SQUARE  
TRAPEZOID  
TRIANGLE

CONE  
CUBE  
CYLINDER  
RECTANGULAR PRISM  
RECTANGULAR PYRAMID  
SPHERE  
TRIANGULAR PRISM  
TRIANGULAR PYRAMID

## **Allowable Memory Aid**

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**DMSCB**      **Does McDonalds Sell Cheese Burgers?**  
**PEMDAS**    **Please Excuse My Dear Aunt Sally**  
**BEDMAS**    **Big Elephants Destroy Mice And Snails**  
**PEDMAS**    **Pink Elephants Destroy Mice And Snails**  
**KHDmdcm**   **King Henry Died Monday Drinking Chocolate Milk**

## **Accommodation 48**

### **MATHEMATICS - NON-ALLOWABLE**

## Time

a.m. – between midnight and noon  
p.m. – between noon and midnight

midnight – 12:00 a.m.  
noon – 12:00 p.m.

1 minute = 60 seconds	1 year = 365 days
1 hour = 60 minutes	1 leap year = 366 days
1 day = 24 hours	1 decade = 10 years
1 week = 7 days	1 century = 100 years
1 year = 12 months	
1 year = 52 weeks + 1 day	

### Days in Each Month

1 <u>January</u> 31	7 <u>July</u> 31
2 <u>February</u> 28	8 <u>August</u> 31
3 <u>March</u> 31	9 <u>September</u> 30
4 <u>April</u> 30	10 <u>October</u> 31
5 <u>May</u> 31	11 <u>November</u> 30
6 <u>June</u> 30	12 <u>December</u> 31

Season	Begins	Goes through	Ends
Spring	Mar. 20, 21	April – May	June 21, 22
Summer	June 21, 22	July – August	Sept. 21, 22, 23
Fall	Sept. 21, 22, 23	Oct. – Nov.	Dec. 21, 22
Winter	Dec. 21, 22	Jan. – Feb.	Mar. 20, 21

## Number Words

1	one	11	eleven	20	twenty
2	two	12	twelve	30	thirty
3	three	13	thirteen	40	forty
4	four	14	fourteen	50	fifty
5	five	15	fifteen	60	sixty
6	six	16	sixteen	70	seventy
7	seven	17	seventeen	80	eighty
8	eight	18	eighteen	90	ninety
9	nine	19	nineteen	100	one hundred
10	ten			1000	one thousand
				1,000,000	one million
		21	twenty-one		
		31	thirty-one		
		46	forty-six		
		58	fifty-eight		
		67	sixty-seven		
		73	seventy-three		
		85	eighty-five		
		94	ninety-four		



## Addition Chart

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

## Multiplication Chart

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144
13	13	26	39	52	65	78	91	104	117	130	143	156
14	14	28	42	56	70	84	98	112	126	140	154	168

## Miscellaneous

### Odd/Even

Odd numbers: 1, 3, 5, 7, 9, ...

Even numbers: 0, 2, 4, 6, 8, ...

### Counts

1 dozen = 12 items

### Less Than/Greater Than

15 < 50    50 > 15

little < big    big > little

NONALLOWABLE

**ORDER OF OPERATION/SYMBOLS**

Do operations within parentheses.	( )
Do powers (exponents) and roots.	$^2$ $\sqrt{\quad}$
Do multiplication and division in order from left to right.	$\times \div$
Do addition and subtraction in order from left to right.	$+ -$

**OPERATIONS**

Parentheses	$()$
Powers (exponents)	$^2$
Roots	$\sqrt{\quad}$
Multiplication	$\times$
Division	$\div$
Addition	$+$
Subtraction	$-$

NON-ALLOWABLE

## COMPARISONS

$<$  Is smaller than

---

$>$  Is greater than

---

$=$  Is equal to

---

$\approx$  Approximate

---

$\leq$  Is smaller or equal to

---

$\geq$  Is greater or equal to

---

NON-ALL AVAILABLE

### FRACTIONS

$\frac{3}{5}$  - numerator

the number above the line in a fraction

5 - denominator

the number below the line in a fraction

## OPERATIONS WITH FRACTIONS

To **add** or **subtract** different fractions, first obtain a common denominator.

$$\frac{1}{3} + \frac{2}{5} = \frac{5}{15} + \frac{6}{15} = \frac{11}{15}$$

To **multiply**, multiply the numerators and multiply the denominators:

$$\frac{1}{3} \times \frac{2}{5} = \frac{1 \times 2}{3 \times 5} = \frac{2}{15}$$

To **divide**, multiply the first with the reciprocal of the second fraction:

$$\frac{2}{3} \div \frac{1}{6} = \frac{2}{3} \times \frac{6}{1} = \frac{12}{3} = 4$$



**FRACTIONS, DECIMALS, PERCENTS – common equivalents**

$$1 = 1.0 = 100\%$$

$$\frac{1}{2} = 0.5 = 50\%$$

$$\frac{1}{3} = 0.\bar{3} = 33.\bar{3}\%$$

$$\frac{1}{4} = 0.25 = 25\%$$

$$\frac{1}{5} = 0.2 = 20\%$$

$$\frac{1}{6} = 0.1\bar{6} = 16.\bar{6}\%$$

$$\frac{1}{8} = 0.125 = 12.5\%$$

$$\frac{1}{9} = 0.\bar{1} = 11.\bar{1}\%$$



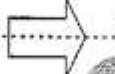
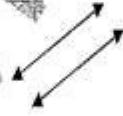

$$\frac{1}{10} = 0.1 = 10\%$$

$$\frac{1}{12} = 0.08\bar{3} = 8.\bar{3}\%$$

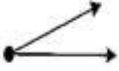




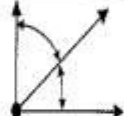
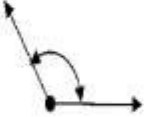

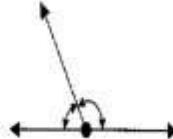
$$\frac{2}{3} = 0.\bar{6} = 66.\bar{6}\%$$

$$\frac{3}{4} = 0.75 = 75\%$$


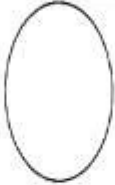
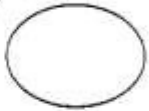




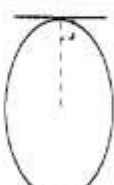
**LINES**

				
LINE	RAY	LINE OF SYMMETRY	PARALLEL LINES	LINE SEGMENT

### ANGLES


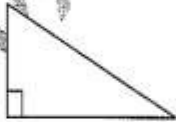

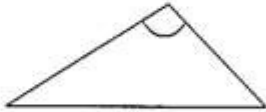


 ANGLE / VERTEX	 0 DEGREE	 90° RIGHT ANGLE
 ACUTE less than 90°	 STRAIGHT 180°	 COMPLEMENTARY add up to 90°
 OBTUSE greater than 90° less than 180°	 COMPLETE 360°	 SUPPLEMENTARY add up to 180°

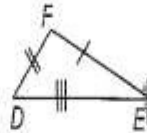
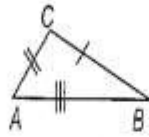
### CIRCLES

 <p>ARC</p>	 <p>CIRCLE</p>	 <p>ELLIPSE</p>		
 <p>SEMICIRCLE</p>	 <p>RADIUS</p>	 <p>DIAMETER</p>	 <p>CHORD</p>	 <p>TANGENT</p>

NON-AVAILABLE

### TRIANGLES

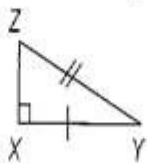
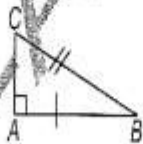
 <p>SCALENE TRIANGLE</p>	 <p>RIGHT TRIANGLE</p>
 <p>ISOSCELES TRIANGLE</p>	 <p>OBTUSE TRIANGLE</p>
 <p>EQUILATERAL TRIANGLE</p>	 <p>ACUTE TRIANGLE</p>

**CONGRUENT TRIANGLES**

$$\triangle ABC \cong \triangle DEF$$

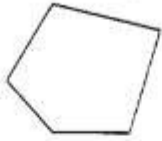
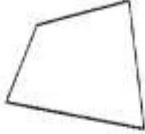








**4 CONGRUENCY CASES**

1. side, side, side SSS
2. side, angle, side SAS
3. angle, side, angle ASA
4. hypotenuse, side HyS

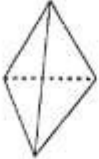
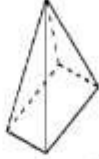
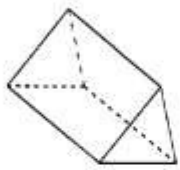


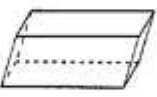






$$\triangle ABC \cong \triangle XYZ$$

**POLYGONS**

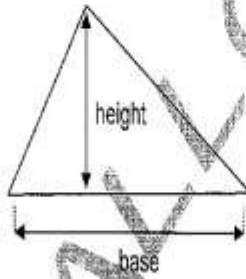
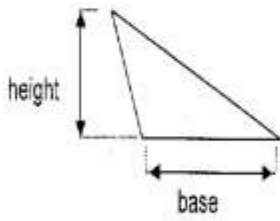
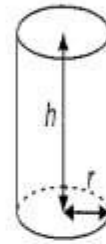
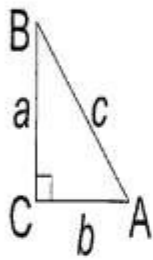
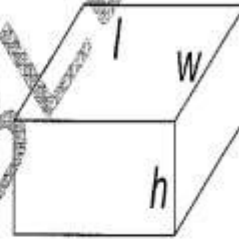
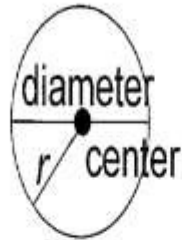
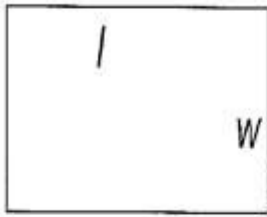
 POLYGON	 QUADRILATERAL
 TRAPEZOID	 PARALLELOGRAM
 RECTANGLE	 RHOMBUS
 SQUARE	 REGULAR PENTAGON
 REGULAR HEXAGON	 REGULAR OCTAGON

**SOLIDS**

 TRIANGULAR PYRAMID	 RECTANGULAR PYRAMID
 TRIANGULAR PRISM	 RECTANGULAR PRISM
 CUBE	 PARALLELEPIPED
 CYLINDER	 CONE
 SPHERE	 ELLIPSOID



### GEOMETRIC LABELS

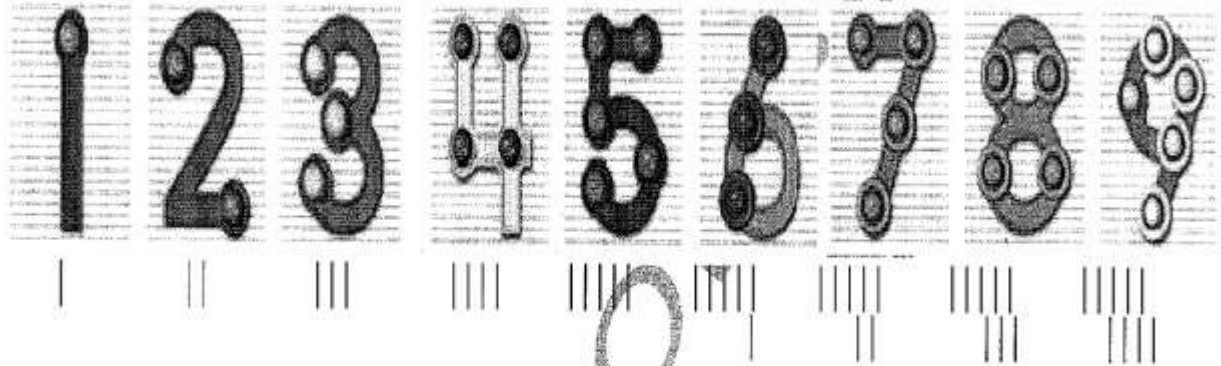


## MULTIPLICATION TABLES

$1 \times 1 = 1$	$2 \times 1 = 2$	$3 \times 1 = 3$	$4 \times 1 = 4$	$5 \times 1 = 5$	$6 \times 1 = 6$
$1 \times 2 = 2$	$2 \times 2 = 4$	$3 \times 2 = 6$	$4 \times 2 = 8$	$5 \times 2 = 10$	$6 \times 2 = 12$
$1 \times 3 = 3$	$2 \times 3 = 6$	$3 \times 3 = 9$	$4 \times 3 = 12$	$5 \times 3 = 15$	$6 \times 3 = 18$
$1 \times 4 = 4$	$2 \times 4 = 8$	$3 \times 4 = 12$	$4 \times 4 = 16$	$5 \times 4 = 20$	$6 \times 4 = 24$
$1 \times 5 = 5$	$2 \times 5 = 10$	$3 \times 5 = 15$	$4 \times 5 = 20$	$5 \times 5 = 25$	$6 \times 5 = 30$
$1 \times 6 = 6$	$2 \times 6 = 12$	$3 \times 6 = 18$	$4 \times 6 = 24$	$5 \times 6 = 30$	$6 \times 6 = 36$
$1 \times 7 = 7$	$2 \times 7 = 14$	$3 \times 7 = 21$	$4 \times 7 = 28$	$5 \times 7 = 35$	$6 \times 7 = 42$
$1 \times 8 = 8$	$2 \times 8 = 16$	$3 \times 8 = 24$	$4 \times 8 = 32$	$5 \times 8 = 40$	$6 \times 8 = 48$
$1 \times 9 = 9$	$2 \times 9 = 18$	$3 \times 9 = 27$	$4 \times 9 = 36$	$5 \times 9 = 45$	$6 \times 9 = 54$
$1 \times 10 = 10$	$2 \times 10 = 20$	$3 \times 10 = 30$	$4 \times 10 = 40$	$5 \times 10 = 50$	$6 \times 10 = 60$
$1 \times 11 = 11$	$2 \times 11 = 22$	$3 \times 11 = 33$	$4 \times 11 = 44$	$5 \times 11 = 55$	$6 \times 11 = 66$
$1 \times 12 = 12$	$2 \times 12 = 24$	$3 \times 12 = 36$	$4 \times 12 = 48$	$5 \times 12 = 60$	$6 \times 12 = 72$

$7 \times 1 = 7$	$8 \times 1 = 8$	$9 \times 1 = 9$	$10 \times 1 = 10$	$11 \times 1 = 11$	$12 \times 1 = 12$
$7 \times 2 = 14$	$8 \times 2 = 16$	$9 \times 2 = 18$	$10 \times 2 = 20$	$11 \times 2 = 22$	$12 \times 2 = 24$
$7 \times 3 = 21$	$8 \times 3 = 24$	$9 \times 3 = 27$	$10 \times 3 = 30$	$11 \times 3 = 33$	$12 \times 3 = 36$
$7 \times 4 = 28$	$8 \times 4 = 32$	$9 \times 4 = 36$	$10 \times 4 = 40$	$11 \times 4 = 44$	$12 \times 4 = 48$
$7 \times 5 = 35$	$8 \times 5 = 40$	$9 \times 5 = 45$	$10 \times 5 = 50$	$11 \times 5 = 55$	$12 \times 5 = 60$
$7 \times 6 = 42$	$8 \times 6 = 48$	$9 \times 6 = 54$	$10 \times 6 = 60$	$11 \times 6 = 66$	$12 \times 6 = 72$
$7 \times 7 = 49$	$8 \times 7 = 56$	$9 \times 7 = 63$	$10 \times 7 = 70$	$11 \times 7 = 77$	$12 \times 7 = 84$
$7 \times 8 = 56$	$8 \times 8 = 64$	$9 \times 8 = 72$	$10 \times 8 = 80$	$11 \times 8 = 88$	$12 \times 8 = 96$
$7 \times 9 = 63$	$8 \times 9 = 72$	$9 \times 9 = 81$	$10 \times 9 = 90$	$11 \times 9 = 99$	$12 \times 9 = 108$
$7 \times 10 = 70$	$8 \times 10 = 80$	$9 \times 10 = 90$	$10 \times 10 = 100$	$11 \times 10 = 110$	$12 \times 10 = 120$
$7 \times 11 = 77$	$8 \times 11 = 88$	$9 \times 11 = 99$	$10 \times 11 = 110$	$11 \times 11 = 121$	$12 \times 11 = 132$
$7 \times 12 = 84$	$8 \times 12 = 96$	$9 \times 12 = 108$	$10 \times 12 = 120$	$11 \times 12 = 132$	$12 \times 12 = 144$

# TOUCH-POINT NUMBERS

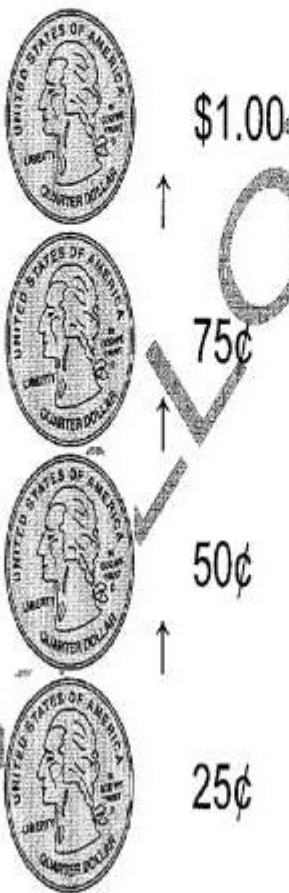


adapted from <https://www.touchmath.com/index.cfm?fuseaction=products.welcome&Cid=2&Pid=109>

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# PARTS OF A DOLLAR

Dollar  
 $100\text{¢} = \$1.00$   
1 dollar



NON-REPRODUCIBLE

## COIN REPRESENTATIONS

Penny  
1¢ = \$0.01  
1 cent



Nickel  
5¢ = \$0.05  
5 cents



Dime  
10¢ = \$0.10  
10 cents



Quarter  
25¢ = \$0.25  
25 cents



NON-ALLOWABLE

## PROPERTIES OF ADDITION AND MULTIPLICATION

Commutative property  
of addition

$$a + b = b + a$$

Commutative property  
of multiplication

$$ab = ba$$

Associative property  
of addition

$$a + (b + c) = (a + b) + c$$

Associative property  
of multiplication

$$a(bc) = (ab)c$$

Distributive property  
of multiplication over addition

$$a(b + c) = ab + ac$$

Distributive property  
of multiplication over subtraction

$$a(b - c) = ab - ac$$

**METRIC SYSTEM**

kilo	hecto	deca		deci	centi	milli
------	-------	------	--	------	-------	-------

NON-AVAILABLE

**METRIC SYSTEM CONVERSIONS**

1000	100	10	1	0.1	0.01	0.001
kilo	hecto	deca		deci	centi	milli
km	hm	dam	m	dm	cm	mm
kg	hg	dag	g	dg	cg	mg
kl	hl	dal	l	dl	cl	ml



## COMMON UNITS used with the International System

UNITS OF MEAS. ABBREV. RELATION

meter	m	length
hectare	ha	area
ton	t	mass
kilogram	kg	mass
nautical mile	M	distance (navigation)
knot	kn	speed (navigation)
liter	L	volume or Capacity
second	s	time
hertz	Hz	frequency
candela	cd	luminous intensity
degree Celsius	°C	temperature
kelvin	K	thermodynamic temperature
pascal	Pa	pressure, stress
joule	J	energy, work
newton	N	force
watt	W	power, radiant flux
ampere	A	electric current
volt	V	electric potential
ohm	$\Omega$	electric resistance
coulomb	C	electric charge

### MEASUREMENT CONVERSIONS

LENGTH / AREA			WEIGHT / CAPACITY		
to go from	to	multiply by	to go from	to	multiply by
cm	→ in	0.3937	g	→ oz	0.0353
in	→ cm	2.54	oz	→ g	28.35
m	→ ft	3.2808	kg	→ lbs	2.2046
km	→ mi	0.6214	t	→ T	1.1023
mi	→ km	1.609	T	→ t	0.9072
m <sup>2</sup>	→ ft <sup>2</sup>	10.76	ml	→ fl oz	0.0338
ft <sup>2</sup>	→ m <sup>2</sup>	0.0929	fl oz	→ ml	29.575
km <sup>2</sup>	→ mi <sup>2</sup>	0.3861	L	→ US gal	0.2642
mi <sup>2</sup>	→ km <sup>2</sup>	2.59	US gal	→ L	3.785

**METRIC SYSTEM**

$$1 \text{ m}^2 = 10,000 \text{ cm}^2$$

$$1 \text{ hectare (ha)} = 10,000 \text{ m}^2$$

$$1 \text{ km}^2 = 100 \text{ ha}$$

$$1 \text{ metric ton (t)} = 1,000 \text{ kg}$$

NON-ALLOWABLE

**ENGLISH SYSTEM**

## Length

$$1 \text{ foot (ft)} = 12 \text{ inches (in)} = 1' = 12''$$

$$1 \text{ yard (yd)} = 3 \text{ feet} = 36 \text{ inches}$$

$$1 \text{ mile (mi)} = 1,760 \text{ yards} = 5,280 \text{ feet}$$

## Liquid

$$1 \text{ tablespoon (T)} = 3 \text{ teaspoons (t)}$$

$$1 \text{ cup (c)} = 16 \text{ T} = 8 \text{ fluid ounces (fl oz)}$$

$$1 \text{ pint (pt)} = 2 \text{ c}$$

$$1 \text{ quart (qt)} = 2 \text{ pt} = 4 \text{ c} = 32 \text{ fl oz}$$

$$1 \text{ gallon (gal)} = 4 \text{ qt}$$

## Weight

$$1 \text{ pound (lb)} = 16 \text{ ounces (oz)}$$

$$1 \text{ ton (t)} = 2000 \text{ pounds}$$

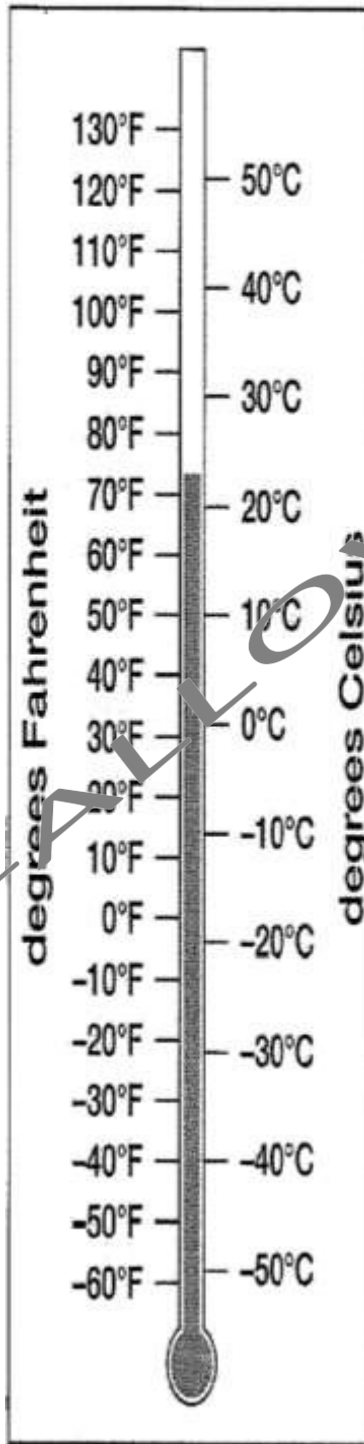
## Area

$$1 \text{ ft}^2 = 144 \text{ in}^2$$

$$1 \text{ yd}^2 = 9 \text{ ft}^2$$

$$1 \text{ acre} = 4,840 \text{ yd}^2$$

# TEMPERATURE



NON-AVAILABLE

**TEMPERATURE CONVERSIONS** $^{\circ}\text{C} \rightarrow ^{\circ}\text{F}$  $n \times 1.8; \text{ add } 32$  $^{\circ}\text{F} \rightarrow ^{\circ}\text{C}$  $n - 32; \text{ multiply by } 0.5555$ 

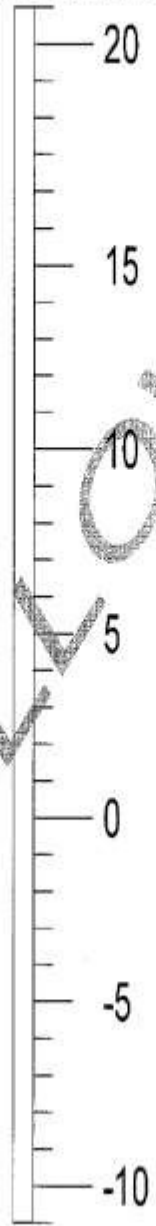
NON-AVAILABLE

TEMPERATURE



NON-ALLOWABLE

TEMPERATURE





### PLACE VALUE

hundred millions
ten millions
millions
hundred thousands
ten thousands
thousands
hundreds
tens
ones
tenths
hundredths
thousandths

NON-AVAILABLE

### COMPASS



The sun rises in the east  
and sets in the west.

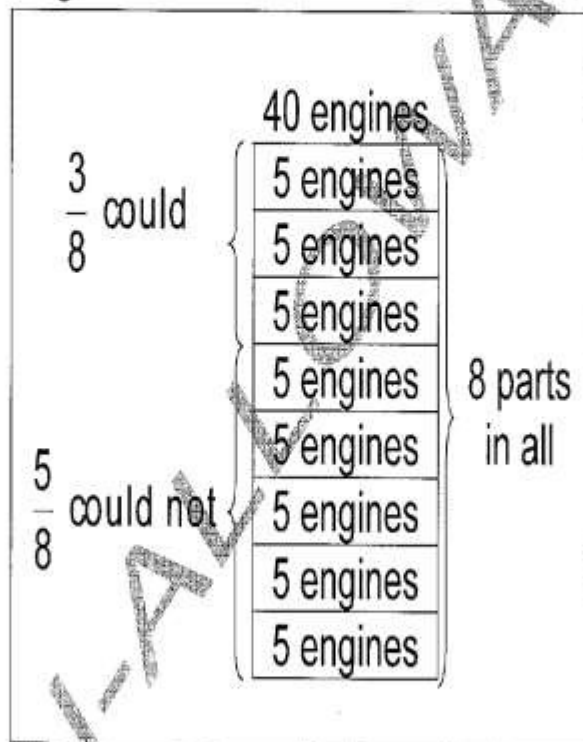
NON-AVAILABLE

NON-ALLOWABLE

### **HALF OF A NUMBER**

To find half of a number,  
divide by two.

$\frac{3}{8}$  OF THE 40 ENGINES COULD



NON-AVAILABLE

## FIND THE MISSING NUMBERS

(Word Problem Thinking Patterns: Sketch the pattern. Record the information.)

SOME, SOME MORE	Some ← If missing, subtract. <u>+ Some more</u> ← If missing, subtract. Total ← If missing, add.
SOME WENT AWAY	Some ← If missing, add. <u>- Some went away</u> ← If missing, subtract. What's left ← If missing, subtract.
LARGER, SMALLER, DIFFERENCE	Larger ← If missing, add. <u>- Smaller</u> ← If missing, subtract. Difference ← If missing, subtract.
LATER, EARLIER, DIFFERENCE	Later ← If missing, add. <u>- Earlier</u> ← If missing, subtract. Difference ← If missing, subtract.
EQUAL GROUPS	Number in each group ← If missing, divide. <u>× Number of groups</u> ← If missing, divide. How many ← If missing, multiply.

**PRIME NUMBERS**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

**DIVISIBILITY RULES**

A whole number is divisible by...

2	if the last digit is 0,2,4,6,8.	6	if the number is divisible by both 2 and 3.
3	if the sum of the digits is divisible by 3.	9	if the sum of the digits is divisible by 9.
5	if the last digit is 5 or 0.	10	if the last digit is 0.

### SYMBOLS

Addition	+	Equal	=	Percent	%
Angle	$\sphericalangle$	Greater than	>	Perpendicular	$\perp$
Arc	( )	Less than	<	Pi	$\pi$
Decimal point	.	Line segment	—	Ray	$\overrightarrow{\quad}$
Degree	$^{\circ}$	Multiplication	$\times$	Right Angle	$\text{L}$
Division	$\div$	Number	#	Set	{ }
Dollar	\$	Parallel		Subtraction	-



**NUMBERS**

<b>Prime Number:</b>	A whole number which has only two factors, itself and 1.	Examples: 2, 3, 7, 11, 13, 17.
<b>Common Factor:</b>	A number that is a factor of two or more numbers.	Examples: 1, 2, and 4 are common factors of 12 and 16.
<b>Greatest Common Factor:</b>	The greatest number that is a factor of two or more numbers	Example: 4 is the greatest common factor of 12 and 16.
<b>Least Common Multiple:</b>	The smallest number that is a multiple of two or more numbers.	Example: 12 is the least common multiple of 2, 3, 4, and 6.

**METRIC SYSTEM**

Length	1 centimeter (cm)	= 10 millimeters (mm)
	1 decimeter (dm)	= 100 millimeters
	1 decimeter	= 10 centimeters
	1 meter (m)	= 1000 millimeters
	1 meter	= 100 centimeters
	1 meter	= 10 decimeters
	1 decameter (dkm)	= 10 meters
	1 kilometer (km)	= 1000 meters
	Liquid	1 liter (L)
Weight	1 gram (g)	= 1000 milligrams (mg)
	1 kilogram (kg)	= 1000 grams

**ROMAN NUMERALS**

I	=	1
V	=	5
X	=	10
L	=	50
C	=	100
D	=	500
M	=	1000

NON-AVAILABLE

### CONVERSIONS

Small to Large	Multiply
Large to Small	Divide

### COMMON SQUARES AND SQUARE ROOTS

$n$	$n^2$	$\sqrt{n}$	$n$	$n^2$	$\sqrt{n}$
1	1	1	15	225	3.873
2	4	1.414			
3	9	1.732	20	400	4.472
4	16	2			
5	25	2.236	25	625	5
6	36	2.449			
7	49	2.646	100	10000	10
8	64	2.828			
9	81	3	1/2	1/4	0.707
10	100	3.162	1/4	1/16	1/2
11	121	3.317			
12	144	3.464			

**PROBLEM SOLVING STEPS**

1	UNDERSTAND & EXPLORE	First things first: find out what the real problem is.
2	GUESS & CHECK	Make a reasonable guess and check it out; try again if necessary.
3	SOLVE THE PROBLEM	Sort out all the information, draw a picture, graph or table, and write it out in math. Sometimes it may help to work backward!
4	CHECK YOUR ANSWER	Think logically... does your solution make sense? Try it out if you can.

$$a(b+c) = ab + ac$$

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

### EXPANDING

$$(a+b)(c+d) = ac + ad + bc + bd$$

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

### FACTORING

$$a^2 - b^2 = (a+b)(a-b)$$

$$a^2 + 2ab + b^2 = (a+b)^2$$

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

$$a^3 - ab = ab(a^2 - 1) = ab(a+1)(a-1)$$

$$a^2 - 2ab + b^2 = (a-b)^2$$

$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

**QUADRATIC FORMULA**

The solution for a quadratic equation

$$ax^2+bx+c=0$$

is given by the

quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$



## PROPERTIES OF EXPONENTS

If  $a, b \in \mathbb{R}$ ,  $a, b \geq 0$ , and  $p, q, r, s \in \mathbb{Q}$ , then:

$1 \quad a^r a^s = a^{r+s}$	$\left. \begin{array}{l} \\ \\ \end{array} \right\} \frac{a^p a^q}{a^r} = a^{p+q-r}$	$5 \quad \left(\frac{a}{b}\right)^r = \frac{a^r}{b^r} \quad (b \neq 0)$
$2 \quad \frac{a^r}{a^s} = a^{r-s}$		$6 \quad a^0 = 1 \quad (a \neq 0)$
$3 \quad (a^r)^s = a^{rs}$	$7 \quad a^{-r} = \frac{1}{a^r} \quad (a \neq 0)$	
$4 \quad (ab)^r = a^r b^r$	$8 \quad a^{\frac{r}{s}} = \sqrt[s]{a^r} \quad a^{\frac{1}{2}} = \sqrt{a} \quad a^{\frac{1}{3}} = \sqrt[3]{a}$	

### PROPERTIES OF LOGARITHMS

$\log(xy) = \log x + \log y$	$\log\left(\frac{x}{y}\right) = \log x - \log y$
$\log y^r = r \log x$	
$\log x = n \leftrightarrow x = 10^n$ (common log)	$\pi \approx 3.14159265$
$\log_a x = n \leftrightarrow x = a^n$ (log to the base a)	$e \approx 2.71828183$
$\ln x = n \leftrightarrow x = e^n$ (natural log)	

Source: MS Code §37-1-3, 20 U.S. Code §1400