

Lake Shore Public Schools  
28850 Harper  
St. Clair Shores, MI 48081

**A  
PARENT'S GUIDE  
TO  
MATHEMATICS/ENGLISH LANGUAGE ARTS  
GRADE LEVEL CONTENT EXPECTATIONS**

**WHAT YOUR CHILD NEEDS  
TO KNOW BY THE END OF**

**F I F T H   G R A D E**

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## Welcome to Our School

This school year promises to be an exciting time for your child, filled with learning, discovery, and growth. It is also a time to share a new guide the Michigan Department of Education has developed for you, outlining the types of literacy and mathematics skills students should know and be able to do at the end of each grade.

Please feel free to share this guide with your family and friends. Use it when you talk with your child's teacher. Ask what *you* can do to support learning in the classroom and reinforce learning at home. You can find more ideas and tools to help you stay involved in your child's education at [www.michigan.gov/mde](http://www.michigan.gov/mde).

We value and share your commitment to your child's education. We look forward to working together to help your child achieve and succeed.

Elementary Principals

George Lewis, Masonic Heights Elementary  
Martha Kliebert, James Rodgers Elementary  
Elizabeth Netschke, Violet Elementary

# A Parent Guide to Grade Level Content Expectations

## *Michigan Sets High Academic Standards –for ALL*

This booklet is a part of Michigan’s Mathematics and English Language Arts Grade Level Content Expectations (GLCE). It is just one in a series of tools available for schools and families. The Michigan Department of Education (MDE) provides similar booklets for families of children in grades K-5.

Teacher versions of the Grade Level Content Expectations are finished for grades kindergarten through fifth. They state in clear and measurable terms what students in each grade are expected to know and be able to do. They also guide the design of the state’s grade level MEAP tests required in the No Child Left Behind Act (NCLB) legislation.

Educators and classroom teachers from Michigan school districts have been involved in the development and/or review of Michigan’s GLCE. The expectations were designed to ensure that students receive seamless instruction, from one grade to the next, leaving no gaps in any child’s education. More importantly, they set high expectations in literacy and mathematics so we can better prepare all K-12 students for the challenges they will face in a global 21<sup>st</sup> century.

To learn more about the Michigan Curriculum Framework, visit [www.michigan.gov/mde](http://www.michigan.gov/mde) and click on “**K-12 Curriculum.**”

**FIFTH GRADE MATHEMATICS** is the science of patterns and relationships. It is the language and logic of our technological world. Mathematical power is the ability to explore, to imagine, to reason logically and to use a variety of mathematical methods to solve problems—all important tools for children's futures. A mathematically powerful person should be able to:

- reason mathematically
- communicate mathematically
- solve problems using mathematics
- make connections within mathematics and between mathematics and other fields



Michigan's **Mathematics Grade Level Content Expectations** (GLCE) are organized into five strands:

- Number and Operations
- Algebra
- Geometry
- Measurement
- Data and Probability

In the fifth grade, emphasis within the number area shifts to understanding of the addition and subtraction of fractions, with continued consolidation of multiplication and division concepts and skills with whole numbers. The idea of remainders in whole number division is addressed. Students learn the meaning of a fraction as the result of a division problem, and learn to work with decimals and percentages. In geometry and measurement, there is emphasis on the meaning and measurement of angles, and on solving problems involving areas and angles. Work in number using exponents and factors begin to lead to algebraic ideas that will be more visible in grade six.

### **Glossary Terms**

Words that have asterisks (\*) are defined in the Glossary located at the end of the math section.

# NUMBER AND OPERATIONS

## Understand Division of Whole Numbers

- Understand the meaning of division of whole numbers, with and without remainders.
- Relate division to fractions.

Example:

$$1 \div 2 = \frac{1}{2}$$

Relate division to repeated subtraction:

Example:

$24 \div 8 = 3$  means three 8's can be taken out of

24 with nothing left over:  $24 - \underline{8} - \underline{8} - \underline{8} = 0$ .

Example:

$26 \div 8 = 3 \text{ r } 2$  means three 8's can be taken out of

26 with 2 left over:  $26 - \underline{8} - \underline{8} - \underline{8} = 2$

Relate division of whole numbers with remainders to the form  $a = bq + r$

Example:

$$34 \div 5 = 6 \text{ r } 4 \quad \text{so } 5 \times 6 + 4 = 34$$

- Write mathematical statements involving division for given situations.

Example:

How many photo pages would you need for 48 pictures

if 6 pictures fit on a page?

$$48 \div 6 = 8 \text{ photo pages}$$

## Multiply and Divide Whole Numbers

- Multiply a multi-digit number by a two-digit number; be able to see and explain common errors in computing the answer, like not accounting for place value.

Example:

	536		536
(correct)	$\begin{array}{r} \times 12 \\ 1072 \\ +5360 \\ \hline 6432 \end{array}$	(error)	$\begin{array}{r} \times 12 \\ 1072 \\ +536 \\ \hline 1608 \end{array}$

## Multiply and Divide Whole Numbers, continued

- Solve applied problems involving multiplication and division of whole numbers.

Divide fluently up to a 4 digit number by a 2 digit number. *5th grade students are expected to have developed a 'toolkit' of strategies that they can use to divide efficiently and accurately, including mental math skills and algorithms\*.  $2000 \div 50$  can easily be solved using number sense, i.e.  $20 \div 5 = 4$  so  $2000 \div 50 = 40$ . However more complex problems, for example,  $4260 \div 12$ , require more sophisticated approaches, including the traditional algorithm or variations thereof, such as the partial products algorithm:*

$$\begin{array}{r} 12 \overline{)4260} \\ \underline{3600} \phantom{00} \\ 300 \phantom{00} \end{array} \quad 300 \text{ (} 12 \times 300 = 3600 \text{)}$$

$$\begin{array}{r}
 660 \\
 \underline{600} \quad 50 \text{ (12 x 50 = 600)} \\
 60 \\
 \underline{60} \quad 5 \text{ (12 x 5 = 60)} \\
 0 \quad 355
 \end{array}$$

Whatever method students use, it needs to make sense to them so they're able to complete the computation quickly and accurately.

### **Find Prime Factorization of Whole Numbers**

Find the prime factorization of numbers from 2 to 50, express it in exponential notations, e.g.,  $24 = 2^3 \times 3^1$ , and understand that every whole number greater than 1 is either prime or can be expressed as a product of primes.

### **Understand the Meaning of Decimal Fractions and Percentages**

Understand the relative magnitude of ones, tenths, and hundredths and the relationship of each place value to the place to its right.

Example:

1 is 10 tenths, one tenth is 10 hundredths

Understand percentages as parts out of 100, use % notation, and express a part of a whole as a percentage.

### **Understand fractions as division statements; find equivalent fractions.**

Understand a fraction as a statement of division, e.g.,  $2 \div 3 = \frac{2}{3}$ , using simple fractions and pictures to represent.

Given two fractions, e.g.,  $\frac{1}{2}$  and  $\frac{1}{4}$ , express them as fractions with a common denominator, but not necessarily a least common denominator, e.g.,  $\frac{1}{2} = \frac{4}{8}$  and  $\frac{3}{4} = \frac{6}{8}$ ; use denominators less than 12 or factors of 100.\*

### **Multiply and divide fractions.**

Find the product of two unit fractions with small denominators using an area model.\*

Divide a fraction by a whole number and a whole number by a fraction, using simple unit fractions.

### **Add and subtract fractions using common denominators.**

Add and subtract fractions with unlike denominators through 12 and/or 100, using the common denominator that is the product of the denominators of the 2 fractions, e.g.,  $\frac{3}{8} + \frac{7}{10}$  : use 80 as the common denominator.\*

### **Multiply and divide by powers of ten**

Multiply a whole number by powers of 10: 0.01, 0.1, 1, 10, 100, 1,000; and identify patterns.

Divide numbers by 10's, 100's, 1,000's using mental strategies.

Multiply one-digit and two-digit whole numbers by decimals up to two decimal places.

## Solve applied problems with fractions

- Given an applied situation involving addition and subtraction of fractions, write mathematical statements describing the situation.

Example:

Joe ate  $\frac{3}{8}$  of a pie and Mary ate  $\frac{2}{8}$  of the pie. How much did they eat altogether?

$$\text{Statement: } \frac{3}{8} + \frac{2}{8} = \frac{5}{8}$$

Example:

How much more pie did Joe eat than Mary?

$$\text{Statement: } \frac{3}{8} - \frac{2}{8} = \frac{1}{8}$$

- Solve applied problems involving fractions and decimals; include rounding of answers and checking reasonableness

Example:

Mary has \$6.00. Does she have enough to buy a can of pop for \$0.75, a bag of chips for \$1.25, and 1 large chocolate bar for \$2.75? [round \$0.75 to \$1.00, \$1.25 to \$1.00, and \$2.75 to \$3.00]

$$1 + 1 + 3 = 5$$

Mary should have enough to buy the items.

## Express, interpret, and use ratios\*; find equivalences

- Express fractions and decimals as percentages and vice versa.

Example:

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

- Express ratios\* in several ways given applied situations

Example:

3 pizzas for 5 people, 3:5, 3/5;

- Recognize and find equivalent ratios.

## MEASUREMENT

### Know and convert among measurement units within a given system

- Know the units of measure of volume: cubic centimeter, cubic meter, cubic inches, cubic feet, cubic yards, and use their abbreviations correctly ( $\text{cm}^3$ ,  $\text{m}^3$ ,  $\text{in}^3$ ,  $\text{ft}^3$ ,  $\text{yd}^3$ ).
- Compare the relative sizes of one cubic inch to one cubic foot, and one cubic centimeter to one cubic meter.
- Convert measurements of length, weight, area, volume, and time within a given system using easily manipulated numbers.

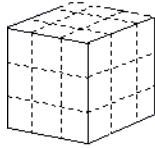
Example:

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



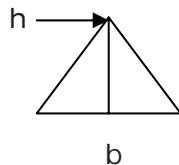
## Understand the concept of volume

- ❑ Build solids with unit cubes and state their volumes.
- ❑ Use filling (unit cubes or liquid), and counting or measuring to find the volume of a cube and rectangular prism.

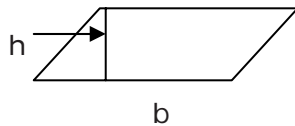


## Find areas of geometric shapes using formulas

- ❑ Show the relationships between areas of rectangles, triangles, and parallelograms using models.
- ❑ Understand and know how to use the area formula of a triangle:  $A = \frac{1}{2}bh$  (where  $b$  is length of the base and  $h$  is the height), and represent using models and manipulatives.



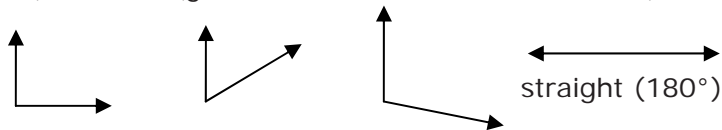
- ❑ Understand and know how to use the area formula for a parallelogram:  $A = bh$ , and represent using models and manipulatives.



## GEOMETRY

### Know the meaning of angles, and solve problems

- ❑ Associate an angle with a certain amount of turning; know that angles are measured in degrees. Understand that  $90^\circ = \frac{1}{4}$  of a turn,  $180^\circ = \frac{1}{2}$  of a turn,  $270^\circ = \frac{3}{4}$  of a turn, and  $360^\circ =$  a full turn.
- ❑ Measure angles with a protractor\*, and classify them as **acute** (less than  $90^\circ$ ), **right** (equal to  $90^\circ$ ), **obtuse** (greater than  $90^\circ$  but less than  $180^\circ$ ), or **straight** (equal to  $180^\circ$ ).



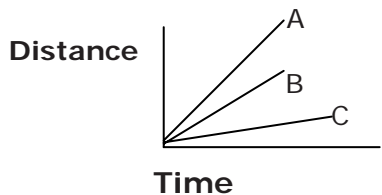
right ( $90^\circ$ )   acute (less than  $90^\circ$ )   obtuse (greater than  $90^\circ$ )

- ❑ Know that angles on a straight line add up to  $180^\circ$  and angles surrounding a point add up to  $360^\circ$ .
- ❑ Understand why the sum of the interior angles of a triangle is  $180^\circ$  and the sum of the interior angles of a quadrilateral is  $360^\circ$ , and use these properties to solve problems.

# DATA AND PROBABILITY

## Construct and interpret line graphs

- Read and interpret line graphs, and solve problems, such as distance-time graphs, and problems with two or three line graphs on same axes\*, comparing different data.



The above graph represents 3 bike rides by 3 different riders. Which rider rode the fastest? Who rode more miles B or C? Which biker spent more time riding their bike?

- Construct line graphs from tables of data; include axis labels and scale\*.

## Find and interpret mean and mode for a given set of data

- Given a set of data, find and interpret the mean\* (using the concept of fair share) and mode\*.

Example:

5 people each have a handful of candy. These numbers represent the amount of candies they each have:

5, 8, 10, 5, & 7. If they put these candies into a bowl and then divided them evenly among all 5 people, what is the mean number of candies? # of candies in bowl = 35 so each person would receive 5 candies (mean = 5).

## \* GLOSSARY TERMS

- **algorithm** – A specific step-by-step procedure for any mathematical operation
- **axes (of a graph)** – the two zero lines of a graph that give the coordinates of points (the horizontal axis is the x-axis, and the vertical axis is the y-axis)
- **common denominator** – a common multiple of two or more denominators
- **composite number** – a number greater than 0 that has more than two different factors – not a prime number
- **denominator** – the bottom number of a fraction
- **divisor** – the number a number is divided by, example:  $12 \div 4 = 3$  – the divisor of 12 is 4.
- **equivalent fractions** – fractions that name the same value
- **exponent** – a superscript that tells how many times another number is used as a factor, example:  $2^3$  – the 3 means  $2 \times 2 \times 2$
- **factor** – numbers multiplied together to produce another number (a) are said to be factors of (a). 2 factors of 12 are 3 and 4. Other factors of 12 are 1, 12, 2 and 6.



- **least common denominator** – the smallest nonzero whole number that is a multiple of each denominator in a group of fractions, example: the lowest common denominator of  $\frac{1}{2}$  and  $\frac{7}{12}$  is 12.
- **mean** – a number found by adding a set of numbers and dividing the sum of these numbers by the how many numbers were added (often referred to as average)
- **mode** – the number that occurs most often in a set of numbers
- **multiple** – A number that may be divided by another number with no remainder: *4, 6, and 12 are multiples of 2.*
- **multiplier** – the number a number is multiplied by, example:  $3 \times 4$  – the multiplier of 3 is 4.
- **numerator** – the top number of a fraction
- **power of 10** – how many times 10 is multiplied and indicated with exponents. Example: 10 to the 3<sup>rd</sup> power is written as  $10^3$  and means  $10 \times 10 \times 10 = 1000$  – note there are 3 zeroes.
- **prime factorization** – a composite number written as a product of its prime factors. The prime factorization of 12 is  $2 \times 2 \times 3$  or  $2^2 \times 3$ .
- **prime number** – a whole number greater than 0 that has exactly 2 different factors, 1 and itself
- **protractor** – instrument for measuring angles
- **ratios** – a comparison of 2 numbers
- **relative magnitude** – value of numbers with respect to some starting point, zero, or another number
- **scale (on a graph)** – the numbers along the axes of a graph
- **unit fraction** – a fraction with 1 in the numerator
- **vertex (pl. vertices)** – the point at which two line segments, lines, or rays meet to form an angle

### Ways to Encourage Your Child...

**You are doing a terrific job!**

**This is correct!**

**You are catching on quickly!**

**I am very proud of you!**

**You are making great progress!**

***Fifth Grade English Language Arts*** (ELA) is more than just reading and writing. It includes skills like speaking, listening, and viewing as well. ELA offers us a way to communicate. Through ELA, your child can apply what s/he learns to solve real problems at home, at school and in the community.



## **Glossary Terms**

Words that have asterisks (\*) are defined in the Glossary located at the end of this section.

By the end of fifth grade, your child should know and be able to do the following:

## **READING**

### **Word Study**

- Easily recognize and know the meanings of fifth grade level words.
- Identify and understand unknown words by using reading strategies such as:
  - analyzing words and their parts; using base words, prefixes and suffixes, syllables.
  - re-reading entire phrases or sentences for clues.
- Fluently\* read beginning grade level text and more difficult texts as the year progresses.
- Be able to use glossaries and other resources to figure out the meaning of unknown words and symbols.

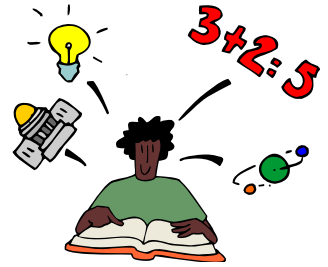
### **Narrative Text (Fiction)**

- Analyze the kinds of narrative genre, such as tall tales\*, historical fiction\*, and fantasy\*.
- Analyze a character's personality and the reason for their actions. Is the character the hero, villain, or narrator?
- Analyze how characters and communities represent life in good literature.



## Informational Text (Non-Fiction)

- Analyze non-fiction texts, such as advertisements, editorials, and atlases.
- Explain how authors help readers understand by using pictures, charts, graphs, tables of contents, summaries, and conclusions.
- Recognize informational text patterns such as compare/contrast and problem/solution.



## Comprehension

- Uses own experiences to help understand new ideas and connect to ideas in texts.
- Retell and summarize the main idea(s) and details for fiction and non-fiction texts at a fifth grade level.
- Remember and use what has been read from other subject areas, such as science and social studies.

## Metacognition\*

- Know when she/he does or does not understand while reading, writing and listening.
- Use strategies to improve comprehension, such as:
  - predicting what will happen next.
  - asking questions before, during, and after reading.
  - summarizing the text.
  - rereading the text.
  - making a mental picture of what the text is about.



## Critical Standards\*

- Discuss and use standards to measure the quality of their own work and the work of others.

## Reading Attitude

- Be excited about reading and learning how to read.
- Choose to read and write on his/her own during free time in school and at home.

# WRITING



## Writing Genre\*

- Write narratives such as mysteries, tall tales or historical fiction that includes characters, setting, problems/solution, and a sequence of events.
- Write poetry based on reading a variety of grade level poetry.
- Write a position paper where the opinion is stated and supported with evidence.
- Produce and present a research project with help from the teacher. The steps should include using the writing process.

## Writing Process

- Think about the audience and purpose for writing.
- Think of ideas for writing; include characters, setting and sequence. Develop relationships, comparing and contrasting elements.
- Read a partner's writing and give advice for helping them create a better piece of writing.
- Proofread their own writing using grade level checklists.



## Personal Style

- Develop individual style to add to written messages. Example: Use humor, express feelings, use details and show examples.

## Grammar and Usage

- Write with complete sentences using nouns, pronouns, articles, conjunctions, hyphens, commas and colons.

## Spelling

- Correctly spell grade level words seen often by fifth graders.
- Sound out words, use word lists given by the teacher, use dictionaries or spell checkers to figure out how to spell more words.

## Handwriting

- Write neatly in cursive.



## Writing Attitude

- Be excited about writing and learning how to become better writers.

## SPEAKING

### Conventions\*

- Use difficult verbs correctly, such as sit/sat, lie/lay, rise/raise.
- Use language to communicate with all kinds of people for all kinds of reasons (research, explanation, persuasion).
- Use more than one volume and pace of talking to make speech more interesting.
- Make presentations using Standard English\*, or their version of Standard English if they are in the process of learning English.



### Spoken Discourse\*

Speaking loudly and clearly in complete sentences, your child will...



- Plan and deliver persuasive presentations or reports that express the point they want to make and support the point with evidence or examples.
- Participate in small group conversations about books or schoolwork.
- Discuss literature with classmates, studying the characters, setting and plot.

## LISTENING AND VIEWING

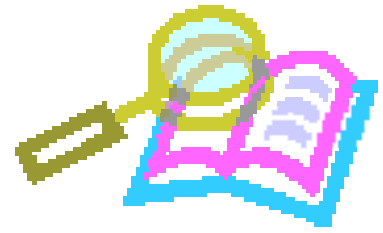
### Response

- Listen to or view and discuss a variety of genre\*; fairy tales, poetry, persuasive talks, and mysteries.
- Use speaking, illustrating, and/or writing to understand texts better.
- Go beyond the information given by a speaker to draw conclusions.



## GLOSSARY TERMS \*

- **conventions** - the rules about how words and language work when speaking or writing
- **critical standards** - the high level of quality students must be able to recognize, to determine if their work will meet expectations
- **fantasy** - a type of story that uses imagination to do impossible things, like talking animals
- **fluently** - being able to read or write accurately and quickly
- **genre** - a category used to describe different kinds of texts, such as poetry, fantasy, and mystery.
- **historical fiction** - created stories that are based on an historical event, person or time period
- **metacognition** - the process of thinking about one's own thinking. Example: Being able to monitor when they do or do not understand what is being read.
- **spoken discourse** - to participate in conversation or discussion
- **Standard English** - the form of English widely accepted as being clear and understood
- **tall tales** - a type of story filled with exaggeration and humor, like Paul Bunyan



**Ways to encourage your child...**  
**Spectacular job!**  
**You sound and appear so confident!**  
**Now you've got it!**  
**I'm proud of you!**