Contact:

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A
Parent's Guide
to
MATHEMATICS
GRADE LEVEL CONTENT EXPECTATIONS

WHAT YOUR CHILD NEEDS
TO KNOW BY THE END OF

SECOND GRADE

MICHIGAN
Department of
Education
Office of School Improvement
www.michigan.gov/mde

Notes

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. *A Parent's Guide to Grade Level Content Expectations* outlines 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.

Your school principal (customize)

A Parent's Guide to the 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 kindergarten, first and second grade.

Teacher versions of the Grade Level Content Expectations are finished for grades Kindergarten through eight. 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 21st century.

To learn more about the Michigan Curriculum Framework, visit www.michigan.gov/mde and click on **"K-12 Curriculum."**

Notes

Glossary Terms

area - the amount of space inside a two dimensional shape determined by learning how much is needed to cover the space

data analysis and statistics - interpret information and see relationships by using tables, graphs and charts

fluently - the ability to calculate numbers with ease and accuracy

geometry - the area of mathematics that involves shape, size, space, position, direction and movement. It describes and classifies the physical world in which we live.

measurement - finding the length, height and weight of an object using units like inches, feet, meters, centimeters and pounds. Time is measured using hours, minutes and seconds.

perimeter - the distance around a two-dimensional shape found by adding together the measured length of all the sides of the shape

pictographs - a graph constructed with pictures or icons

Questions to ask my child's teacher…

_____

_____

_____

_____

_____

Ways to Praise Your Child
I'm so proud of you.
I knew you could do it!
You are really improving.
You're doing much better today.

Second Grade Mathematics

Second 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 <u>five</u> strands:
- Number and Operations
- Algebra
- Geometry
- Measurement
- Data and Probability

In the second grade, children continue with more sophisticated work in **addition** and **subtraction** of whole numbers, and begin to understand multiplication and division when used in story and with concrete objects. Simple ideas about fractions are introduced. In geometry, children continue to learn about shapes and their parts.

Glossary Terms
Words that have asterisks (*) are defined in the Glossary located in the back of this booklet.

NUMBER AND OPERATIONS

❑ Count, write, and order whole numbers.
❑ Count to 1,000 by 1s, 10s and 100s starting from any number in the sequence.
❑ Read and write numbers to 1,000 in numerals and words, and match them to the quantities they stand for.
❑ Compare and order numbers to 1,000; use the symbols > and <
❑ Count orally by 3s and 4s starting with 0, and by 2s, 5s and 10's starting from any number.

Understand Place Value

❑ Write numbers up to 1,000 using place value.
Example: 137 = 1 hundred, 3 tens and 7 ones; use concrete materials such as bundled straws.

Add and Subtract Whole Numbers

❑ Break 100 into parts.
Example: 100 = 99 + 1   100 = 98 + 2
❑ Find the distance between numbers on the number line.
Example: How far is 79 from 26?
❑ Find missing values in open sentences.
Example: 42+ ____= 57
❑ Use relationships between addition and subtraction.
Example: 6+5=11 and 5+6= 11; 11-5=6 and 11-6=5
❑ Add and subtract numbers up to 2-digits when given a situation that involves numbers. Be able to solve and explain problems using objects, pictures and/or numbers.

GEOMETRY, continued

❑ Recognize that shapes, even when they are turned around or flipped over, are the same shape. For example:

❑ Create and describe patterns involving geometric objects.
❑ Find and name locations using maps and grids.

Data and Probability

Data Analysis and Statistics (*)

Use Pictographs   (*)

❑ Make pictographs in which the pictograph stands for more than one object. Example:
☺ stands for 2   or   ☺ stands for 3 people
❑ Read and interpret pictographs where the pictographs stand for 2 or 3 objects or people.
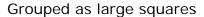Example: How many cookies did each child bake?

Each ☺ = 2

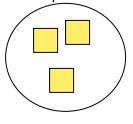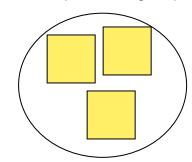| James	☺ ☺ ☺ ☺
Kylia	☺ ☺
Bob	☺ ☺ ☺ ☺ ☺

GEOMETRY, continued

❏ Tell the difference between curves and straight lines and between curved surfaces and flat surfaces
❏ Classify flat and solid objects.
  Example: Using any of the following shapes such as, square, rectangle, rhombus, cube, pyramid, prism, cone, cylinder, and sphere; place into a group by common traits such as shape size, color, roundness, and be able to tell which trait had been used to group (classify) the objects.

Grouped as small squares   Grouped as large squares

Ask why these shapes do not belong in the groups above.

Ways to Praise Your Child
Wonderful!
I'm happy to see you working so hard.
You made my day.
That's the way to do it!
You're learning fast.

Add and Subtract Whole Numbers, continued

❏ Add fluently* two numbers with up to two digits each; subtract fluently two numbers with up to two digits each.
❏ Estimate and calculate the sum of two numbers with three digits that do not require regrouping (carrying). Example: 123 + 234 =
❏ Add and subtract "in his/her head" (mental math). Examples:

  o three digit numbers and ones;   (123 +3 =)
  o three digit numbers and tens,   (563 +20 =)
  o three digit numbers and hundreds (123 +700 =)

Understand the Meaning of Multiplication and Division

❏ Understand that multiplication is like counting objects in sets of equal groups.
  Example: 3 x 5 = 15 means adding 3 sets with 5 objects in each set or 5 +5 + 5 = 15

❏ Represent multiplication using area and array models.
  Example: x x x   stands for 2 x 3 = 6
                x x x
❏ Understand the relationship between multiplication and division. Example: 2 x 3 = 6 can be rewritten as 6 2 = 3.
❏ Solve and explain multiplication and division problems using objects, pictures and/or numbers.
❏ Know the "times table" up to 5 x 5.

Work with Fractions

❏ Recognize, name and show commonly used fractions through 1/12.
❏ Show 1/2, 1/3 and 1/4 by folding paper.
❏ Place 0 and halves on the number line. Example:

  ← 0   ½   1   1½   2   2½   3   3½ →

Fractions, continued

❑ Compare fractions from 1/12 to ½.
❑ Recognize that fractions such as 2/2, 3/3, 4/4 are equal to one whole.

MEASUREMENT

❑ Measure lengths in meters, centimeters, inches, feet and yards using abbreviations: cm, m, in, ft, yd. Compare lengths; add and subtract lengths.
❑ Draw rectangles and triangles and add the length of all the sides of the shape to get the perimeter*.
❑ Know what perimeter means.

Understand the Concept of Area*

❑ Measure area using non-standard units to the nearest whole unit.
   Example: How many blocks will it take to cover the bottom a shoebox?

Tell Time and Solve Time Problems

❑ Using both a.m. and p.m., tell and write time from the clock face in five-minute intervals and from digital clocks to the minute.
❑ Read time such as 9:15, as nine-fifteen and 9:50, as nine-fifty.
❑ Read time both as minutes after the hour and minutes before the next hour (five minutes after nine, five minutes to nine).
❑ Show times by drawing hands on a clock face.
❑ Use the concept of time duration.
   Example: Figure out what time will it be half an hour from 1:15.

Record, Add and Subtract Money

❑ Read and write amounts of money using decimal notations.
   Example: $1.15
❑ Add and subtract money in mixed units.
   Example: $2.50 + .30 = $2.80

Read Thermometers

Read temperature in degrees Fahrenheit (F).

GEOMETRY*

❑ Name, describe and compare two-dimensional shapes such as triangles, rectangles, squares, and circles.
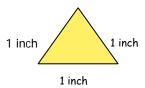❑ Name, describe and compare three-dimensional shapes such as cones, cubes, cylinders, and rectangles.
❑ Predict the results of putting together and taking apart two-dimensional and three-dimensional shapes.
   Example: What shape would you have if you put together these two triangles?

❑ Draw rectangles and triangles, and add the lengths of each side of a shape together to get the perimeter.
   Example:

1 inch   1 inch

1 inch

1 + 1+ 1 = 3 inches