Tips and Activities for Parents

- Play card and board games with your child.
- Search through newspapers and magazines for lists, tables and graphs containing numerical information. Together, study the graph and discuss what information is being given and points are being made.
- Create a set of cards to help your child practice basic division. For example, write a "fact" such as 35 ÷ 7 on one side of the card. On the other side draw a picture of 35 circles using 7 rows of circles with 5 circles in each row. Circle each row to show 7 groups of 5. Under the drawing write 5.

Internet Resources for Fifth Grade Math

Math games to help your children learn math faster and retain their math knowledge through math games that increase the attention span.
www.toonuniversity.com/free/math-games-4th-6th_a.asp

This site provides a variety of grade 5 mathematics games. For more great math games, check out the links! www.cemc.uwaterloo.ca/mathfrog/english/kidz/Games5.shtml

The Cyberchase contains great games that challenge in many concept areas. Check out the grade level challenges. www.geocities.com/EnchantedForest/Tower/1217/math.html

Want to improve 5th grade mathematics skills? Try these pages.
www.kidport.com/Grade5/Math/Mathindex.htm

This site contains Fraction Frensy Equivalent Fractions, Fraction Man Equivalent Fractions, Compare Three Comparing Fractions, decimals and percentages, and more.
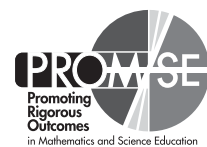www.mtlsd.org/lincoln_elementary/fifthgrademathgames.asp

Free 5th grade math worksheets and games for learning place value, roman numerals, measurements, percent calculations, algebra, and more.
www.softschools.com/grades/5thgrade.jsp

Visit "Mathematics Counts & Science Matters" at **www.promse.msu.edu**

Local Partner: SMART Consortium **www.smartconsortium.org**

MICHIGAN STATE UNIVERSITY

PROM/SE
Promoting Rigorous Outcomes in Mathematics and Science Education

■ The important math concepts in 5th grade are extending the operations of addition, subtraction, multiplication and division of whole numbers to fractions and decimals, and working with angle measurement. Based on national curriculum recommendations and reflecting Ohio Academic Content Standards, the following describes some of the central mathematical skills and understandings that students should acquire by the end of fifth grade.

■ Number and Operations

Multiply and Divide Whole Numbers

1. Understand how division of whole numbers with and without remainders is related to multiplication and how division is related to subtraction
2. Multiply a multi-digit number by a two-digit number (e.g., 2787×47)
3. Divide up to a four-digit number by any two-digit number
4. Multiply one-digit and two-digit whole numbers by powers of 10 (e.g., $26 \times 10 = 260$; $26 \times 100 = 2600$)

Prime Factorizations

5. Find the prime factorization of numbers from 2 through 50 and write the results using exponents (e.g., $24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3^1$)

Fractions and Decimals

6. Understand fractions as division statements (e.g., $2 \div 3 = {}^2/_3$)
7. Express two fractions as fractions with a common denominator (e.g., $^1/_2 = {}^3/_6$ and $^2/_3 = {}^4/_6$)
8. Understand that decimals and percentages are forms of fractions and be able to go from one form to any other
9. Write fractions from applied situations in several ways; recognize and find equivalent ratios (e.g., 3 cups to 5 people, 3:5, an average of $^3/_5$ cup for each person)
10. Add and subtract fractions with unlike denominators of 2 through 12 and with denominators of 100 (e.g., $^3/_8 + {}^7/_{10} = {}^{30}/_{80} + {}^{56}/_{80} = {}^{86}/_{80}$)
11. Multiply one-digit and two-digit whole numbers by decimals up to two decimal places and by powers of 10 (e.g., $35 \times 0.1 = 3.5$, $8 \times 0.25 = 2$, $26 \times 1000 = 26,000$)
12. Multiply two unit fractions with small denominators (e.g., $^1/_3 \times {}^1/_4 = {}^1/_{12}$)
13. Divide a fraction by a whole number and a whole number by a fraction, using simple unit fractions (e.g., $^1/_2 \div 4 = {}^1/_8$, $4 \div {}^1/_2 = 8$)

14. Solve applied problems involving fractions and decimals; include rounding answers and checking reasonableness (e.g., Gamali bought a CD for $9.99 and the sales tax was 6%. How much did he have to pay for the CD including tax? *Answer: $10.59*)
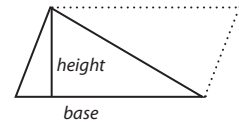
15. Solve for the unknown in equations of the form $a + x = b$ (e.g., $\frac{1}{4} + x = \frac{7}{12}$)

■ Geometry and Measurement

Area, Volume, and Angles

16. Use area formulas and understand and recognize the connections among the areas of rectangles, triangles, and parallelograms

    Example: area of triangle = $\frac{1}{2}$ (base × height)
    = $\frac{1}{2}$ (area of parallelogram)

17. Find the volume of cubes and rectangular prisms by filling with unit cubes, building, counting or measuring

18. Recognize the equivalence of 1 liter, 1,000 ml and 1,000 cm^3, make conversions among liters, milliliters, and cubic centimeters, and know the units of measure of volume: cubic centimeter, cubic meter, cubic inches, cubic feet, cubic yards, and use their abbreviations (cm^3, m^3, in^3, ft^3, yd ^{3})

19. Use a protractor or angle ruler to measure angles in degrees; classify angles as acute (less than 90°), right (equal to 90°), obtuse (greater than 90°), or straight (equal to 180°)

20. Find the measure of angles formed by intersecting lines, triangles, and quadrilaterals

■ Data and Probability

Data and Graphs

21. Construct and interpret line graphs, and solve problems based on line graphs (e.g., the distance-time graph shows a 3-mile trip that lasted 1 hour; the walker traveled fast for the first 2 miles going 1 mile every 10 minutes, stopped for 20 minutes, then completed the last mile in 20 minutes, traveling only ½ mile for every 10 minutes)

A Walking Trip

Distance (miles) vs *Time (minutes)*

22. Find and interpret range, mean, and mode for a given set of data
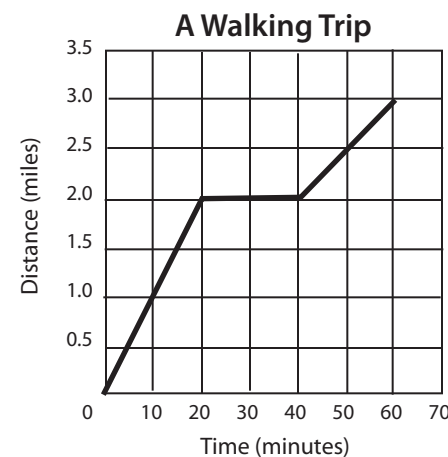
Glossary — Grade 5

- **Angle** – two rays sharing a common endpoint

- **Exponent** – a shortcut notation to express multiplication using the same number several times (4 is an exponent in $3^4 = 3 \cdot 3 \cdot 3 \cdot 3$)

- **Factor** – positive whole number that divides into a given number with zero remainder (e.g., factors of 6 are 1, 2, 3 and 6)

- **Line Graph** – a visual way to show how two quantities are related to each other and how one varies according to how the other changes

- **Mean** – the sum of the numbers in a list divided by the number of items in the list (e.g., 4 is the mean of 2, 3, 4, 5, 5, 5 because 2+3+4+5+5+5=24 and 24÷6=4)

- **Mode** – the number that occurs most often in a list (e.g., 5 is the mode of 2, 3, 4, 5, 5, 5)

- **Power of Ten** – numbers whose factors can be all tens (e.g., 1000 = 10 x 10 x 10, so 1000 is the third power of 10)

- **Prime Number** – a whole number that has exactly two factors; 1 and the number itself (e.g., 2, 3, 5, 7, 11)

- **Prime Factorization** – writing a whole number as a product of primes (e.g., $12 = 2 \times 2 \times 3$)

- **Prism** – a three-dimensional figure whose bases (ends) are the same size and shape and are parallel and whose other sides are parallelograms

  Triangular Prism   Rectangular Prism
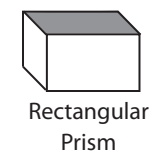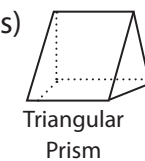
- **Quadrilateral** – a polygon with four sides
  Examples:

- **Unit Fraction** – a number written in the form of $\frac{1}{b}$, where b ≠ 0 (e.g., $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ . . .)

- **Volume of a Rectangular Three-Dimensional Figure** – the number of unit cubes needed to fill up the inside of the rectangular solid

  Volume = 48 cubic units
  4 units
  3 units
  4 units

Mathematics Counts & **Science** Matters