Tips and Activities for Parents

- Play games with your child such as checkers, board games, chess and increasingly complex card games. All involve problem solving and logic, and all are based on mathematics.

- Present a problem to your child such as finding the number of games to be played in a tournament with 60 teams. Have him or her come up with different strategies to solve the problem.

- Find tables of salaries of possible careers for your child from newspapers, magazines and the Internet and have your child compare the data and draw conclusions.

Internet Resources for Seventh Grade Math

A free website created for students and teachers that includes grade 7 games and lessons.
www.cemc.uwaterloo.ca/wired_math/english/grade7.shtml

Free math games for elementary school kids including grades 6 and 7 math games.
www.dr-mikes-math-games-for-kids.com/elementary-math-games.html

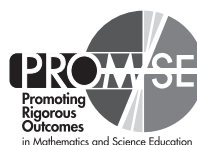Math brain teasers, mathematical problem solving, math games and flash cards.
www.kidinfo.com/Mathematics/Mathematics.html

Interactive practice and estimation games sorted by grade level and math topic.
www.jc-schools.net/tutorials/interact-math.htm

Great site to practice solving equations.
http://www.321know.com/equ725x6.htm#section2

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

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■ The math for 7th grade focuses on extending students' knowledge of fractions to rational numbers and developing concepts of linear equations. Based on Michigan Grade Level Content Expectations, the following describes some of the central mathematical skills and understandings that students should acquire by the end of seventh grade.

■ Number and Operations

Rational Numbers, Roots, and Proportions

1. Add, subtract, multiply, and divide positive and negative rational numbers (e.g., $\frac{1}{2} + \frac{-3}{4} = \frac{-1}{4}$; $0.06 \times {-5} = -0.30$)

2. Solve single and multi-step problems using positive and negative rational numbers

3. Understand and solve problems involving proportions, including scaling, unit conversion, rates of change, and equivalence (e.g., convert feet per second to miles per hour, scale a drawing where 1 inch = 10 feet)

4. Understand the meaning of square roots and cube roots; recognize simple square roots and cube roots, such as $\sqrt[3]{27} = 3$ and $\sqrt{25} = 5$. Use calculators and prior knowledge to estimate other square roots and cube roots (e.g., $\sqrt{2}$ is about 1.4)

■ Algebra

Linear Relationships

5. Recognize when the information in an applied situation, table, graph or formula suggests a linear relationship between two quantities and understand that it can be represented graphically by a straight line and as a linear equation

6. Solve problems that involve a linear relationship by using graphs and by using equations

7. Find the slope and the *x*- and *y*-intercepts of a line and interpret them for the context in which the linear relationship arises

8. Understand that when one quantity varies directly with respect to another quantity, this is a special case of a linear relationship; it may be represented graphically by a straight line through the origin and may be represented by an equation of the form $y = mx$ (e.g., as the side of a square (s) increases, the perimeter *P* of the square increases, as *P* = 4s)

9. Solve equations of the form $ax + b = cx + d$ and justify and interpret the solutions (e.g., the solution to $3x + 10 = 5x - 22$ is $x = 16$)

Mathematics — Grade 7 (cont.)

■ Geometry

Similarity and Construction

10. Draw and construct geometric shapes with specified dimensions

11. Understand the concept of similar polygons and solve related problems (e.g., rectangles A and B are similar because the ratios of the corresponding sides in each are equal; $8/4 = 4/2 = 2/1$; A and C are not similar because the ratios are not equal; $8/4 \neq 6/4$
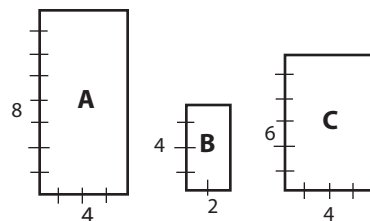
■ Data and Probability

Represent and Interpret Data

12. Represent and interpret data using a variety of graphs and select appropriate graphs to address specific questions

13. Create and interpret scatter plots and when appropriate model the relationship with a line

14. Find and interpret measures of center (median and mean) and variability (range) for a given set of data
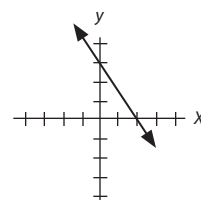
Glossary — Grade 7

■ **Congruent** – exactly the same shape and size

■ **Expression** – a sequence containing numbers, symbols and operations that can be used to represent a quantity (e.g., $3x + 5$)

■ **Equation** – a sentence stating that two mathematical expressions are equal (e.g., $2x + 6 = 20$ or $4x + 4 = x + 16$)

■ **Integers** – whole numbers and their opposites (. . . , -3, -2, -1, 0, 1, 2, 3, …)

■ **Intercept** – the value of x or y in an ordered pair describing the point where a graph intersects the x- or y-axis (e.g., the x-intercept is at (2, 0) and the y-intercept is at (0, 3) in the graph shown)

■ **Linear Equation in Two Variables** – an equation in two variables whose graph is a straight line (e.g., $y = 2x + 3$)

■ **Proportion** – an equation stating that two ratios are equal (e.g., $3/4 = 15/20$)

Glossary — Grade 7 (cont.)

■ **Rational Numbers** – a number that can be expressed as $^a/_b$ where a and b are integers and b is nonzero (e.g., $^3/_8$, $7 = ^7/_1$, and $6.3 = {}^{63}/_{10}$)

■ **Root: Square (Cube)** – a square (cube) root of a number is a factor of the number whose square (or cube) equals the number (e.g., the cube root of 125 is five because $5^3 = 5 \times 5 \times 5$ or 125; the square root of 16 is 4 and $^-4$ because is $4^2 = 4 \times 4 = 16$ and $-4^2 = -4 \times -4 = 16$)

■ **Similar Figures** – figures whose corresponding sides are proportional and whose corresponding angles are congruent (e.g., all squares are similar)
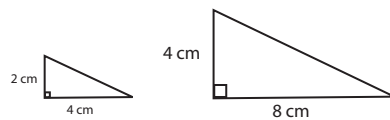
■ **Slope** – the measure of steepness of a line going from left to right. Numerical value for slope is found using two points on the line and dividing the change in y-value by the change in x-value; slope $= \frac{change\ in\ y}{change\ in\ x}$ or $\frac{y_2 - y_1}{x_2 - x_1}$
(e.g., to calculate the slope for $y = 2x + 3$, using two points on the line (0, 3) and (1, 5), $\frac{3-5}{0-1} = \frac{-2}{-1} = 2$)

Table

x	y
0	3
1	5
2	7

Graph