

Living and Working in a Mathematical World—Career Connections

We live in a mathematical world. Whether we are buying a car, choosing an apartment, or filing a tax return, we rely on our understanding of mathematics.

The level of mathematical thinking and problem solving needed in the workplace has increased dramatically. Those who understand and can do mathematics will have opportunities that others do not. Mathematical competence opens doors to productive futures. Here are a few examples of people at work and how they use mathematics in their everyday lives:



Paul Zandt, Meteorologist

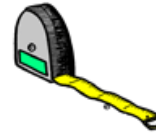
Believe it or not, the weather surrounding you is mathematics in motion! Every cloud, monsoon storm or hot, dry day can be summed up by a series of mathematical equations. Paul Zandt learned these mathematical equations by taking college courses in advanced mathematics. The equations Paul learned help explain which way the wind will blow and whether the temperature will rise or fall. These equations are programmed into giant computers. Meteorologists like Paul rely on these computers to help them make the forecasts you hear on the radio or TV. Paul could not do his job without a good understanding of mathematics. So, if you think your child might want to be a meteorologist, encourage her to excel in mathematics!



Tina DiFelicianonio, Filmmaker

Have you ever heard the phrase “time is money?” It turns out that the more filmmakers know about mathematics, the better they are at getting a film produced on budget and on

schedule! As a producer, Tina uses mathematics to decide how many people can be hired, how much they will be paid and how much time she can spend editing the film. The cameraman uses mathematics to design the look of the film and to calculate the depth of field using “f stops” and focal lengths. The sound team calculates sound patterns and recording levels using mathematics. As you can see, once Tina starts to put a film together, there is no end to the use of mathematics! If your child shows promise as a creative filmmaker, remind him that studying mathematics will help him achieve his dream!



Bill Whitmire, House Builder

Bill likes pounding nails, sawing wood and trying to figure out the best way to solve a problem. That’s what building is: a lot of mathematical thinking to go along with the physical work. Bill uses mathematics to figure out how much cement, lumber, nails, roofing and insulation he will need. He uses mathematics to read blueprints and figure out where to pour the foundation and put the doors. He uses geometry to figure the angles of the building, slope of the land and incline of the stairs. Building strong houses comes from building strong mathematics skills!

PBS MATHLINE: Career Connections

To explore profiles of other people who tell about their careers and how they use mathematics in their everyday lives, go to: www.pbs.org/teachersource/mathline/career

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11/15/10



Osborn School District
An Osborn Education

*Parents’ Guide to
Grade Level
Learning Targets
for Mathematics*

Grade 7

Osborn School District ***7th Grade Targets***

Mathematics

Students will be able to:

Number Sense and operations

- Order integers
- Locate integers on a number line
- Add, subtract, multiply, and divide integers
- Classify rational numbers as natural, whole, or integer`s
- Identify the greatest common factor (GCF) and least common multiple (LCM) for a set of whole numbers
- Recognize the absolute value of a number in a contextual situation
- Solve grade level appropriate word problems using operations and numbers
- Calculate the percent of a given number
- Convert numbers expressed in standard notation to scientific notation and vice versa
- Simplify numerical expressions using the order of operations
- **Determine whether an estimation of the circumference of a circle, angle, or area is approximately equal to the actual measure**
- **Verify the reasonableness of estimates made from calculator results within a contextual situation**

Data Analysis, Probability and Discrete Mathematics

- Formulate questions to collect data in contextual situations
- Construct a circle graph with appropriate labels and title from organized data
- Determine when it is appropriate to use histograms, line graphs, double bar graphs, and stem-and-leaf plots
- Interpret and answer questions based on data displays including histograms, stem-and-leaf plots, circle graphs, and double line graphs
- Find the mean, median, mode, and range of a given numerical data set
- Predict the outcome of a grade-level appropriate probability experiment
- Record the data from performing a grade-level appropriate probability experiment
- Determine all possible outcomes involving the combination of up to three sets of objects (e.g., How many outfits can be made with 3 pants, 2 tee shirts and 2 pairs of shoes?)
- Find the shortest circuit on a map that makes a tour of specified sites (vertex-edge graph).

Patterns, Algebra, and Functions

- Communicate a grade-level appropriate recursive pattern, using symbols or numbers
- Solve grade-level appropriate recursive pattern problems
- Describe the rule used in a simple grade-

level appropriate function

- Use variables in contextual situations
- Solve one-step equations using inverse operations with positive rational numbers
- Analyze change in various linear contextual situations

Geometry and Measurement

- Draw a geometric figure showing specified properties
- Classify 3-dimensional solids by their configuration and properties
- Identify arcs and chords of a circle
- Distinguish between length, area, and volume, using 2- and 3-dimensional geometric figures
- Recognize simple single rotations, translations or reflections on a coordinate grid
- Graph data points in (x, y) form in any quadrant of a coordinate grid
- Identify the appropriate unit of measure for the volume of an object
- Solve problems involving the area and circumference of a circle

Structure and Logic

- Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem
- Analyze algorithms for computing with fractions
- Solve a logic problem using multiple variables