

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

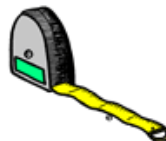
Believe it or not, the weather that surrounds you is mathematics in motion! Every cloud, monsoon storm or hot, dry day can be summed up by a series of mathematical equations. Paul Zandt learned these mathematical equations by taking college courses in advanced mathematics. The equations Paul learned 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 DiFelicianantonio, 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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*Parents’ Guide to
Grade Level
Learning Targets
for Mathematics*

Grade 4

Osborn School District Grade 4 Targets

Mathematics

Number and Operations

Number Sense:

- Students build on knowledge of whole numbers, fractions, and decimals, making connections with percents and between decimal notation and the base ten system;
- Develop an understanding of how various representations for fractions, decimals, and percents are related.

Numerical Operations:

Estimation: Students apply benchmarks in estimation of whole numbers, decimals, and fractions.

Data Analysis and Probability

Data Analysis (Statistics):

- Students continue to build their data collection tools;
- Collect data and create bar, and circle graphs to display data;
- Analyze data displays by formulating and answering questions.

Probability: Students focus on the fundamental elements of theoretical probability.

Systematic Listing and Counting:

Students focus on constructing tree diagrams to solve systematic listing and counting problems.

Vertex-Edge Graphs:

- Students build on their understanding of vertex-edge graphs by demonstrating the connection between coloring maps and coloring vertices;
- Apply their new understanding to real world problems involving conflict.

Patterns, Algebra and Functions

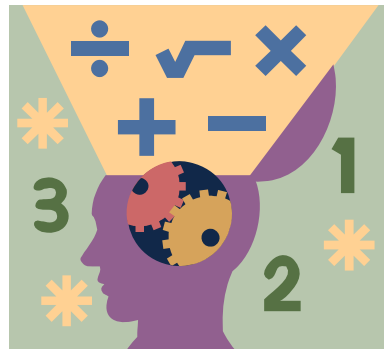
Patterns:

- Students identify, describe, and extend numeric patterns involving all operations;
- Develop an understanding of the use of a rule to describe a sequence of numbers.

Algebraic Representations:

- Students use symbols to represent unknown quantities in expressions and equations;
- Solve one-step equations with whole numbers.

Analysis of Change: Students make predictions based on changes in data over time.



Geometry and Measurement

Geometric Properties:

- Students classify triangles and other two-dimensional polygons using properties and attributes;
- Recognize nets for 3-dimensional figures.

Coordinate Geometry:

- Students use coordinates to describe positions in the first quadrant on a grid;
- Plot line segments and connect the segments to construct geometric figures.

Measurement:

- Students expand their understanding of measuring in standard units of measure from U.S. Customary to metric;
- Build on concepts of time by computing elapsed time;
- Explore and develop an understanding of the relationship between area and perimeter of plane figures.

Structure and Logic

Algorithms and Algorithmic Thinking :

Students use symbols, pictures, or mathematical language to explain the reasoning behind their decisions and solutions.

Logic, Reasoning and Problem Solving:

Students become more adept at conjecturing and collecting evidence to make generalizations.