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| Title of Lesson Plan | From Trees to Paper |
| Prepared By (first and last name) | Kelly Miller |
| City and State | Rochester, MN |
| Grade Level(s) | 6 th grade mathematics |
| Keywords (subjects covered) | trees, lumber, harvesting, sustainable forestry, recycling, mill, pulp, paper |
| Brief Description | students will use conversions and proportions to learn about the process from trees in the forest to paper in our classroom |
| Total Time Required | 1 class period; 45 minutes |
| Setting | regular math class; computer access for students at home or school to complete the homework portion (if this is not possible, print off statistics for the student(s) to use in a print form) |
| Lesson Objectives/Goals | The student will use their knowledge of units of measurement to convert between measurements in real-world mathematical problems by solving problems when given specific data. |
| Materials Needed | pictures of process (trees, harvester, logging trucks, paper mill process, paper reels); conversion statistics/units; paper; pencil; calculator |
| Standards Addressed | Minnesota State Mathematic Standards: 6.3.3.1 and 6.3.3.2 – Choose appropriate units of measurement and use ratios to convert within measurement systems to solve real-world and mathematical problems. |
| Procedure | <p>Introduction:</p> <ol style="list-style-type: none"> 1. Ask students: "What do we use paper for? What products are made from paper?" Make a list on the board. (Try to get a wide variety of products/uses.) 2. Ask students, "Where does paper come from?" (Try to get trees and recycled paper.) 3. Write the following terms on the board: trees, lumber, harvesting, sustainable forestry, recycling, mill, pulp, paper --- have students make predictions with a partner 4. Have students share predictions for the meaning of terms. Show pictures of terms and discuss as a class. 5. Pose the following questions to students. Work through the first one or two as a class; discuss different methods to solve the problems. Then have students work with a partner to solve the rest of the problems. <ul style="list-style-type: none"> A.) At the New Page paper mill, they use trees to make paper. They use 125,000 cords of wood each year. One cord of wood is 4'x4'x8' (128 cu. ft. w/air, 80 cu. ft w/o air). How many cubic feet of wood does New Page use each year? (approx. 15,000,000 cu. ft. per yr.) B.) It takes 40 minutes to make one reel of paper. The reel is 24.5' wide. The machines make the paper at a rate of 5,000 ft per min. At this rate, approximately how long is each reel of paper? (approx. 200,000 feet) How much area would one reel of paper cover? (4,900,000 sq. ft. or 705,600,000 sq. in.) <p>Challenge: Approximately how many notebooks would one reel make? You must show your work. (one page is approx. 8"x10" = 80 sq. in.; 705,600,000 sq. in. per reel/ 80 sq. in. per</p> |

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| | <p>page = 8,820,000 pages; 8,820,000 pages / 70 sheets per notebook = 126,000 notebooks)</p> <p>6. Discuss all answers and problem-solving methods as a class. Have students share different ways they solved problems.</p> <p>7. Introduce the resources pages (listed below.) Begin a discussion about recycling and have students use the resource pages to begin learning more about it. (See homework in assessment section.)</p> |
| Assessment | <p>Homework: Have students go to one of the resources pages to find statistics about paper, trees, or recycling. Students should use the statistics to write three math problems to bring to class the next day. Students should also have the answers and show/explain how to get the answers with proper labels. We will use the problems as an assessment and class discussion on recycling the next day.</p> |
| Literature Cited/References | <p>Statistics Mill: http://www.statmill.org/ Paper Recycles: http://www.paperrecycles.org/index.html</p> |
| Forestry Tour Attended | Duluth – June 2009 |

Lesson Plan Disclaimer

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