MATHEMATICAL MAGAZINES

Student/Class Goal
Adults are exposed to magazine advertisements and need to be able to draw conclusions about the differences they find in various types of magazines.

Outcome (*lesson objective)*
Students will classify and tabulate the type of advertisements found in a collection of magazines. They will determine what percent of the total number of ads each type represents and present their results orally and in a graph.

Time Frame
2-3 hours

Standard *Use Math to Solve Problems and Communicate*

NRS EFL 2-6

COPS	**Activity Addresses Components of Performance**
Understand, interpret, and work with pictures, numbers, and symbolic information.	Students interpret pictures, text and symbols in magazine advertisements to develop categories in which to classify them.
Apply knowledge of mathematical concepts and procedures to figure out how to answer a question, solve a problem, make a prediction, or carry out a task that has a mathematical dimension.	Students will make a prediction about the types of ads they might find in their magazine and plan a method for recording their data. They will use numbers to analyze the percent of each category of ads found in their magazine.
Define and select data to be used in solving the problem.	Students evaluate the text in a magazine to find the advertisements.
Determine the degree of precision required by the situation.	The students use their advertisement data to construct a graph that adequately displays the summary of the type of ads.
Solve problem using appropriate quantitative procedures and verify that the results are reasonable.	Students record quantitative data on types of ads in their magazine.
Communicate results using a variety of mathematical representations, including graphs, chart, tables, and algebraic models.	Students will select a type of graph to construct to display their ad data and verbally discuss the results.

Materials
Students will classify and tabulate the type of advertisements found in a collection of magazines. They will determine what percent of the total number of ads each type represents and present their results orally and in a graph.

Learner Prior Knowledge
If possible, basic knowledge of graphing, data collection (making a chart, hash marks, etc.), and calculating percentages.

Instructional Activities
Step 1 - To introduce the students to the lesson, display a collection of magazines. Brainstorm with the students about the various common elements of a magazine (table of contents, articles, ads, etc.). Next discuss the differences between the types of magazines (types of articles, length, cost, audience, types of ads, etc.). Be sure to record the class brainstorming on the chalk board, overhead, or chart paper. The students should mention that different magazines have different types of advertisements. After the students have come up with this idea encourage them to reflect on why the ads are different (because their readers are different). Ask them if they think they could figure out what type of magazine a selection of ads came from? If possible quickly survey the class to see how many students feel they could do this.

TEACHER NOTE You could use two different types of magazines and record the info on a Venn Diagram.

Step 2 - Divide your students into 6-8 small groups. This is a group activity so make sure there are at least two students in each group. Briefly discuss with the group how they might tabulate data from their magazine (e.g., hash marks in groups of 5).

TEACHER NOTE Most of my students are not familiar with this method and just make straight lines, not indicating a group of 5.

Each group should have a different magazine and type (money, women's, home/garden, sports, kids, quilting, fishing, news, health, regional, computer, etc.) Your choices will depend on the size of your group and the magazines you have access to.

TEACHER NOTE Libraries usually have back issues available for check-out. Your issues need not be the latest.

Pass out magazines to each group. Make sure the magazines are concealed when given to each group (use large tan envelopes) so nearby groups cannot see another group's magazine. Identify each magazine by listing a number on the envelope, thereby giving students a way to label their magazine "name" on their graph.

Step 3 **–** After looking at the name of magazine their group has, the group members should list the types of products they think will be found in their magazine. These ideas can become the initial categories for recording their advertisement data. As the groups are doing a page by page tabulation of the ads in their magazines, the teacher should circulate around the room to monitor each group's progress.

TEACHER NOTE Students sometimes have difficulty determining what is being advertised in some ads. Also help students add additional categories for types of ads if necessary. Be prepared to guide, with strategic questions, the group's thoughts if necessary.

Once each group has tabulated ad data (at least one magazine for every two members of the group) find the sum of the ads in each category. Next find the total number of ads in the magazines surveyed. Collect the magazines when the students have completed this step.

Step 4 **-** the students have counted the number of ads found in each category and the total number of ads found in the magazines, it is time to calculate the percent each kind of ad represents of the total. Make sure calculators are available for this part of the lesson. Use whatever method the students are familiar with to calculate the percent of the total each type represents. One way is to set percent problems up as proportions, like the example below.

$$\frac{\text{\# of type of ad}}{\text{total \# of ads}} = \frac{\text{\% or } x}{100}$$

If students have little experience with percentage problems, it is important to go over several examples with the class and be available to help each group as needed. Students should calculate the percent of the total each type of ad represents. The percentages should also be recorded on the chart with their data. Students should decide how to round off their answers.

Step 5 - Using the data each group has tabulated the group will now construct a graph to represent the data. Before the groups start, take a moment to review types of graphs. Ask the students what types of graphs they are familiar with (bar, pict-o, circle and line). Discuss the types of data each is best used to represent. Be sure students know line graphs are best for showing change and would not be good for representing these data. **Remind students that their graph should indicate the frequency of the different types of ads but should NOT include the name of the magazine.** The graphs can be labeled based on the number from the envelope with their magazines. The members of the class will be trying to guess the name of the magazine based on the kinds of ads found in the magazine. Provide markers, rulers, and chart paper so each group can represent their advertisement results in graph form. Hang the graphs around the classroom when completed.

Step 6 - After all the graphs have been posted allow the students to walk around the room to make a guess as to what magazine title was in each envelope. Have each student number a paper from 1-6 (or the number of groups) to record the name of the magazine next to each number. Be sure to list the title of the magazines surveyed on the chalk board so the students can match them up with the graphs.

When all students are finished, have each group present their results. Ask for group guesses as to what magazine they had and then present the actual magazine.

After all magazines have been identified, compile a list of the conclusions they could draw about the types of ads found in magazines. Discuss how these results might relate to ads in other media (TV, radio, internet, etc.)

TEACHER NOTE This lesson does not need to be done during one class period. It is easy to stop the lesson after the data have been collected, after the data have been tabulated, or even after the graphs have been finished.

Assessment/Evidence (*based on outcome)*
Brainstorming chart or Venn Diagram
Data chart on ads in magazines
Completed graphs of data
Sheet with student responses matching graphs to magazine titles.

Teacher Reflection/Lesson Evaluation
This lesson provided my students will lots of reading practice in addition to the math.

Next Steps
Students could reflect on whether ads for TV programming would follow a similar pattern as with magazines.

Technology Integration
Venn Diagram http://literacy.kent.edu/eureka/strategies/venn_diagrams.pdf

Purposeful/Transparent
The students will be able to draw conclusions based on the frequency of ads presented in various kinds of magazines.

Contextual
Students are exposed to advertisements in their daily lives. They can transfer what they have learned about magazine ads to TV and radio ads.

Building Expertise
The activity provides the students with practice gathering real life data.