# RELEASED TEST ITEMS 

Sample Student Work Illustrating LEAP Achievement Levels

## August 2006

## Mathematics

Strand:
Benchmark M.3:

## Measurement

Selecting appropriate units and tools for tasks by considering the purpose for the measurement and the precision required for the task (e.g., length of a room in feet rather than inches)

## Achievement Level: Advanced

Which of the following units would be most appropriate to use in measuring the weight of a bowling ball?
A. grams

* B. kilograms
C. centigrams
D. milligrams


## * correct answer

This item would most likely be answered correctly by students who score at the Advanced level. This item requires students to select an appropriate unit of measurement to describe the weight of a bowling ball. In this case all of the units given are in the metric system. To determine the appropriate unit, students must take into account two considerations. They must be certain that the unit measures the characteristic in question-weight rather than length or speed or any other characteristic. They must also select the largest unit that provides an acceptable degree of precision: Can the unit be used to describe a weight that is close enough to the actual, exact weight? If, for example, a dosage of medicine was measured, gram or perhaps milligram would be required; since the degree of precision would need to be very high and close to the actual, exact weight. For the object used in this item, a bowling ball, kilogram is an appropriate unit of measurement to use. This unit measures the correct characteristic, weight, and it provides an acceptable degree of precision. Option B is the correct response. This item does not require the use of a calculator.

## Strand:

Benchmark A.4:

## Algebra

Analyzing tables and graphs to identify relationships exhibited by the data and making generalizations based upon these relationships

## Achievement Level: Mastery

A marketing company conducted a study to determine the price of a new basketball shoe. The graph below shows the relationship between the price of the shoe and the number of pairs sold.


Which of the following equations could be used to describe the relationship between the price $(p)$ of the shoe and the number ( $n$ ) of pairs sold?
A. $n=\frac{1}{2} p+110$

* B. $n=-\frac{1}{2} p+110$
C. $n=\frac{1}{2} p-110$
D. $n=-\frac{1}{2} p-110$
* correct answer

This item would most likely be answered correctly by students who score at the Mastery level and above. This item requires students to determine an equation that describes a graph. For this item, students must select an equation written in the slope-intercept form: $y=m x+b$. This is a common form of an equation.

## Strand:

Benchmark D.1:

Systematically collecting, organizing, describing, and displaying data in charts, tables, plots, graphs, and/or spreadsheets

## Achievement Level:

Basic
Use the table below of a family budget to answer the following question.
FAMILY BUDGET

| How Money <br> Was Spent | Percentage of <br> Money Spent |
| :--- | :---: |
| Housing | $40 \%$ |
| Food | $20 \%$ |
| Transportation | $10 \%$ |
| Entertainment | $5 \%$ |
| Savings | $10 \%$ |
| Other | $15 \%$ |



Which of the circle graphs correctly shows the information in the table?
A.


* B.

C.

D.


[^0]
## Strand:

Benchmark G.3:

## Geometry

Making predictions regarding transformations of geometric figures (e.g., make predictions regarding translations, reflections, and rotations of common figures)

## Approaching Basic

Figure 1 has been transformed into Image 1 as shown below.


Figure 1 Image 1


Figure 2
If Figure 2 is transformed in the same manner, how should Image 2 appear?
A.

B.


* C.

D.


[^1]The following pages present a mathematics constructed-response item, a scoring rubric, and examples of student work at scores of 0 to 4 . The original item is shown below, and the scoring rubric can be found on page 13. The content standard for this item is Patterns, Relations, and Functions. In problem-solving investigations, students demonstrate an understanding of patterns, relations, and functions that represent and explain real-world situations.

A company that has several branch offices connected by computer uses a coding system to record communication between the branch offices.

- When the company had only 2 branch offices, it needed only one code: AB.
- With 3 branch offices, the company needed three codes: $A B, A C$, BC.
A. The company now has 4 branch offices. How many codes does the company need to record communications between the branch offices? Justify your answer.
B. The company plans to add more branches in the future. Complete the table below to show the number of codes it will need.


| Number of <br> Branch Offices | Number of <br> Codes Needed |
| :---: | :---: |
| 2 | 1 |
| 3 | 3 |
| 4 |  |
| 5 |  |
| 6 |  |

C. Describe the pattern shown in the table. Justify your answer with a diagram or an explanation.


[^0]:    * correct answer

[^1]:    * correct answer

