Name(s)	Project Number
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Project Title

Are Some Multiplication Facts Harder than Others?

Abstract

Objectives/Goals
An experiment was carried out to determine if some multiplication facts are harder than others. For the purpose of this investigation, time to answer the fact and the accuracy of the answer were used as the indicators of difficulty.

Methods/Materials
A computer program was designed and coded to measure these quantities. The program presented all 100 multiplication facts in the form N x M where N and M ranged from 1 to 10 to a test subject. Facts were given in a random order to avoid bias due to factors such as fatigue at the end of the test. The program recorded the test subject#s time to answer and the accuracy of the answer. Ten subjects ranging in age from 10 to 12 years old were tested. The results were analyzed and graphed to determine the average time to answer each fact and the average accuracy. Averages were also calculated for each of the factors N and M.

Results
The results showed that 6 x 8 is the hardest multiplication fact, and that the 8, 6, 7, and 9 multiplication tables are the hardest, in that order.

Conclusions/Discussion
This was in general agreement with the hypothesis, which predicted that the 6, 7, and 8 multiplication tables would be the most challenging. This information could help educators develop more targeted learning strategies.

Summary Statement

I determined which multiplication facts (1x1 through 10x10) are hardest for 6th grade students by using a custom computer program to measure the speed and accuracy of the responses obtained when each fact was presented.

Help Received

My father helped code the computer program I designed.