

Key Math-3

Key Math-3 Diagnostic Assessment

Jody Ruf

UW-Platteville

Abstract

Key Math-3 DA is a test used to measure math concepts and skills. It is arranged to help measure in three math content areas. They are basic concepts, operations, and applications. It is used with individuals from the ages of 4 years 6 months through 21 years of age. It is used in the development of intervention programs that can be tailored to fit each individual student that is tested, it can be used with the KeyMath-3 ER program, and it is aligned with math standards.

The original test, *KeyMath Diagnostic Arithmetic Test* was developed by Austin Connolly in 1971. He was a classroom teacher who had concerns for his students that were struggling with standard achievement tests. The current test, *KeyMath-3 DA* is the third edition and it brings new features that include colorful items, a variety of content, and emphasis on an examiner who is aware of their test subject.

Connolly (2007) determined the purpose of the *KeyMath-3* is to: (1) help in monitoring student's progress over time; (2) provide guidance in math instruction when used with the companion *KeyMath-3 ER* program; (3) serve as a resource for teachers in their math curriculum and instruction (p. 2).

According to Connolly (2007), the *KeyMath-3* is a norm-referenced test of three general math content areas; basic concepts, operations, and applications. The 372 items of the test are divided into ten subtests. The basic concepts subtests are numeration, algebra, geometry, measurement, and analysis and probability. Operations include mental computation and estimation, addition and subtraction, and multiplication and division. Applications subtests include foundations of problem solving and applied problem solving. This test is appropriate for use with individuals age 4 years 6 months through 21 years of age (p. 1-3).

Connolly (2007) states the *KeyMath-3* is an untimed test. The time is 30 – 40 minutes for elementary students and approximately 75 – 90 minutes for older students. It is suggested in the manual that the examiner be familiar with the assessment materials and administration procedures, as well as finding an approach that works well with the examinee. Starting points are given by grade level to correspond with the student's grade level. Testing continues until the student being tested has achieved a basal and a ceiling

for each test. It is suggested that examiners who give and interpret the *KeyMath-3* have some formal training in assessment as well as having supervised practice in using the tests. Training can be obtained from coursework in principles of measurement and interpretation of tests as well as formal training in mathematics. Before actually giving the *KeyMath-3* the manual does ask that examiners read and study all the testing materials and practice in administering and scoring the tests (p. ix).

The *KeyMath-3* was normed on a sample of 3,630 persons from 45 states of these 3,105 students in grades K-12 were used. The students were ages 4 years 6 months through 21 years 11 months. The sites were selected in each of the four major geographic regions which included the Northeast, Midwest, South, and West. All students that were used in the sample attended general education classes and students with disabilities were also included in the normative sample. The characteristics of the sample were broken down by percentages by geographic region, gender, race, ethnicity, and parental education. The scale scores are then presented in terms of having a mean of 10 and a standard deviation of 3 for each grade level and age group, and the standard scores have a mean of 100 and a standard deviation of 15 for each grade level and age group. The *KeyMath-3* also provides percentiles, age and grade equivalents for the subtests and composite scores (Connolly, 2007, p. 26).

The reliability of the *KeyMath-3* is .89 - .99 for total test scores using both Form A and Form B. The *KeyMath-3* tested across three areas of reliability, internal consistency, test-retest, and alternate form reliability. Break downs were also given for each subtest using both Forms A and B as well as across grade levels. (Connolly, 2007, p. 71-83).

The *KeyMath-3* provided evidence for content validity and construct validity. The content validity used test items that were developed using state math standards and were organized in sequence across grade levels. The items were developed that access student proficiency in the specified concepts and skills.

Connolly (2007) stated the construct validity for the *KeyMath-3*, has been correlated with *KeyMath Revised* as well as four other tests; the *Kauffman Test of Educational Achievement, Second Edition*, the *Iowa Tests of Basic Skills*, the *Measures of Academic Progress* and the *Group Mathematics Assessment and Diagnostic Evaluation* (Connolly, 2007, p. 85-106). The test scores also increase as the grade level of the examinee increases.

References

Connolly, Austin J. (2007). *KeyMath-3 Diagnostic Assessment*. Minneapolis, MN:
PEARSON.

NAME: NS

PARENTS: SS & DS

DATE OF TESTING: 7/29/13

NS is an 11 year old, fifth grade student who was given the KeyMath-3. NS quickly warmed up to this examiner and to the testing environment. NS was willing to answer the questions and try the activities that she was presented. It appeared that she tried her best.

ASSESSMENT ADMINISTERED:

KeyMath-3

TEST RESULTS:

Basic Concepts		Operations	
Numeration	<u>13</u>	Mental Computation & Estimation	<u>13</u>
Algebra	<u>14</u>	Addition & Subtraction	<u>14</u>
Geometry	<u>13</u>	Multiplication & Division	<u>12</u>
Measurement	<u>12</u>		
Data Analysis & Probability	<u>11</u>		
Applications			
Foundations of Problem Solving	<u>12</u>		
Applied Problem Solving	<u>12</u>		
<u>Total Test</u>	114	82%	
Basic Concepts	113	81%	
Operations	113	81%	
Applications	104	61%	

NS was administered the KeyMath-3 which is an assessment measure for children and adolescents that provide information about a child's mathematical ability. Results are based on standard scores with a mean of 100(50th percentile) and scores that fall between 85(16th percentile) and 115 (84th percentile) are considered to be in the average range.

NS's overall performance on the KeyMath-3 indicates that she performs in the Average range of total mathematics. NS obtained total test standard score of 114. This was in the 82nd percentile range.

NS received a Basic Concepts score of 113 (81st percentile), placing NS in the average range. Basic concepts area measures an individual's conceptual understanding across the five content standards of numeration, algebra, geometry, measurement, and data analysis and probability.

The Operations score NS received was 113 (81st percentile), placing NS in the Average range. Operations area measures an individual's written and mental computation skills with respect to addition, subtraction, multiplication, and division of whole and rational numbers.

NS received a score of 104 (61st percentile) in the Applications area placing NS in the Average range. Applications area measures an individual's ability to apply conceptual knowledge and operational skills to solve math problems.

Recommendations:

1. Since NS had an application score in the middle average area, she may benefit from practicing story problems and working on real life math problems.