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Educational Research Association

(FRANK N. FREEMAN, *Secretary and Editor*)

PROGRESS IN ARITHMETIC IN KANSAS CITY, MISSOURI

Reported by George Melcher

Assistant Superintendent in charge of Research and Efficiency

The marked gain in arithmetic which may be produced by the use of standard tests is well illustrated by the following extracts from a report made by Mr. Melcher.

We are glad to send to you the results of the work in the fundamental operations in arithmetic last year. An examination of these scores will show you that the results last year are the best that we have had at any time in the system. When you compare the results in May, 1922, with the results in Kansas City in 1915, you will find 85.5 percent improvement.

In Attempts or Speed, the median of the city is up to standard or above in every operation in every grade. In Rights, all the A classes in every grade and in every operation were up to standard with the exception of multiplication in the sixth grade. The B classes were up to standard in Rights in the majority of the cases.

In May, 1920, 42.5 percent of all the classes of the city scored below normal; again in May, 1921, 42.5 percent of all the classes scored below normal; however, in May, 1922, only 24.6 percent of the classes scored below normal or, reversing this, 75.4 percent of the classes were normal or above last May. From this report it is evident that the majority of our teachers have mastered the technique of teaching the fundamental operations. These results demonstrate without question that the standards are not too high. Teachers in schools in other cities, especially New York and Boston, have attained as high and even higher levels than we have in Kansas City.

Every teacher should aim to reach the standard. Slow classes should reach the lowest normal score in each grade, average classes should reach the standard, and strong classes may score somewhat above standard. However, it is advised that classes should not exceed the upper normal scores in any grade. We had a large number of classes last year that did exceed the upper normal score.

When a class has attained the standard score for its grade, the amount of drill work should be reduced to such a minimum as will only maintain the

TABLE I. THE PERCENTS OF CLASSES NORMAL, BELOW NORMAL, AND ABOVE NORMAL IN 1919, 1921, AND 1922

	Below Normal			Normal			Above Normal		
	1919	1921	1922	1919	1921	1922	1919	1921	1922
Addition	73.7	40.7	18.9	18.7	27.5	27.5	7.6	31.8	53.6
Subtraction	45.0	45.2	24.1	42.7	35.0	41.5	12.3	19.8	34.4
Multiplication	50.7	46.1	32.5	39.4	37.5	38.3	9.9	16.4	29.2
Division	41.7	38.4	22.8	41.6	38.4	34.8	16.7	23.2	42.4
Total	52.8	42.5	24.6	35.6	34.7	35.5	11.6	22.8	39.9

TABLE II. THE PERCENT OF CLASSES THAT ARE BELOW NORMAL, NORMAL, AND ABOVE NORMAL FOR EACH OPERATION AND EACH GRADE, MAY, 1922

	Below Normal	Normal	Above Normal
Fourth Grade	26.9	38.0	35.1
Fifth Grade	27.3	37.2	35.5
Sixth Grade	24.2	33.7	42.1
Seventh Grade	19.4	32.8	47.8
Total	24.6	35.5	39.9

TABLE III. COURTIS RESEARCH TESTS—PERCENT OF GAIN OF 1922 SCORES OVER 1915 SCORES

	Fourth Grade	Fifth Grade	Sixth Grade	Seventh Grade	Average of Each Operation for the Four Grades
ATTEMPTS					
Addition	67.8	67.1	63.9	71.3	52.5
Subtraction	51.6	48.7	38.9	43.3	45.6
Multiplication	49.1	42.0	37.3	34.0	40.6
Division	76.3	70.4	54.7	45.7	61.8
Average for each grade—four operations	61.2	57.1	48.7	48.6	53.9
RIGHTS					
Addition	117.7	120.9	105.5	101.6	111.4
Subtraction	97.2	84.6	64.8	57.6	76.1
Multiplication	75.8	82.6	49.2	40.0	61.9
Division	143.5	90.0	76.2	60.2	92.5
Average for each grade—four operations	108.6	94.5	73.9	64.9	85.5
PERCENT OF ACCURACY					
Addition	29.3	30.7	25.7	18.3	26.0
Subtraction	30.2	23.2	18.7	9.8	20.5
Multiplication	17.7	28.3	9.6	5.2	15.2
Division	37.7	12.2	14.3	10.0	18.6
Average for each grade—four operations	28.7	23.6	17.1	10.6	20.1

skill already attained. Last year we sent a list of 18 schools in which the work was reported as excellent. This year we are reporting to you 37 schools in this excellent list. This is about one-half of the white elementary schools.

Several of these schools have ranked "excellent" for a number of years. Some of them did not lapse even when the schools were interrupted by the War and the influenza epidemic. While this group of schools ranks "excellent," there is a second group of 21 schools that ranks "good," and a small group of 12 schools that ranks "poor." To avoid humiliation for the "poor" schools, we refrain from publishing the list of "good" and "poor." Any principal requesting it will be given the ranking of his own school. It is possible for every school to enter the "excellent" list. It is certainly commendable that there were only 12 white schools in the system in 1921-22 that did "poor" work in the fundamental operations in arithmetic.

Eleven schools had every class normal or above in every operation this year. Seventeen had more than 90 percent and less than 100 percent of their classes normal and above normal. Seven schools had more than 80 percent and less than 90 percent of their classes normal and above normal.