The purpose of this link from my web-site is to identify a selection of problems aligned with the Minnesota mathematics standards and benchmarks for Grade 3 as adopted in Spring 2003. My focus consists of the standards and benchmarks themselves; the problems here serve to illuminate them. The benchmarks and standards that are particularly relevant for a particular problem are identified in the left-hand margins; for instance, 3-II.B.1 indicates the Grade-3 benchmark II.B.1 and 3-II.B refers to the corresponding standard. In another sense, the focus is the suitability of problems for the Minnesota Comprehensive Assessments (now as MCA’s), but in saying this I want to emphasize that the opinions are mine alone, formed without consultation with Minnesota Department of Education. Relevant to the above concerns is a companion link which includes the problems from this link, along with a variety of comments.

I was one of approximately 40 members of the mathematics subcommittee of the Academic Standards Committee, formed by the Minnesota Commissioner of Education in February 2003. I strongly support the mathematics standards and benchmarks resulting from the work of that committee and which, on the basis of a law passed by the Legislature and signed by the Governor, became official in Spring 2003. Although there is no guarantee that this web-site item reflects the thinking within the Department of Education, I have tried very hard to reflect the standards and benchmarks accurately, taking care not to bend them in the direction of my individual views. [Even though I strongly support the standards and benchmarks document, there are places where I would have preferred the document to be a bit different, and I suspect that the same is true (but not for the same places) of every member of the mathematics subcommittee.]

Anticipating that I might want to modify this document from time to time, I have refrained from labeling the problems with numerals and am planning to change the date at the top any time I make additions or changes.

Since the standards are cumulative, all the K-3 benchmarks are relevant for the Grade-3 MCA. It seems to me that it is desirable for K-3 teachers to examine all the K-3 benchmarks, and in general for teachers to read the standards for a couple grades on either side of the grade they are teaching.

The variety of different problems that are consistent with the standards and benchmarks is very large—that is the power of mathematics; a manageable number of basic principles and techniques enables one to handle a myriad of different situations. So, of course, the problem list that follows cannot be viewed as comprehensive.
For each problem in which students are to place the correct digits in boxes, I have included three boxes. If the answer requires only two digits or one, it is the left-hand box or boxes which should be left blank. [If the Grade-3 MCA were, in fact, to include such problems it would be important that students become familiar with the instructions some days in advance of the test.]

It is clear from the benchmarks that the Grade-3 MCA should consist mostly of problems for which a calculator should not be permitted. The small latter portion of the problem list below is there in case the state decides that there should also be a ‘calculator permitted’ portion of the Grade-3 MCA; the place where this latter portion begins is clearly identified with an introductory sentence.

I want to again emphasize: Although the standards and the benchmarks accompanying them constitute an official document of the state of Minnesota, all the judgments about alignment of problems with the benchmarks and standards are mine; neither do they have any official standing nor have they been obtained in consultation with the Minnesota Department of Education. Also, they have not been reviewed by the University of Minnesota where I am a faculty member and, of course, they do not represent any official view of that institution.

What number belongs in the blank?

\[ \underline{} + 5 = 9 \]

(a) 4  
(b) 5  
(c) 9  
(d) 14
3-II.B.6 Which of the following pictures is a picture of $6 \times 3$?

(a) \[ \begin{array}{cccc}
\bullet & \bullet & \bullet & \bullet \\
\bullet & \bullet & \bullet & \bullet
\end{array} \]

(b) \[ \begin{array}{ccc}
\bullet & \bullet & \bullet \\
\bullet & \bullet & \bullet \\
\end{array} \]

(c) \[ \begin{array}{cccc}
\bullet & \bullet & \bullet & \bullet \\
\bullet & \bullet & \bullet & \bullet \\
\bullet & \bullet & \bullet & \bullet \\
\bullet & \bullet & \bullet & \bullet
\end{array} \]

(d) \[ \begin{array}{ccc}
\bullet & \bullet & \bullet \\
\bullet & \bullet & \bullet \\
\bullet & \bullet & \bullet
\end{array} \]

3-II.A.1 Which number is four thousand, two hundred seven?

(a) 427  
(b) 4027  
(c) 4207  
(d) 4270

3-V.A.1 How many lines of symmetry does a square have?

(a) 0  
(b) 1  
(c) 2  
(d) 4
When calculating $8 + 5 + 7$ you can first add any two of the numbers first and then add the third number. When doing this, which of the following would not happen?

(a) $12 + 8$
(b) $13 + 7$
(c) $14 + 6$
(d) $15 + 5$

Which statement is correct?

(a) 3 feet equals 1 yard.
(b) 100 meters equals 1 centimeter.
(c) 60 hours equals 1 minute.
(d) 4 dollars equals 1 quarter.

Deborah had 133 pieces of candy, but she gave 84 pieces away. Which of the following equals the number of pieces of candy she still has?

(a) $133 - 84$
(b) $133 - 49$
(c) $133 + 49$
(d) $133 + 84$

Which of the following is correct?

(a) 12 feet equals 1 yard
(b) 12 yards equals 1 foot
(c) 12 feet equals 1 inch
(d) 12 inches equals 1 foot
3-II.A.4 Which of the following pictures shows the fraction 3/4?

3-IV.A.1

(a) 

(b) 

(c) 

(d) 

3-V.B.1 Which is always true about right triangles?

3-I.6
(a) Two sides are equal.
(b) There are no acute angles.
(c) There is exactly one acute angle.
(d) The triangle can be put together with a copy of itself in order to form a rectangle.

2-III.B.1 Find 539 + 0.

3-II.A.1

3-II.B.3 If you find 5,978 + 7,836 and then subtract 5,978 from that sum, what will you finally get?

3-IV.A.1
3-V.C.2 Find the perimeter of the polygon shown below.

3-V.C.5 How many minutes is it from 11:48am to 12:27pm of the same day?

2-V.C.2 __________ minutes
Show how the following shape is composed of two triangles and one rectangle.

Label the parts of your picture.
If it can be managed, say with a voice-activated machine, I can envision part of the MCA’s for Grade 3 as being oral. A problem might ask for a student to do as many of the simple calculations as he or she can in 2 minutes, with scoring based on the total number tried, total number correct, and total number incorrect. If such testing cannot be managed, then several problems similar to those below should appear on the Grade-3 MCA’s, preferably as problems where the student has to fill in boxes with digits of the correct answers.

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I include below a problem which would be appropriate for a calculator portion of the Grade-3 MCA if indeed there is such a portion.

3-II.B.1 Alphonso attended school 166 days as a first grader and 165 days as a second grader. How many days does he have to attend as a third grader in order that his total attendance for the three grades equal 500 days?

3-I.2

The views and opinions expressed in this link are strictly those of Bert Fristedt. The contents have been neither reviewed nor approved by the University of Minnesota.