at local lumber yards and wholesale distributors, and contacting framing crews, electricians, plumbers, roofers, insulators, painters, etc., for prices.

We also spent time demonstrating what to look for when buying an older home. Examples were shown of dry rot in attics, houses that used cheap construction methods and materials such as return gyproc, and minimal insulation.

Since implementing this career mathematics course, as well as locally developed business and consumer math course, and a General Math 12 course, we have increased our general math enrolment from two classes to 11. This, I think, is directly related to the relevance of the material offered.

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A Maze for Mathematics

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As a classroom teacher, I often searched for a variety of ways to stimulate my students to enjoy dull drill. One particular device not only provided a way to 'drill' some basics but also provided an interesting 'twist' that reduced students' dislike to practise computational skills: This device is commonly referred to as a Maze.

The only tools needed to make a maze are a grid of some sort to record drill questions and a supply of drill type questions. An example follows. This maze is based on straightforward calculations. Once the students find an answer, they need to study their answers to find some pattern or rule that connects START to FINISH The path followed must go horizontally or vertically (not diagonally).

START

$8 \div 4 \times 6$	$49 - 7 \times 0$	$18 \div 3 \times 2$	$\frac{18-9}{9-6}$
$4 + 2 \times 3$	$16 \div 2 \div 1$	11×11	$3 \times 7 \times 2$
$\frac{8+4}{8-4}$	$24 \div (4 \times 1)$	$\frac{36}{3+6}$	$15 \div (3+2)$
$\frac{6 \times 6 - 3}{11}$	$16 \div 8 \div 2$	$\frac{8+32}{20}$	$12 \times 9 \times 4 \times 0$

FINISH

The answers for each square are shown in the next grid.

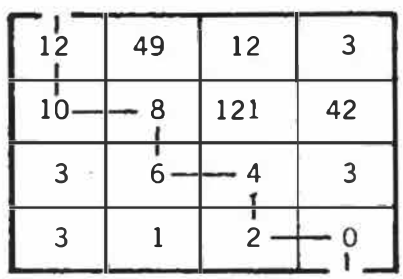
START

12	49	12	3
10	8	121	42
3	6	4	3
3	1	2	0

FINISH

By studying their answers, the students will eventually see this simple rule or pattern: the values in consecutive boxes decrease by 2.

START



FINISH

In finding answers, the students will eventually realize that they need not do the computation in every box.

Challenge the students to do the least number of computations to find the path (based on some pattern or rule for the answers).

There are a number of other useful mazes based on different topics. The following examples illustrate that a maze is a device that might be used to drill 'basics' in many different topics.

For each maze, a pattern or rule is given to connect START to FINISH. Keep in mind that often students will find other rules that describe the pattern they have found, other than the rules that are given.

The rule for the path in this maze is: answers are divisible by 4. This maze encourages students to do mental calculations.

START

6 X 7	16 X 3	$4^2 + 8$	64 ÷ 4
100 + 100	86 X 8	16^2	57 X 6
72 X 6 X 3	$2^2 + 3^2$	$5^2 - 4^2$	25 − 16 18
1000 − 864	22 X 6 X 2	$4^2 + 4^2$	$10^2 - 10$

FINISH

This maze is based on simple calculations with specific fractions. The rule for the path is: each answer is the same. Remember you cannot move on a diagonal.

FINISH

$\frac{1}{8} \times \frac{3}{4}$	$\frac{2}{3} \times \frac{4}{5}$	$\frac{3}{12} \div \frac{5}{12}$	$\frac{15}{5} \times \frac{3}{15}$
START — $\frac{3}{5} \times \frac{2}{2}$	$\frac{6}{5} \times \frac{3}{6}$	$\frac{2}{5} \times \frac{3}{5}$	$12 \times \frac{1}{20}$
$\frac{1}{4} \div \frac{1}{3}$	$\frac{11}{5} \div \frac{11}{3}$	$\frac{1}{10} \div \frac{1}{5}$	$\frac{2}{5} \div \frac{2}{3}$
$\frac{1}{3} \div \frac{3}{5}$	$\frac{5}{5} \div \frac{5}{3}$	$\frac{9}{15} \div \frac{4}{4}$	$\frac{3}{4} \times \frac{4}{5}$

The following maze is based on simple division for review. The rule for the path is: each answer has a remainder of 2.

FINISH

101 ÷ 9	86 ÷ 7	66 ÷ 8	123 ÷ 10
143 ÷ 8	55 ÷ 9	102 ÷ 10	132 ÷ 11
27 ÷ 5	32 ÷ 6	54 ÷ 13	147 ÷ 12
14 ÷ 4	46 ÷ 7	49 ÷ 6	93 ÷ 10

START

This maze is based on division. Have your students find the rule for the path.

START

$\frac{293}{24}$	$\frac{509}{22}$	$\frac{134}{11}$	$\frac{169}{12}$
$\frac{350}{18}$	$\frac{361}{17}$	$\frac{636}{19}$	$\frac{560}{18}$
$\frac{500}{29}$	$\frac{395}{26}$	$\frac{344}{21}$	$\frac{417}{23}$
$\frac{439}{16}$	$\frac{356}{14}$	$\frac{316}{24}$	$\frac{642}{22}$

FINISH

In referring to the squares in a maze it is helpful to place letters to identify them (as shown in this next maze). This maze is based on some review of substitution skills. For this maze, a = 7, b = 3, c = 5.

START

A $c^2 - b^2 + 4$	B $b \times c$	C $a + b$	D $\frac{c^2}{c}$
E $16 - (a + b)$	F $a + c - 7$	G $\frac{a + b}{5}$	H $a + b - c$
I $\frac{a^2 - 4}{9}$	J $a \times b + c - 1$	K $b + c - a$	L $a^2 - c^2$
M $\frac{a \times b - 1}{4}$	N $b \times c - 10$	O $\frac{a \times c + 5}{8}$	P $25 \div c$

FINISH

The use of mazes can be applied to different grade levels. For example, at an early grade the maze can be used to review the '8 times table' as shown. The students need to find the factors of the numbers given to find the path from START to FINISH. (The rule could be given as a the multiples of 8.)

START

64	16	70	63
49	24	35	25
18	32	56	72
42	54	21	40

FINISH

At this level, the maze can also be used to review simple basic skills as shown on the next page.

START

15 X 2	4 X 4	8 + 9	5 ÷ 1
2 X 7	18 − 3	5 X 9	25 − 2
7 + 6	16 + 8	3 + 6	64 ÷ 8
6 X 2	31 − 20	100 ÷ 10	12 X 3

FINISH

The path is based on the rule that the answers decrease by 1 as shown.

START

30	16	17	5
14	15	45	23
13	24	9	8
12	11	10	36

FINISH

Here is a suggestion to accumulate a number of these mazes. Have each student in the class decide on a pattern or rule for the maze to trace a path from START to FINISH.

The students then 'create' computational questions to relate to the pattern and complete the maze. They also can use their textbook as a source of questions.

Print the questions on the maze. Have the students exchange mazes and work them. In this way, any flaws will be found by the students.

If the students exchange their mazes, they can be checked for their 'work ability.'

In creating a maze the students review their basic skills for the given topic and enjoy themselves (there are exceptions!)

After this activity, you will have another source of mazes that can be drawn on later for review of the topic. Try it. They'll like it!

You will be 'amazed' how a maze stimulates interest in dull drill.

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