??? *Problem Corner* ???

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Problems suggested here are aimed at students of both the junior and senior high schools of Alberta. Solutions are solicited and a selection will be made for publication in the next issue of *delta-K*. Names of participants will be included. All solutions must be received (preferably in typewritten form) within 30 days of publication of the problem in *delta-K*.

Mail solutions to: Dr. Roy Sinclair or Dr. Bill Bruce
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Solutions to Problems 2 and 3 will be published in the next issue of *delta-K*.
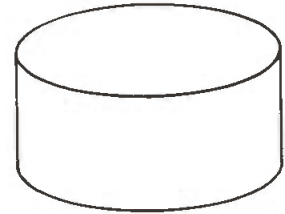

Problem 4:

(submitted by Dr. A. Meir, University of Alberta)
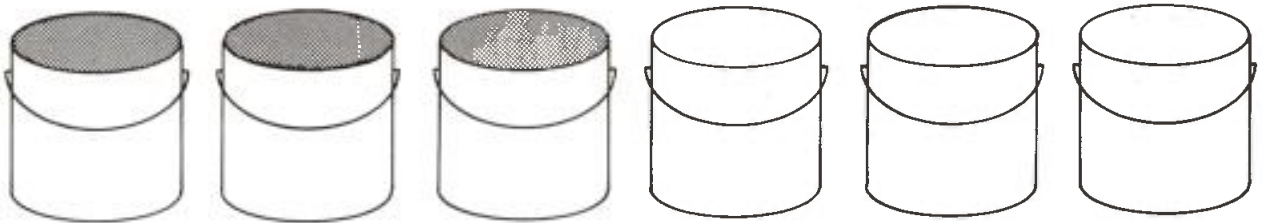
Let p be a prime number and <u>a</u> be a positive integer. Show that $(a-p)^3 + a^3 = (a+p)^3$ cannot be true.

Rec. Corner

1. Cut the cake into 8 pieces using only
    3 cuts.

2. Move just one pail and end up with an alternating pattern of full and empty
    pails.

3. Study the following examples:

$$
\begin{array}{r} 47 \\ \times 43 \\ \hline 2021 \end{array}
\qquad
\begin{array}{r} 52 \\ \times 58 \\ \hline 3016 \end{array}
\qquad
\begin{array}{r} 36 \\ \times 34 \\ \hline 1224 \end{array}
$$

These products can be written
in one line in seconds.

What characteristics are common to all three examples?

What is the short-cut method?

Try your method on these:

$$
\begin{array}{r} 85 \\ \times 85 \\ \hline \end{array}
\qquad
\begin{array}{r} 71 \\ \times 79 \\ \hline \end{array}
$$

Why does it work?