CHAPTER 1 Mathematical Processes
1.5 Focus on Selecting Tools and Computational Strategies
Selecting tools and strategies: calculators, physical models, graph paper and computers

Example:

a) Describe the pattern that results when you colour in the perfect squares on a 10 by 10 multiplication square.

b) Describe any pattern that you see in the other diagonal.

Solution:

a) Use graph paper or computer software such as a spreadsheet to construct a 10 by 10 multiplication square. Colour in the perfect squares to see that they lie along one of the diagonals of the square.

b) Start in the lower left hand corner, and move up the other diagonal. The numbers are obtained by adding 8, 6, 4, 2, 0, –2, –4, –6, and –8.

	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Practice:

1. You want to find the thickness of a sheet of paper. What tools can you use to determine this measurement?

2. Tom is thinking of a one-digit number. If you multiply by 3, add 8, divide by 2, and subtract 6, you get the same number back again. Describe what tools you would use to determine the number.

Answers:

1. Make a physical model by piling several hundred sheets, or find a package of paper. Use a ruler to measure the thickness of the pile of sheets. Use a calculator to divide the thickness by the number of sheets. Sample answer: 500 sheets of paper measure 5.0 cm. Each sheet must have a thickness of $\frac{5.0}{500} = 0.01$ cm.

2. There are 10 possible one-digit numbers. You can check each one using a calculator. Alternatively, you can use computer software such as a spreadsheet to quickly apply the formula to all possible numbers, and see which one works. Answer: 4.