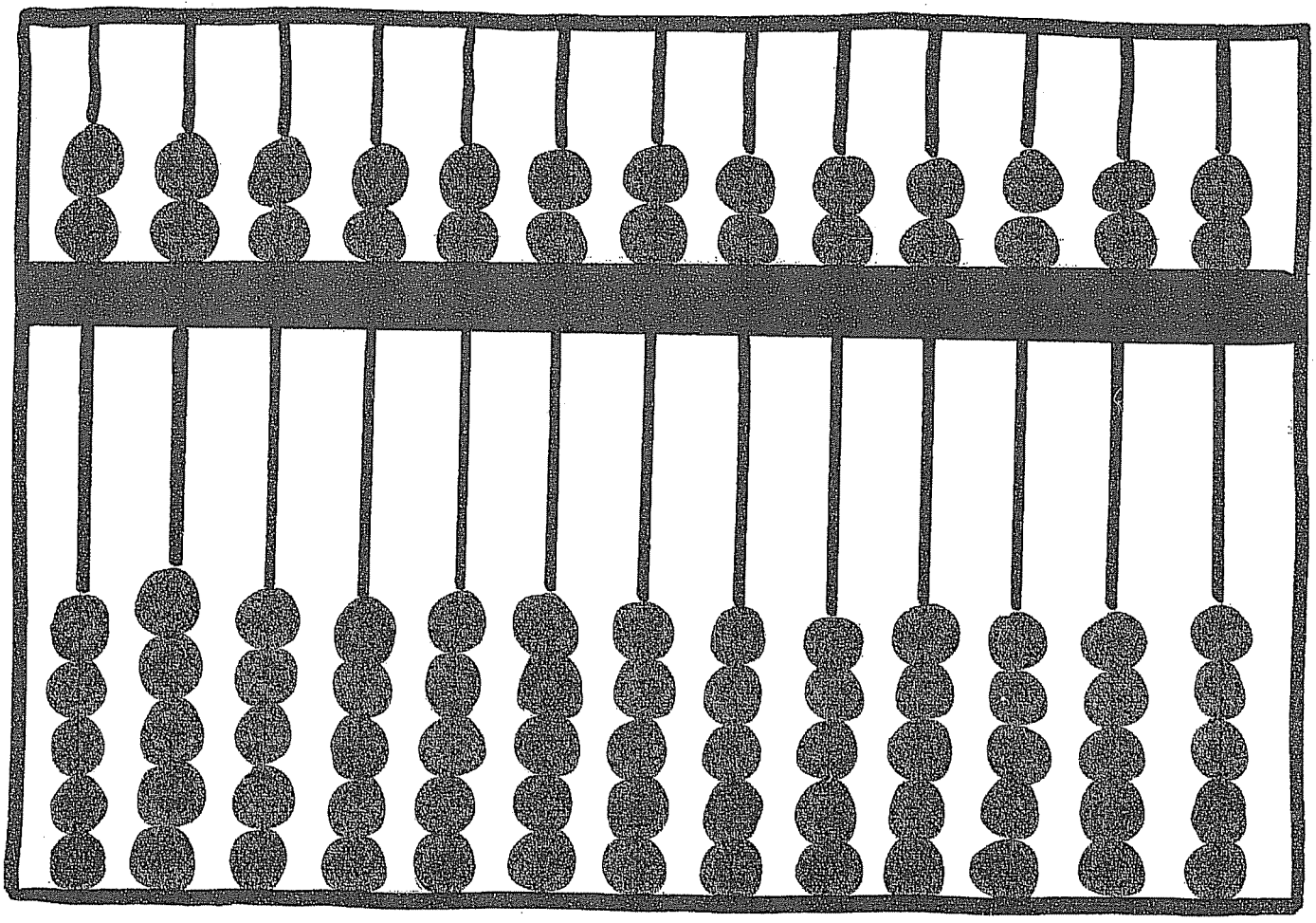
Abacus

An abacus is an instrument used to calculate math problems. It uses bead (numbers represented by beads) arithmetic. The use of the abacus is called the "art of reckoning". The abacus pictured below is one type, called the Chinese abacus.



Shoshana Waxman
The Linden School
Toronto, Ontario

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Edited by Frances Schatz

The school year is coming to a close.This is a great time to introduce fun activities and to find out what works well in the classroom.

The June potpourri opens with **A Toilet Tissue Adventure** by **Claudia Carver,** Kitchener, a hospital social worker. Whenever I read the newspaper I search for real-world mathematics and one of my favourite columns in the Kitchener Waterloo Record is 'The Lighter Side' which welcomes community contributions. This adventure should stimulate student's curiosity about other products in stores. Meantime, enjoy some entertainment in the Number and Data Management strand. Thank you Claudia for showing levels 5-10 investigation and communication skills.

Cindy Harvey, grade 5 teacher at R.Gordon Sinclair PS in Kingston, has provided **Beothuk: The Vanished People of Newfoundland** for our native theme in problem solving. Thank you Cindy for this mathematical connection to history.

Peter Banks, Dickson Public School, Cambridge, knows from personal experience how important **A Daily Dose of Basic Math** is to grade five students. In a letter to parents he aims for home/school cooperation and encourages parents to sign the Daily Speed Drill. Thank you Peter for sharing teaching numeracy skills from your classroom.

Michael Salter, London, likes his grades 2-4 students to do multiplication in a geometric setting. **Cloverleaf Multiplication** uses circle patterns on a four-leaf clover for three learning outcomes in the numeration and spatial sense strands:

i. Creation and recording of basic operation of multiplication by counting.

ii. Application of repeated patterns to determine new multiplication facts.

iii. Use of geometric concepts to make designs related to multiplication.

Thank you Michael for this unique approach which incorporates math drill, geometry and art.

Frances Schatz

Answer Keys

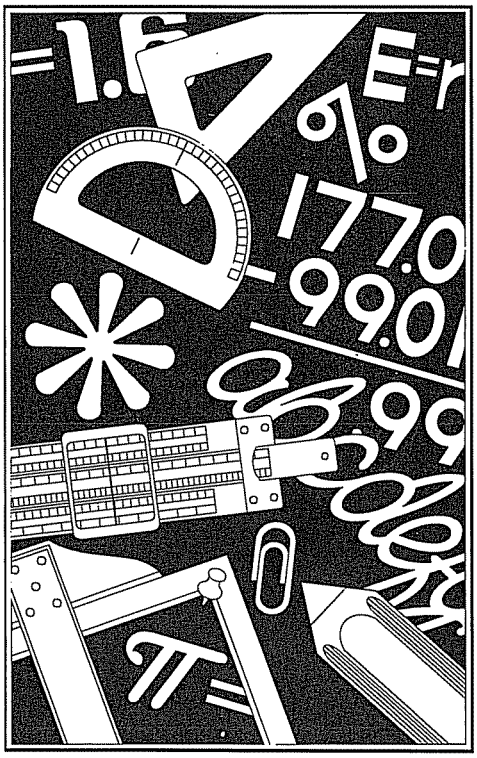
Some Answers for BEOTHUK:

There are 200 caribou of which 30% or 60 are older males. Each canoe group could kill 4 caribou. If 60 caribou are the maximum kill then the following chart shows some possible answers for number of outfits:

If fence is 2 km long and each tree makes about 3 m, then 2000 divided by 3 means about 667 trees are needed.

Warrior (3 hides)	Child (1.5 hides)	Woman (2 hides)
20	0	0
19	2	0
16	0	6
16	4	6
10	8	9

Various answers possible for remainder of story.



Answer Keys

Circle Patterns: Clover leaf multiplication

Multiply by 4

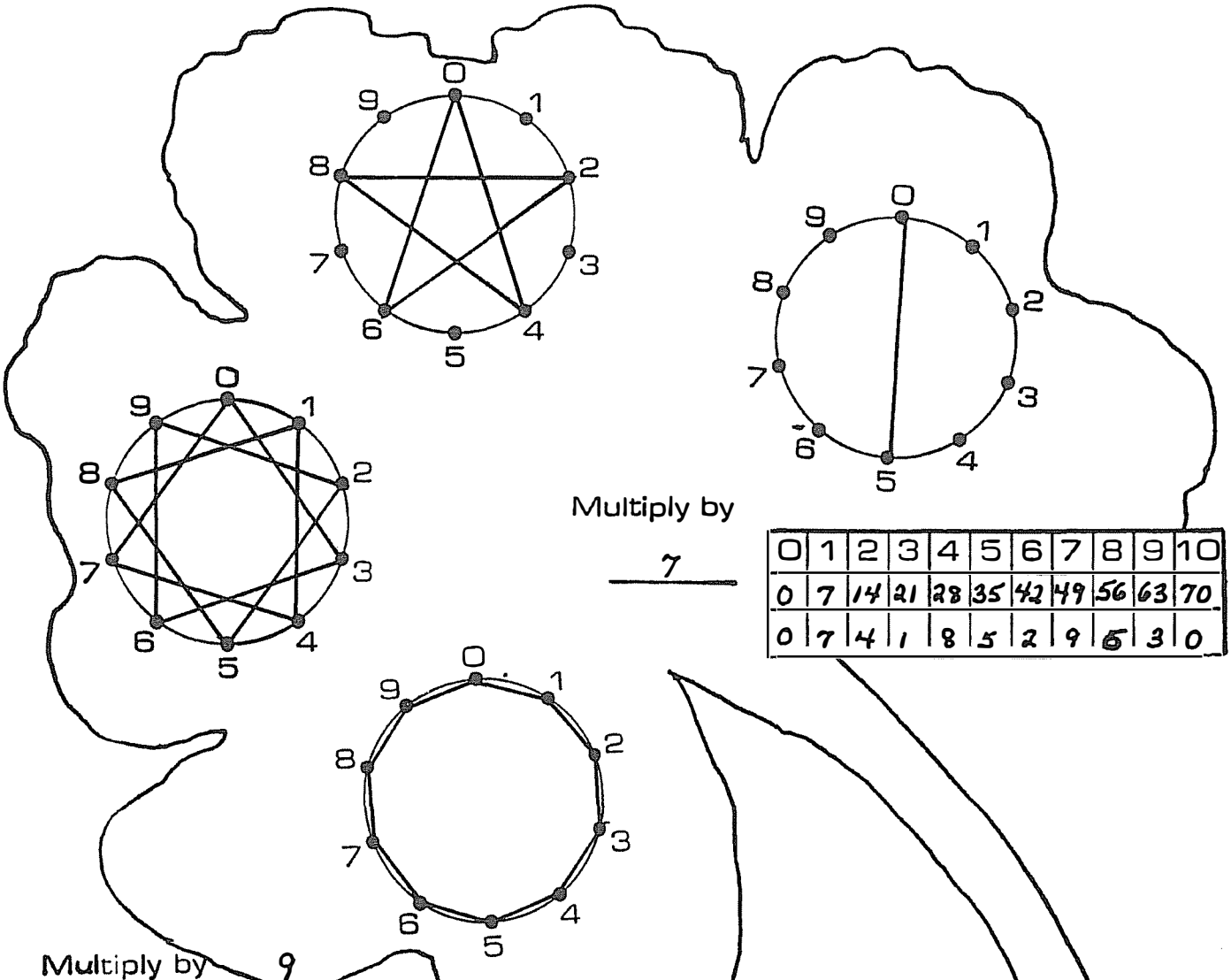
0	1	2	3	4	5	6	7	8	9	10
0	4	8	12	16	20	24	28	32	36	40
0	4	8	2	6	0	4	8	2	6	0

Multiples

Ones Digit

Multiply by 5

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	25	30	35	40	45	50
0	5	0	5	0	5	0	5	0	5	0



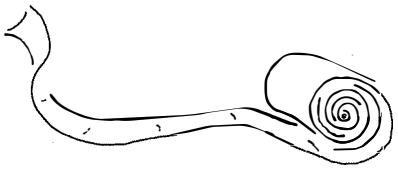
Multiply by 7

0	1	2	3	4	5	6	7	8	9	10
0	7	14	21	28	35	42	49	56	63	70
0	7	4	1	8	5	2	9	6	3	0

Multiply by 9

0	1	2	3	4	5	6	7	8	9	10
0	9	18	27	36	45	54	63	72	81	90
0	9	8	7	6	5	4	3	2	1	0

A Toilet Tissue Adventure



by Claudia Carver

Some think I am cheap; I prefer to consider myself frugal. I'm assigning partial blame to the woman who engaged my husband and me in conversation at the grocery store on the weekend. "Can you find the unit price of any of these," she asked.

Then she added, "Even if we could find the unit prices, it doesn't make much difference when the rolls are all different sizes." I knew I could not solve this dilemma with people breathing down my neck, so I quickly grabbed a package and wheeled off, promising myself I would get to the bottom of this trickery a.s.a.p.

With a note pad and pen for field research, I jotted down key descriptive words, price, number of rolls per package and number of sheets per roll. I figured out the price per roll, simply divide the total cost per package by the number of rolls. The range was 27 to 83 cents per roll. The tricky part is to calculate the cost per sheet. The sheetage varied from 200 to 380. "Smart Choice" was 0.00077 cents per sheet while "Ultra Soft Thick" was a whopping 0.00346 cents per sheet. I still wasn't done, however, for what I hadn't reckoned with when I began my research was the variance in sheet size.

This was puzzling until I realized that some brands advertised not only that they were extra soft and/or had no inks, dyes or perfumes, but that the tissue comprised extra-long sheets - 15 cm by 10.7 cm to be exact. How could I compare a smaller sheet of 11.2 cm by 10.6 cm at 0.0018cents to an extra-long sheet at 0.00297 cents? To make matters more confusing, one was advertised as an environmentally friendly product, 100% postconsumer recycled paper and the other made no such claims.

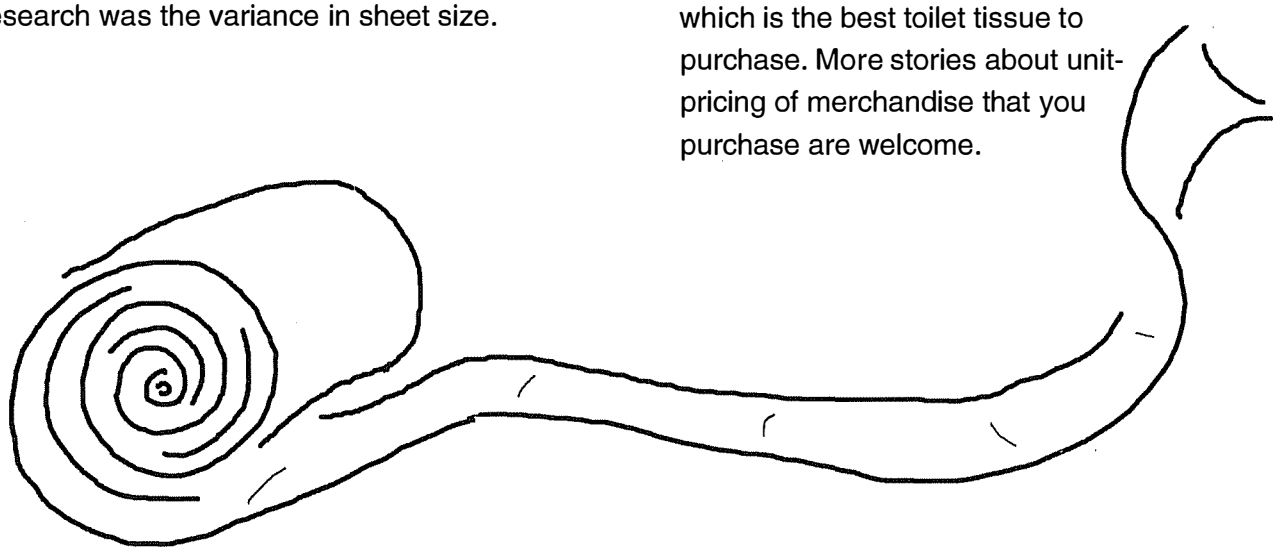
Was price alone the only thing to consider? What about quilted softness or hypo allergenic qualities? I figured I had only three choices left:

1. Keep the number of people in my house constant for week-long periods of time and measure the cost of using a particular brand.

2. Return to my eeny-meeny-miney-mo technique when shopping.

3. Make use of the old Sears catalogues I have stored in the garage. Cheap, you say?

Write to the *ABACUS* editor with your ideas on which is the best toilet tissue to purchase. More stories about unit-pricing of merchandise that you purchase are welcome.



BEOTHUK: THE VANISHED PEOPLE OF NEWFOUNDLAND

by Cindy Harvey

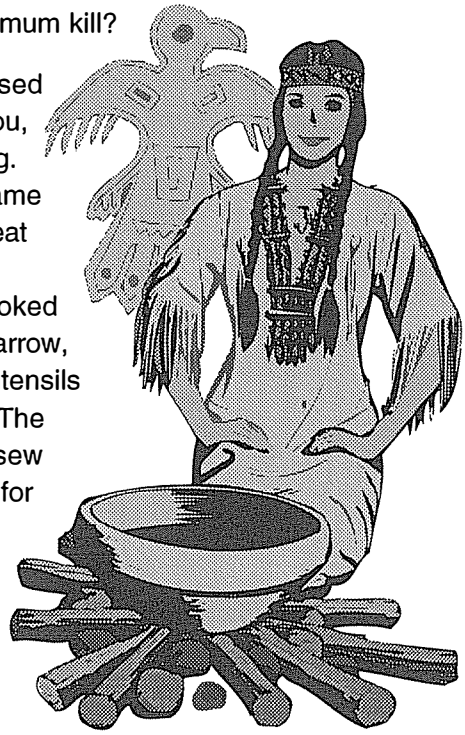


The last Beothuk died in 1829 after whitemen settled permanently on Newfoundland. Before this for centuries, the nomadic bands of Beothuk travelled the northeast coast and interior of Newfoundland. They were very dependent on the caribou herds and developed unique hunting techniques. Just imagine...

A caribou herd of 200 has been following the natural annual route inland to winter feeding grounds. The Beothuk have created a fence of fallen trees to guide the caribou to the deep river. As the warriors chant and yell, the frightened caribou must swim to escape. However, waiting in canoes on the river are the hunting warriors who shoot with bow and arrow the slow swimming caribou, dragging them to shore.

The herd consists of 50% female, 20% young and the rest are older males. If the warriors only kill the males, what is the maximum kill of caribou?

There are only 15 canoes in the group of bands and they are all used in this hunt. How many caribou would each have to shoot to get the maximum kill?

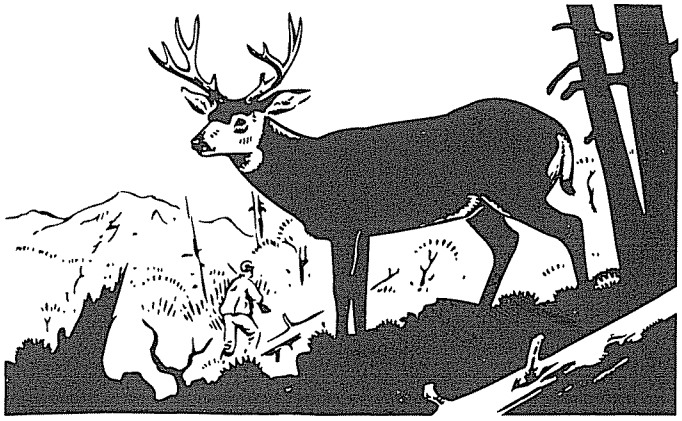


The Beothuk used all of the caribou, wasting nothing. The skins became clothes, the meat was eaten, the bones were cooked for the tasty marrow, then used for utensils and weapons. The women would sew winter clothing for everyone. A warrior outfit would require 3 hides, a child's would only need 1.5 hides and a woman's would use 2 hides. Using the maximum kill from the hunt, how many outfits could be made? Organize the information in a chart giving at least 5 different answers.

Before the actual hunt, much time was spent preparing the fence. Trees were cut at about 1.5 m off the ground and the tops just pushed over to form a fence. Branches were piled up to fill any gaps. Fences stretched for 2-3 kilometers to make sure the herd of caribou was caught. One tree would make about 3 m of fence. Assuming no gaps in the fence, how many trees would be required for 2 km of fence?

- How would you organize your band of warriors to make a successful hunt?
- How many in a canoe?
- How would you find the caribou before the hunt?
- Make noise in the forest?
- How long do you think this hunt would last?

Good hunting...



A DAILY DOSE OF BASIC MATH

by Peter Banks



Dear Parent/Guardian:

Many of todays students need to improve their knowledge of basic mathematical skills. In my classroom I feel that students benefit more from a daily review of these skills rather than a two or three week mass review of a particular skill. If students do something on a daily basis it will become a habit. Every day the students in my grade 5 class begin the day working on an assortment of addition, subtraction, division and multiplication questions. At this level multiplication is the most challenging and here is how you can help.

Review the multiplication tables together on a nightly basis. **The Daily Speed Drill** chart shows you what table we are currently studying in class. Please complete the date, table done at home, and your signature. Fifteen minutes of daily practice in morning class and at home opens the afternoon block of time to learn other mathematics in the curriculum.

We can help students enjoy math by playing math games at home and school. When giving quizzes I use less questions rather than more - I want to see what has been mastered not how fast or how many?

A daily dose of basic math at home and at school will make past and current lessons fun for all.

DAILY SPEED DRILL

Date	Times Table Studied	Parent's Signature

CLOVERLEAF MULTIPLICATION

by Michael Salter

Skills:

Multiplication, Geometry in circles, Art Equipment: I or 2 copies of Cloverleaf, pencils, crayons, straightedge.

Purpose:

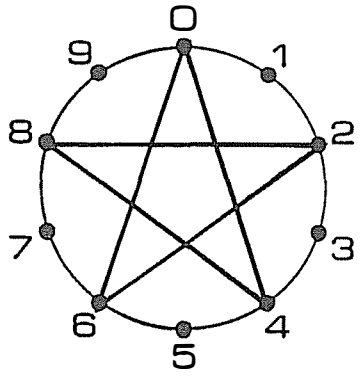
To explore the relationship between the ones digit of the multiples of a number on a circle.

To describe and colour the design created.

Example:

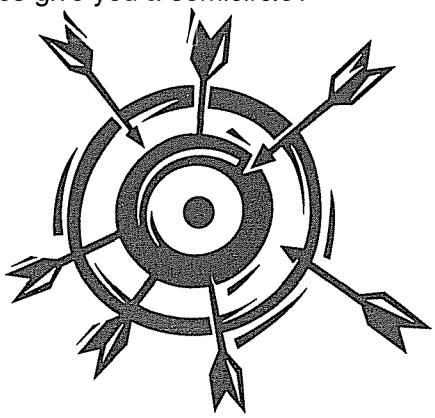
Multiply by 6.

	0	1	2	3	4	5	6	7	8	9	10
Multiple	0	6	12	18	24	30	36	42	48	54	60
Units Digit	0	6	2	8	4	0	6	2	8	4	0



Use the circle. Connect the numbers in your repeating pattern. Describe the design, then colour it.

Multiples of 6 give a five-pointed star. I see 5 triangles and a pentagon. There are 5 lines joining numbers. Is there anything else we can say about this pattern? Make designs for multiples of 2, 3, 4, 5, 6, 7, 8, 9. Are any of the patterns the same? Why do you suppose some of the circle patterns are different? Which multiplication tables give you a semicircle?



Extension

Use a calculator to determine ones digits for multiplication by 11, 12, 13, 14 etc. There is an endless number of counting numbers. How many different circle patterns are possible? What do you notice?

CLOVERLEAF MULTIPLICATION

Multiply by _____

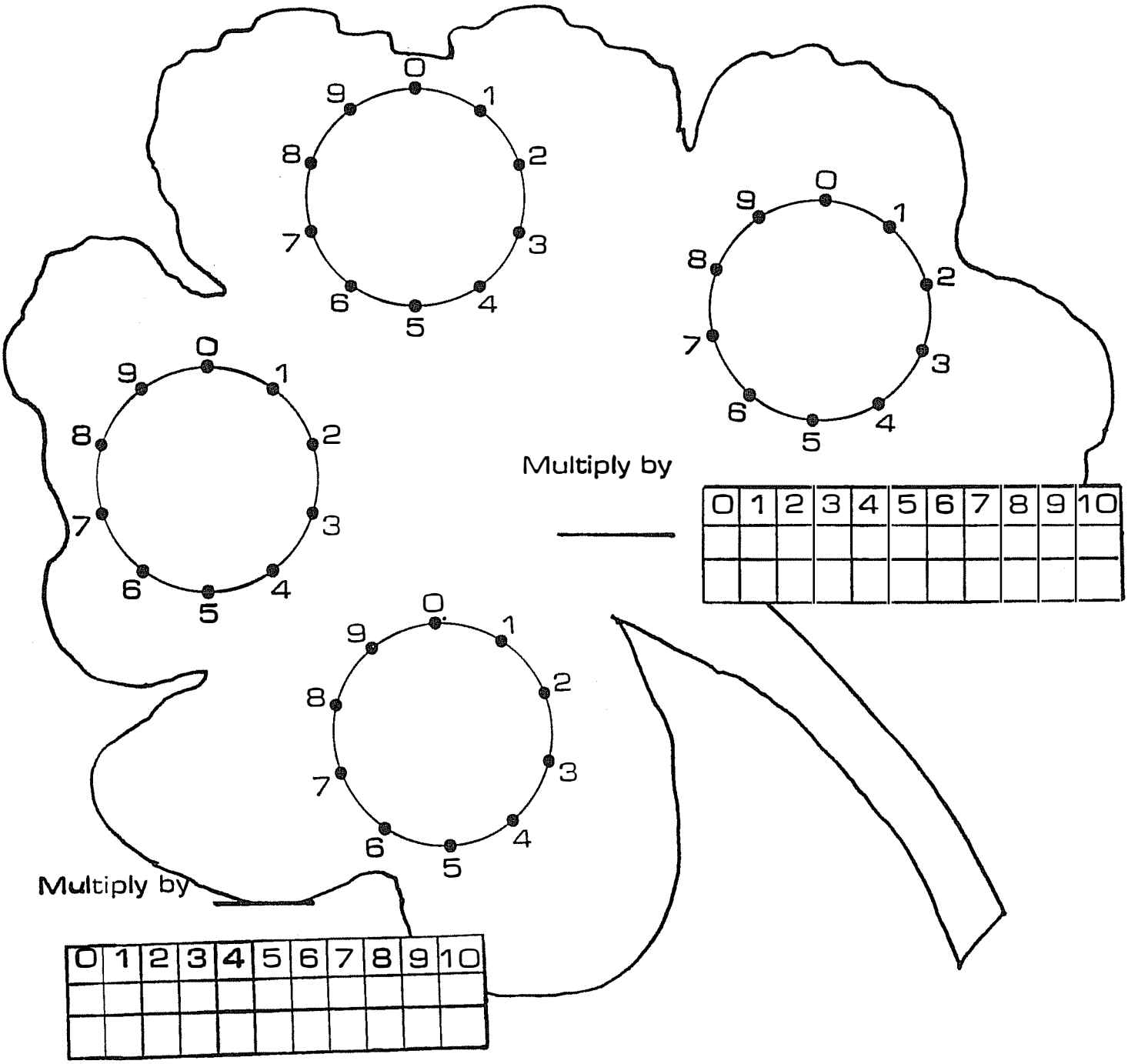
0	1	2	3	4	5	6	7	8	9	10

Multiples

Ones Digit

Multiply by _____

0	1	2	3	4	5	6	7	8	9	10



Multiply by _____

0	1	2	3	4	5	6	7	8	9	10

Multiply by _____

0	1	2	3	4	5	6	7	8	9	10