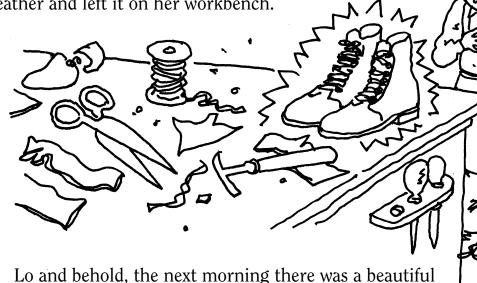# The Elves and the Shoemaker

Once there lived a shoemaker and her husband. They were very poor indeed. The husband took care of the house and meals while his wife was at her workbench.

"We're down to our last piece of leather," said the shoemaker. "I have enough to cut out one more pair of boots to sell. With all the big factories springing up all over the city, it's hard to make a living as a shoemaker these days."

With a sigh, the shoemaker cut out the last strip of leather and left it on her workbench.

Lo and behold, the next morning there was a beautiful pair of leather boots sitting on the workbench. A young man came into the shop and paid a generous price for the boots. Word spread, and soon there were at least a dozen orders for more boots.

The shoemaker was delighted and used the money to buy enough leather for 2 more pairs. As before, she left the cut leather on her workbench. Sure enough, in the morning, she found 2 beautiful pairs of boots.

Then she bought leather for 4 pairs of boots, and so it went for 10 days! The shoemaker and her husband were written up in the newspaper and became famous in their town.

"We've got to pay our nighttime helpers back somehow," the shoemaker said to her husband. "Let's stay up and see who's been coming here to work."

That night, they hid behind their new dishwasher. At the stroke of midnight, 4 teenage elves appeared and set to work. One elf played a tiny electric guitar while the other elves sewed without stopping until dawn. Then they disappeared.

"Those poor young elves," said the shoemaker. "Their clothing is so ragged!"

"Let's sew them some new vests and pants and tiny boots to repay them," suggested her husband.

That's exactly what they did. Each vest had 6 silver buttons, and the pants were very fashionable. The shoemaker and her husband left the tiny clothes along with a gift certificate to a music store.

The delighted elves dressed up in their new clothes. They danced to the guitar music and left. They never returned.

But don't worry about the shoemaker and her husband. They had been touched by magic, and they were prosperous and happy for the rest of their lives.

The Elves and the Shoemaker

1. Complete the table. Show how many boots the elves made on nights 1 through 10.

Night	Number of Pairs of Boots Made
1	2
2	4
3	8
4	16
5	
6	
7	
8	
9	
10	

What pattern do you see?

_____

_____

Use a calculator to find out how many pairs of boots the elves made in all.

_____

2. What if the elves had made 1 pair of boots the first night, 3 pairs the second night, 9 pairs the third night, and 27 pairs the next night? How many pairs of boots would they have made on the sixth night?

Night	Number of Pairs of Boots Made
1	1
2	3
3	9
4	27
5	
6	

What pattern do you see?

_____

_____

3. When the shoemaker and her husband sewed clothes for the 4 elves, they made vests with 6 buttons on each vest. How many buttons did they need for 1, 2, 3, and 4 vests?

Number of Vests	Number of Buttons
1	6
2	
3	
4	

The Elves and the Shoemaker, p. 43

1.

Night	Number of Pairs of Boots Made
1	2
2	4
3	8
4	16
5	32
6	64
7	128
8	256
9	512
10	1,024

The number of pairs doubles each day; 2,046 pairs of boots.

2. 243 pairs of boots

Night	Number of Pairs of Boots Made
1	1
2	3
3	9
4	27
5	81
6	243

The number of pairs of boots is three times the number the day before.

3.

Number of Vests	Number of Buttons
1	6
2	12
3	18
4	24