

Lesson plan for Literacy Day

Topic: Multiplication, factorials

Launch: Write an expression that uses multiplication to describe the total number of stars in the picture (attached, print on transparency).

Expected answers: $2 \times 3 \times 4$ or $2 \times (3 \times 4)$ or similar expressions, with the factors arranged in a different order. Ask selected children to explain why they wrote their expression in the way they did.

Lesson: Read *Anno's Mysterious Multiplying Jar* by Masaichiro and Mitsumasa Anno up to: "But how many jars were in the boxes together?". The story describes 1 island with 2 countries on it and with 3 mountains in each country. On each mountain are 4 walled kingdoms and within each kingdom are 5 villages. In each village there are 6 houses and in each house are 7 rooms. In each room are 8 cupboards and within each cupboard are 9 boxes. Within each box are 10 jars.

Tell the children that before we figure out how many jars there are, we will first figure out how many villages there are.

Ask the children to draw a simple picture of the island, countries, mountains, walled kingdoms, and villages and to write an expression for the total number of villages. They should write one of the following two expressions:

$$1 \times 2 \times 3 \times 4 \times 5 \quad 5 \times 4 \times 3 \times 2 \times 1$$

(they might leave the 1 out, which is ok).

Ask: what is the value of this expression? The children should find that it is 120. So there are 120 villages.

Ask: how many houses are there? Write an expression for the number of houses and find the value of the expression. There are

$$1 \times 2 \times 3 \times 4 \times 5 \times 6 = 720$$

houses.

Similarly, ask how many rooms are there? How many cupboards are there? How many boxes are there? How many jars are there? There are

$$720 \times 7 = 5040$$

rooms. There are

$$5040 \times 8 = 40,320$$

cupboards. There are

$$40,320 \times 9 = 362,880$$

boxes. There are

$$362,880 \times 10 = 3,628,800$$

jars.

Tell the children that we have a special mathematical notation for the products we have been considering. We write

$$5!$$

for

$$5 \times 4 \times 3 \times 2 \times 1$$

So we figured that

$$10! = 3,628,800$$

Now read the rest of the story.

Write an expression that uses multiplication to describe the total number of stars.

Find the value of your expression.

