Abaku Balls (from Plusville[1])

Alena Vávrová, ZŠ Karla Čapka, Praha 10 – Vršovice

Topic: Reading three-digit numbers, comparing them and sorting them out from different perspectives, searching for equations.

Aim (expected outcome): Children will create a playful relationship towards numbers, so they would not only be able to read the number, but also find hidden equations. With time the equation will not remain hidden any more, but they will see it straight away.

Typical age group: 6 years (addition and subtraction of single-digit numbers), 8 years (third grade - three-digit numbers).

Instructions: Use picture PR6.

● If we work with first-graders, we search for balls which have equations hidden in their number. Each problem always contains one mathematical operation and an equal sign in this order. Such balls (and numbers) we call Abaku balls (or numbers). For example, ball number 347 is an Abaku ball, because it contains the equation 3+4=7, ball number 374 is not an Abaku one, because it does not contain an equation in the desired order. Once a ball is found we send it to the dog's house.

● Once three-digit numbers are introduced and children learn to read them correctly, they will start by reading numbers on the balls, then they can compare them and sort them out by their sizes. If you haven't used this Worksheet (PR6) to look at the problems, use it now.

● We work with Worksheet PL3 exactly in the same way. Children read numbers on the balls and straight away they can say if the balls are Abaku ones (from Plusville[1]). They colour in Abaku balls and they can distinguish by colour balls with addition equations and subtraction equations.

● On both examples (picture PR6 and Worksheet PL3) there are balls which do not contain any equations. Correct one digit in such a way as to make it an Abaku ball. Compare with

other children, how much their corrections match. Point out and praise the different corrections.

E.g. ball 141 is not an Abaku one and we can correct it to 541 or 145 or 111 or 441 or 144. This obviously depends on the level of the children's knowledge (if they already know how to use multiplication).

We will write Abaku numbers on the blank balls, or we will draw more balls.

● Raise the question: How many three-digit Abaku numbers are existing? (In detail this problem is solved in the address book Math Problems / License Plates).

With younger children we can ask questions like, which Abaku number begins with number one, with number two, ..., which one is the lowest Abaku number (112, if we work with zero[2], then of course 101.)

We ask them to think if there can be one-digit or two-digit Abaku numbers. Depending on the children's level of knowledge, we can ask that question the other way round, that is: Why one-digit or two-digit numbers cannot be Abaku ones[3]

---

[1] If you have already got to know the town of Plusville, you can mark balls as they are from Plusville.

[2] Abaku itself uses zero only as a part of multi-digit numbers, it never uses it on its own. With these balls I would recommend using it.

[3] It might happen that some children will know enough that number 39 could be an Abaku number, because 3 squared is nine. Yes, in such case even double-digit numbers can be Abaku numbers and we will praise them for it. ☺