

Place Value Activities Stage Two

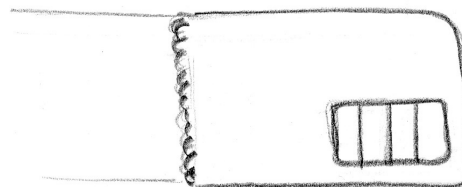
Day 2:

Now this process can be grounded in the written form – but in very small increments so that we offer the manipulatives bridge¹³ for ground as they move into the next, more conceptual, step.

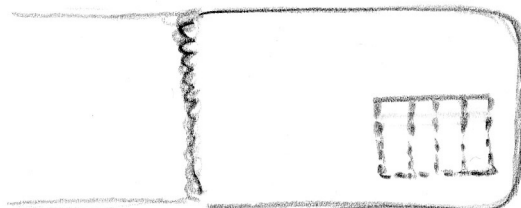
Step 1: Ahead of time, an adult must prepare the papers to make this possible - it will help to read through all the directions before beginning.

We will need to use the two pages in the child's Morning Lesson Book that follow his Tricky Mischief picture:

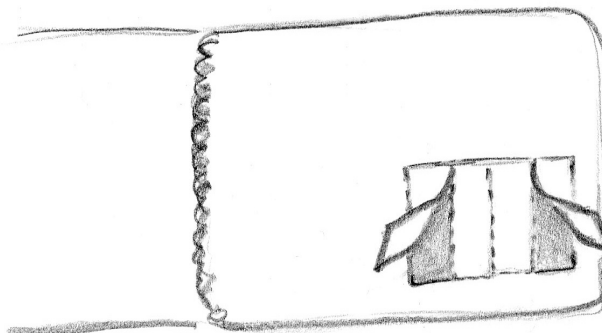
- a) On the *First or upper* of these sheets, towards the bottom right, draw a large box divided into four sections – this should be big enough to draw in bags and jewels:



- b) Place a piece of cardboard between the sheets (i.e. under the one you have just drawn on) and cut the right, left, and bottom sides of the drawn box with a mat knife, leaving the top side intact. Cut along the vertical dividing lines.

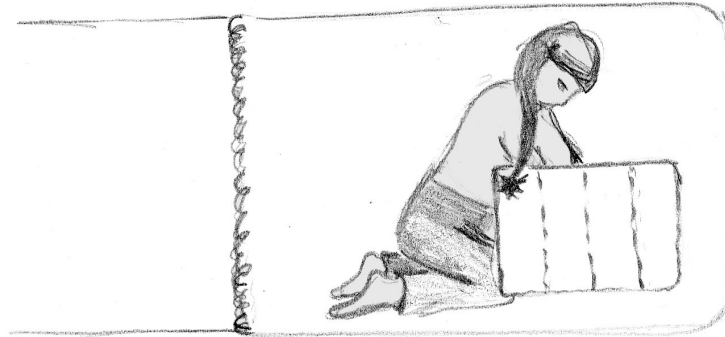


- c) Remove the cardboard and lay the top sheet down on the bottom sheet. Line up the pages carefully. Flip up the cut sections and use this as a guide to draw the identical box on the bottom sheet. Lay down each section you have flipped up to draw that line where it should be.
- d) Glue the two sheets together, I
done ahead of time without th



¹³ see Teaching Guides: Foundations/Acti

Step 2: On a different large paper or on the board, lead the children through a drawing of Tricky Mischief leaning over a drawing of a box, just like the box you have made them. The children draw right along with you, on their own paper where you have drawn and cut the boxes:



They will not use this drawing today, but having done it now will interest them in the process, and will deepen their sleep cycle preparation for drawing in it themselves tomorrow.

Step 3:

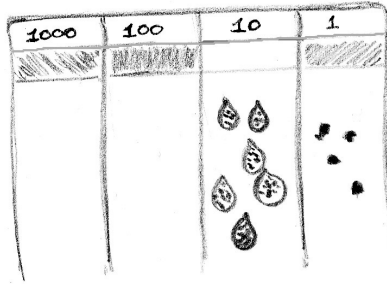
- a) On the blackboard or a large paper, color a small rectangle over each box section, with the appropriate color (wood/brown, china/white, silver/grey-blue; gold/golden yellow) The children don't draw yet.

1000	100	10	1
Gold	Silver	White	Brown

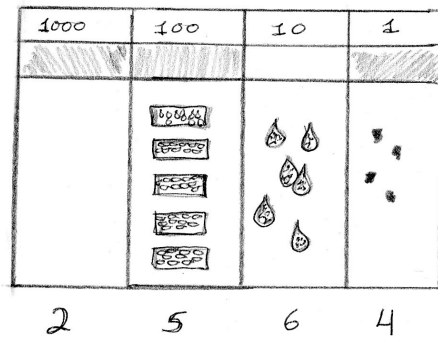
- b) Now draw some number of single stones in the ones box (far right). Ask the children how many jewels Tricky Mischief has. Write this number underneath this section of the box.

1000	100	10	1
			•••
			••

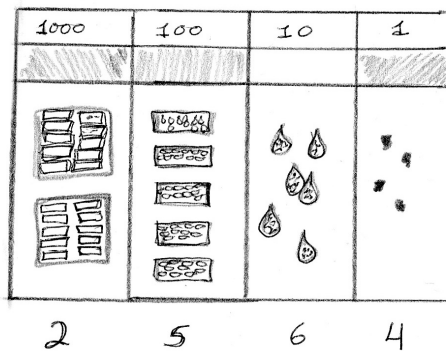
- c) Using the white chalk, draw a few bags in the tens box, and really put 10 dots or circles in each. Ask the children how many they have in this section. Write this number underneath this section of the box. Ask them to “read” how many they have altogether now.



- d) Using the grey-blue chalk, draw some number of boxes in the next section. Draw ten bags in each box, and ten dots in each bag (if they will fit). Count out each box by tens’ bags to reaffirm that there are 100 in each box. Ask the children how many Tricky Mischief has in this section. Write this number underneath this section of the box. Ask them to “read” how many she has altogether now.



- e) Using the golden-yellow chalk, draw a number of bigger boxes in the next section (far left). Ten small boxes will have to fit in each of these, and something representing ten bags in each of those. Count out each small box by tens bags to reaffirm that there are 100 in each small box. Then count out each big box by hundreds’ boxes to reaffirm that there are 1000 in each big box. Ask the children how many Tricky Mischief has in this section. Write this number underneath this section of the box. Ask them to “read” how many she has altogether.



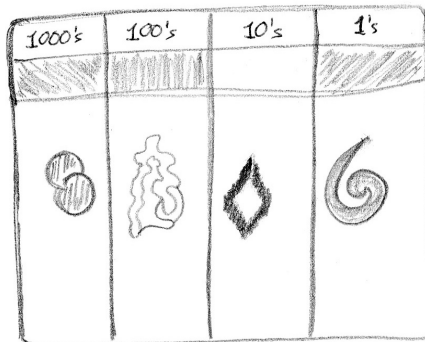
Step 4: Have one child at a time come up and change the number of bags or boxes. Do not let them erase or add more than a few or it will bog down. They can be limited to not removing or adding more than two or three whatever's, total (they choose which three - but they have to draw the nesting, so it can be quite time-consuming). In a classroom, more than one child can work at a time, with each child making changes to only one column. Then have another child come up and change the written numbers to reflect the truth. Have the whole group check the column numbers and read the full number.

It is best to do this process as many times as possible, as long as the children's energy is with you - don't exhaust them. Every change, they should be asked if they are sure the number is right and given a minute to ponder it. Every few changes it is a good idea to follow this with recounting each section (by 10's, by 100's, by 1000's). Each repetition cements the meaning in their bones.

While it may look as though the mathematically adept get this very quickly, that is usually an intuitive gift and they need the experience to strengthen the ground of understanding so they have this to draw on when intuition is not enough (usually in grades 5-7).

Day 3:

Step 1: Now the children start drawing the boxes. Give the children a brown crayon and glitter sticks of white, silver, and gold to decorate their boxes/flip sections (in the right order as described in the story). Glitter is a rare treat and this is a good place for it. It is best if the children can make a design to be the seal of the kingdom, in the glitter color of the preceding box, before they put the glitter over the whole lid. This helps deepen the sense of nesting, as china boxes are within silver and the china seal is on the silver etc. It is best not to use the numbers (10, 100, etc) for these symbols so that the magic in the boxes is a bit of a secret - this will cause the child to internalize more.



Step 2: Have the children flip up the one's "lid" and go to the bottom (or lower) of the glued pages. They begin drawing in their jewels just as you have done on the board - let them choose the number (which can be the real number of stones they counted - or not); take a minute to go over the fact that 9 is the most you can have (different colors for each column is

fine and fun). Even though they have just done this with you and there will be children who get it instantly, some will be totally lost. Review by asking them what happened with each box when they got to 10.

Once their jewels are in, have them write the number of jewels they have drawn in their box, underneath the box on the TOP sheet, such that it shows when the lids are closed (just as you did on the board the day before).

Then go on through each section, just as was done on the board, writing the number of bags or boxes in it. Insist on the ten dots in each bag, and ten bags in each small box, and ten small boxes in each big box. Color code the bags and boxes as was done on the board. Some children will want to draw all the way to the jewels level in each section – that is fine, but not needed – and slow going!

Day 4:

We want the children to keep reaffirming this process for as long as they are energetically with us – there is no such thing as too much of this if they are with us. For example:

- 1) ask them to look at someone else's box to see if they have put the right numbers down;
- 2) have them look inside someone else's box for just a minute and guess the number. This forces them to start perceiving in sets or groups of 10. Then count and see if they are right;
- 3) change the amounts using small pieces of cut felt to cover some number of jewels, bags or boxes. Then go around and guess after just a glance.

Come up with many variations of this for a day or two. It is best if they spend two full weeks getting this far – lots of sleep cycle. Then go on to the Place Value Grid and Base Ten Block activities as described in the following pages.