

Good practices MATH_117B_EN

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Description of the problem / exercise: **Using Poly-Universe in addition of fractions**

Used sets: Triangles

Fit any number of triangular elements so that the small triangles side by side are of the same color and the same size

The value of the base color of the triangle should be 1, the large triangle should be $\frac{1}{2}$, the medium triangle should be $\frac{1}{4}$, the small triangle should be $\frac{1}{8}$.

Task: After each item placed, calculate the total value of the red triangles in the resulting shape!

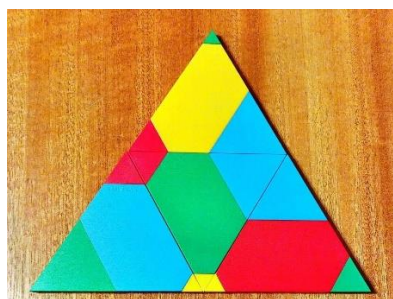
We can vary the tasks according to the needed level of practice. Examples:



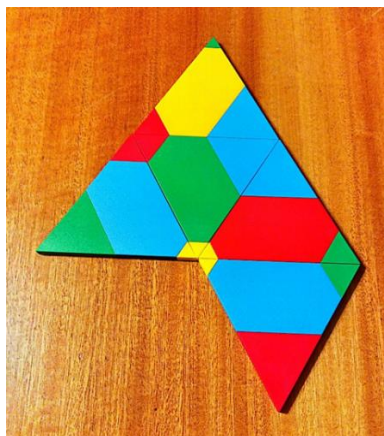
Calculating two elements: $\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$



Calculating three elements: $\frac{1}{4} + \frac{1}{4} + 1 = 1\frac{2}{4} = 1\frac{1}{2}$

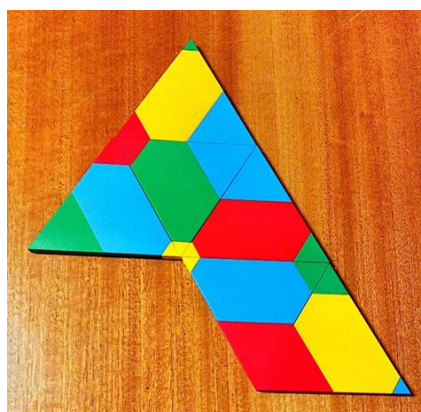


Calculating four elements: $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + 1 = 1\frac{3}{4}$



Calculating five elements:

$$\frac{1}{4} + \frac{1}{4} + 1 + \frac{1}{4} + \frac{1}{2} = \frac{9}{4} = 2 \frac{1}{4}$$



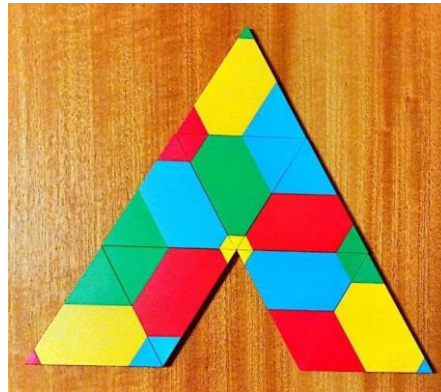
Calculating six elements:

$$\frac{1}{4} + \frac{1}{4} + 1 + \frac{1}{4} + \frac{1}{2} + \frac{1}{2} = \frac{11}{4} = 2 \frac{3}{4}$$



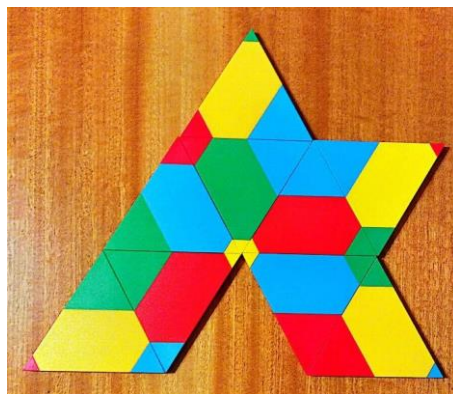
Calculating seven elements:

$$\frac{1}{4} + \frac{1}{4} + 1 + \frac{1}{4} + \frac{1}{2} + \frac{1}{2} + 1 = \frac{15}{4} = 3 \frac{3}{4}$$



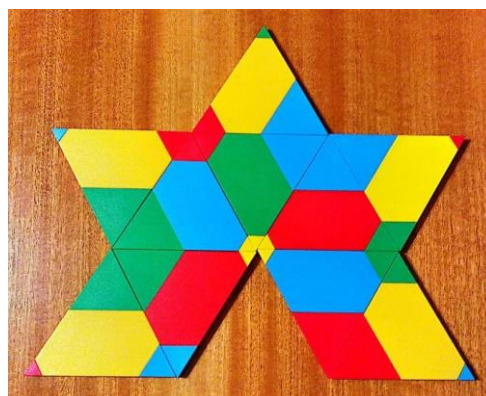
Calculating eight elements:

$$\frac{1}{4} + \frac{1}{4} + 1 + \frac{1}{4} + \frac{1}{2} + \frac{1}{2} + 1 + \frac{1}{8} = \frac{31}{8} = 3 \frac{7}{8}$$



Calculating nine elements:

$$\frac{1}{4} + \frac{1}{4} + 1 + \frac{1}{4} + \frac{1}{2} + \frac{1}{2} + 1 + \frac{1}{8} + \frac{1}{8} = \frac{32}{8} = 4$$



Calculating ten elements:

$$\frac{1}{4} + \frac{1}{4} + 1 + \frac{1}{4} + \frac{1}{2} + \frac{1}{2} + 1 + \frac{1}{8} + \frac{1}{8} + \frac{1}{4} = \frac{34}{8} = \frac{17}{4} = 4 \frac{1}{4}$$

- *Why this exercise is good: It develops the logical ability of children to develop the correct order of elements, also suitable for practicing addition of fractions in a playful form.*
- *Which level is recommended: It can be used in the upper elementary school, but also in high school by changing operations by changing operations.*
- *School subject(s): Mathematics*