

Good practices

SCIEN_712A_EN

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Description of the problem / exercise: **Caterpillars**

Set used: Circle

A caterpillar has to be placed from the circle elements according to the given conditions. The caterpillar is obtained by connecting the circle elements with a total connection, e. g. the diameters of same-sized semicircles are connected.



a) A small caterpillar:

Select 6 circle elements of the same base colour. The caterpillar is laid out with a total connection of the same size and colour.

b) A medium caterpillar:

Choose two base colours. Out of the 12 circles, is it possible to make a caterpillar in which the base colours of the circles alternate (e. g. one red after one yellow and this repeats) and all the matches are the same size and colour?



c) Giant caterpillar:

Using the full circle set, make a long caterpillar of the same size and colour with a full matching.

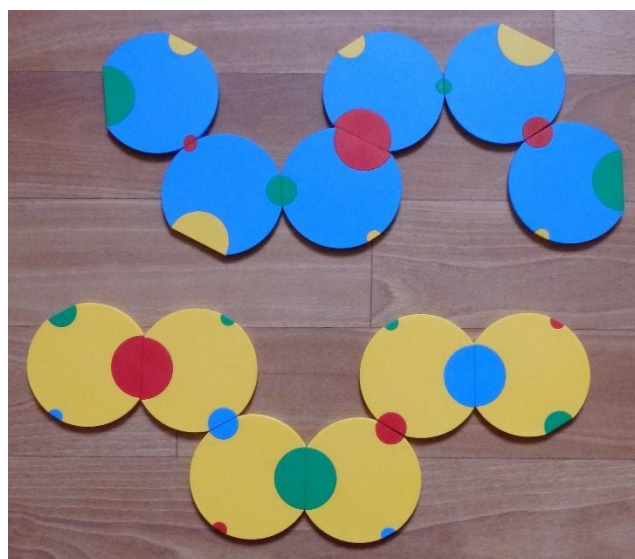


Tasks and questions related to the text:

1. How many different base colours of caterpillars can be placed from 6 circles in case a)?
2. How many different colour combinations can be used to make a two-coloured caterpillar (case b)?

Solutions:

1. You can make a caterpillar out of each of the base colours.



2. With two base colours, you can make a caterpillar of 12 circles with alternating base colours. The 4 base colours can be paired in 6 different ways.



3. From the complete set, there are many ways to make a caterpillar. Another option is to use the two-coloured (12-piece) caterpillar already made and fit two of them together.



- *Why this exercise is good: We deal with basic combinatorial cases in a playful way. We determine the number of combinatorial cases in a problem by putting and counting each case.*
- *Which level is recommended: Lower-grades of elementary school (6-10 years)*
- *School subject(s): Biology, environmental studies*