Grade 1: Measuring Length

1.MD.A.2 - Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

Instructions

Instruct students to solve the problem and write their answer below.
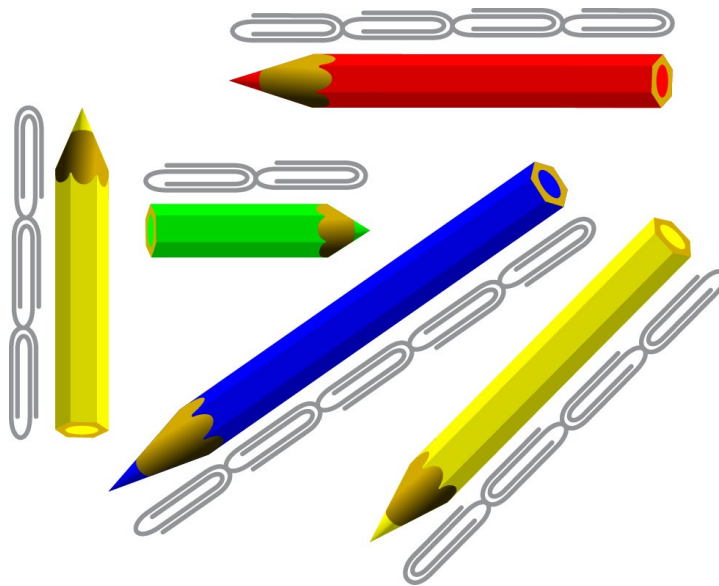
Find the longest pencil. How many 🔗 long is it?

Answer: _____

Solution

Correct if student writes the number 5.

Students in grade 1 typically measure objects by using other objects as units of length. In this problem, 1 paperclip is being used as a unit of length. The longest pencil is 5 of these units long.

Extension

To extend the problem, you could ask students additional questions about the situation, such as: How much longer is the longest pencil than the shortest pencil? (Answer: 3 units longer, because 5 – 2 = 3.)

Elaboration on Alignment

This problem is supposed to be easy, but it's also supposed to be a problem *about measurement*. For example, the problem doesn't simply ask which pencil is longest, because that judgment could be made purely visually and without counting any length units. For this reason also, there are multiple pencils, and they are shown in a scattered arrangement; this way, at least some students will verify their visual identification of the blue pencil by counting paperclips against a competing possibility (the red pencil or the longer of the two yellow pencils).

Pencils were chosen because they are naturally thought of as having a length dimension; in fact, the length of a pencil is usually the only measurable attribute of a pencil that anyone thinks of.

Paperclips were chosen as the length unit because we naturally consider paperclips to be uniform in size (if, say, we open a box of paperclips and spill the paperclips out on the table). It's true that the paperclips in one kitchen drawer might not be the same size as the ones in another kitchen drawer, but that issue is actually a virtue of this problem, because it points to the need for a standard length unit, one that is the same for everybody in a given society. Standard units are exactly where the measurement progression is headed in grade 2.
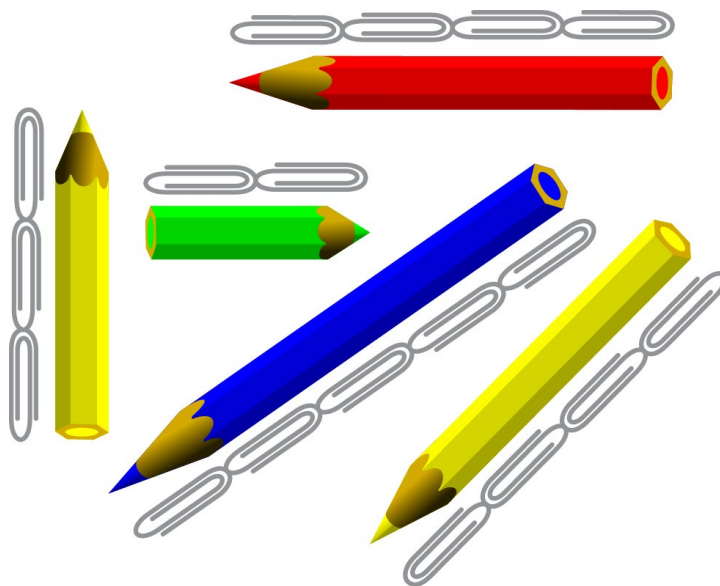
A better version of this problem would involve dragging copies of a paperclip up against a pencil to actively measure it. But this version is amenable to being presented as a static image.

The pencils are made colored pencils to add visual interest to the image, but the problem itself never refers to the colors of the pencils, and students don't use color to solve the problem. This is in case some students have trouble perceiving color or the task is printed in black and white

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Name: _____

Find the longest pencil. How many long is it?

Answer: _____