

Comparing coloured strips

Annotation

Liam uses the same starting point when lining up several different-coloured strips beside each other, showing that he understands the measurable attribute of length. He then places the strips in order, according to their length, and is able to identify which strip is longest and which is shortest.

Problem: Comparing coloured strips

The teacher places strips of paper of varying length and colours and in different positions and orientations in front of the student. Then the teacher asks the student to put the coloured strips in order from longest to shortest.

Student Response



Teacher: Which is the shortest?

Liam: The red one.

Teacher: Which is the longest?

Liam: The green one.

Greedy Cat takes the shorter path

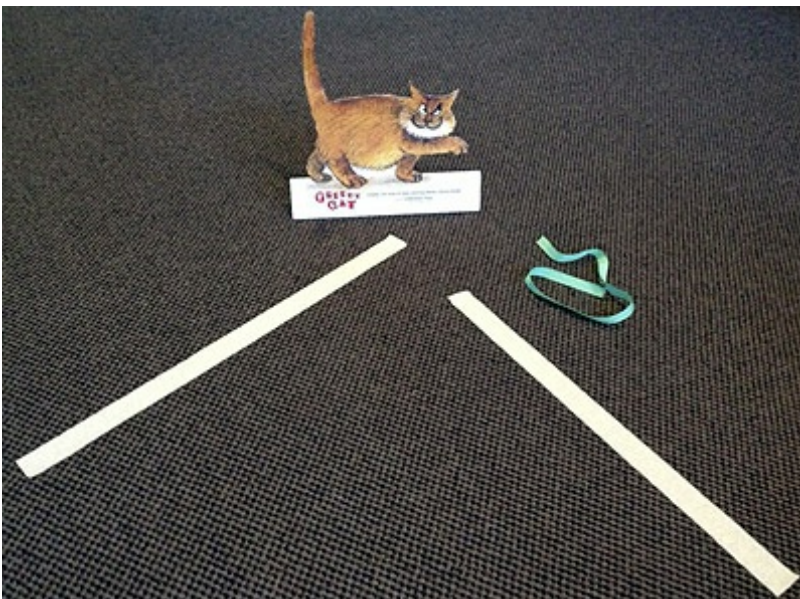
Annotation

Lily shows that she can use an indirect measure. She is able to determine that one path is the shorter path by using a ribbon as an intermediary measure of two paths that cannot be compared directly. Lily finds that her ribbon is longer than path A but that it doesn't reach the end of path B. She uses this information to conclude that path A is shorter.

Problem: Greedy Cat takes the shorter path

The teacher asks the student to help Greedy Cat find the shorter path to the fridge. The student has to choose between two masking-tape paths that run in different directions. The teacher gives the student a ribbon that is longer than the shorter path and shorter than the longer path to help the student choose and asks:

Which of these two paths to the fridge is shorter?



Student Response

Lily: "It is that one."
Lily uses visual comparison to identify the shorter path.

Teacher: "Can you use the ribbon to measure the paths and show me that you are right?"

Lily: Lily carefully lines up the ribbon on the longer path and then repeats the process on the shorter path.

"This one is shorter because a bit of the ribbon goes onto the carpet at the end of the path."

Weighing and comparing three objects

Annotation

Joshua shows that he understands that heavier objects will have more downward pull when he picks them up. He is also able to transfer his understanding to the balance scales by identifying that the pan that goes down holds the heavier object. By systematically comparing the weights of pairs of objects on the balance scales, Joshua is able to correctly order three objects by weight and confirm his original hand-weighed estimates.

Problem: Weighing and comparing three objects

The teacher provides the student with three objects of noticeably different weights. The teacher asks the student to hold each object to estimate their weights and then arrange them in order from the heaviest to the lightest. The teacher then asks the student to use balance scales to check their original hand-weighed estimates and asks:

Which is the heaviest; the glue stick, the box of staples or the scissors?



Student Response

Joshua weighs the glue stick, the box of staples and the scissors in his hand and then arranges them in an order from heaviest to lightest. Then he uses the balance scales to check his estimate.

Joshua: The box of staples.

Teacher: How do you know?

Joshua: The box of staples felt the heaviest. When I put the staples in one pan on the balance scales, with the glue stick in the other, the staples end went down. The staples went down again when I did it with the staples and the scissors. So the staples are the heaviest. When I did the glue stick and scissors, the scissors went down a bit, so the scissors are next and the glue stick is last. So I was right.

What's the measure?

Annotation

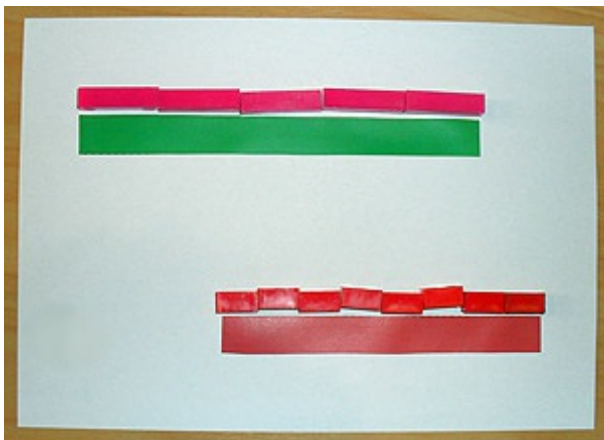
Ryan can repeatedly use a small measurement unit (Cuisenaire rods) to measure two strips of different colours and lengths. He knows to place each unit without gaps or overlaps until he has filled the length, however he incorrectly chooses different units to measure each coloured strip. When asked which is longer, he relies on a visual comparison and does not appear to understand the use of a non-standard measurement unit.

Problem: What's the measure?

The teacher gives the student a card with two coloured strips glued on it. Then the teacher makes available to the student red and pink Cuisenaire rods to help him measure the lengths of the two strips and asks:

Which strip is longer, the green or the red?

Student Response



Ryan: The green strip is longer.

Teacher: Tell me how you know this.

Ryan: Because it looks longer.

Teacher: How long is it?

Ryan: Five pink rods.

Teacher: How long is the red strip?

Ryan: Eight red rods.