

Diagrams and fractions - lesson 2 - Introducing fractions

Summary

The objective of this lesson is to introduce the fractions for each one of the pieces studied in the previous lesson but instead of doing it through verbal explanation, the link between the pieces and fractions will be done using an animation. We expect that the students will be able to realize the principles behind this link only by watching the animation carefully and, then, they will have to answer a series of questions to emphasize the link and explore further features of this model.

Material: 1) animation, 2) each student should receive one copy of the worksheet, but each group will receive only one bag of pieces (with 1 white, 5 greens, 4 pinks, 10 reds, 12 yellows, 10 blues).

Outline of the lesson

Animation

The goal is to show (visually, not verbally) how fractions can be used to describe the pieces discussed in the previous lesson. Additionally, the animation shows that: 1) the same fraction can be represented by pieces with different shapes (but same area), 2) how non-unit fractions can be seen as collections of unit fractions, 3) the same area can be described by more than one fraction.

The teacher may play the animation twice if necessary. Especially if the students are not used to this model, they may focus on the wrong details of the animation (such as the position of the pieces or the trajectory when they come for the first time). The teacher also stop the video before some fraction appear and ask the students to say which fraction is presented. The written (or verbal) form of each fraction will be explored in the first task.

Task 1

The goal of this task is to register what was seen in the animation, connecting to what was done in the previous lesson, and include explicitly the written form of each fraction.

It is expected that the students will be able to fill the fraction column, but they may have problem to fill the last one because to limitations in terms of vocabulary. Individual assistance may be enough to solve this issue.

Task 2

Once again, the goal is to register what was seen in the animation.

The last three items are exploring fractions that are equal or bigger than one. This may raise some questions. There is no need of using mixed numbers at this point.

Task 3

This task introduces, without mentioning it explicitly, equivalent fractions.

It is important that the students have the pieces available and, in case of difficulty to solve an item, are asked to use the pieces to actually see how many pieces of one type is needed to cover the others. The second item using the purple square may be challenging, because it is not possible to cover the white square with the purples directly. At this point, the students will have to see numerical relationships between quantities.

Task 4

This task is a conclusion for the lesson, leaving some space for the students to create questions by their own.

The teacher may use the equalities created by the students as a progress check in the end of the lesson.