

# Diagrams and fractions - lesson 4 - New fractions

## Summary

The objective of this lesson is to introduce fractions with new denominators: 6, 8, 10, 12 and 15. Also, the students will further explore equivalent fractions.

**Material:** each student should receive one worksheet and each group one bag with the shapes.

## Outline of the lesson

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### Starter

The goal of this starter is to discuss errors done by students in other groups. The idea is to reinforce that a certain degree of accuracy in the diagram is necessary.

*When discussing the answers, it is important to ask why they think each diagram is wrong or right. Although the question admits some level of variation in the answers, only the second item was selected as a right answer. The first is using ratio instead of fraction and the last two diagrams are too inaccurate.*

After discussing the answers, the teacher should ask the students to represent  $\frac{1}{7}$  in the space remaining. The goal is to check if they will pay attention to accuracy when using an unfamiliar denominator.

*The teacher can use the visualizer to show some answers and discuss them.*

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### Task 1

Similar to the first task of all previous lessons.

*This time, the students will not have enough pieces to cover the whole square in any of the colours. They will have to use the grids to extrapolate the amounts.*

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### Task 2

The goal is to obtain equivalent fractions using the pieces.

*All the items are similar in terms of difficulty. However, they all admit more than one equivalent fraction: half admits 4, the thirds admit 3, the quarters and fifths admit 2. It is important to ensure that all students get all the answers before moving to the next task.*

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### Task 3

The goal is to verify if the students have established strategies during the previous task and are capable of applying it to a question without the cut-outs.

*The students may solve by creating disconnected quarters and twentieths and then try to compare them; or by creating horizontal quarters and then divide them in vertical fifths obtaining twentieths. When helping the students, try to suggest the second approach.*

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### Task 4

The goal is to compare fractions explicitly using the equivalents obtained in task 2. This is a step towards a symbolic approach and away from the cut-outs.

*All the fractions used here were explored in the previous tasks. The students should find the "proper pair" of equivalent fractions (with the same denominator) and compare the numerators. The questions can be solved differently, but the intention is to show the convenience of using the same denominator to compare fractions.*

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