# Rational Numbers

*Problems about Rational Numbers.*

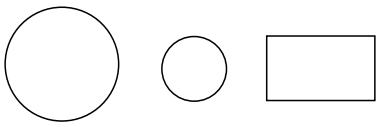
**Problem 1** *Describe the set of rational numbers. Give some relevant and revealing examples/nonexamples.*

**Problem 2** *What algebraic properties do the rational numbers enjoy that the integers do not? Explain your reasoning.*

**Problem 3** *What number gives the same result when added to* $1/2$ *as when multiplied by* $1/2$*. Explain your reasoning.*

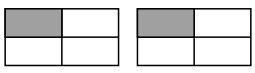
**Problem 4** *Draw a rectangle to represent a garden. Shade in* $3/5$ *of the garden. Without changing the shading, show why* $3/5$ *of the garden is the same as* $12/20$ *of the garden. Explain your reasoning.*

**Problem 5** *Shade in* $2/3$ *of the entire picture below:*



*Explain your reasoning.*

**Problem 6** *What fractions could the following picture be illustrating?*



*Explain your reasoning.*

Learning outcomes:
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**Problem 7** *When Jesse was asked what the* 7 *in the fraction* $\frac{3}{7}$ *means, Jesse said that the "7" is the whole. Explain why this is not completely correct. What is a better description of what the "7" in the fraction* $\frac{3}{7}$ *means?*