

TIPS 2.0 Lesson Template

Operations with Fractions – A Focus on Spatial Reasoning

Grades 7&8

M/O 10mins A 20 mins D&C 30 mins	<p>Math Learning Goals</p> <ul style="list-style-type: none"> o unitizing is an important concept when adding fractions; common units help us to add fractions o There is a relationship between repeated addition and multiplication <p>Math Process Focus: Selecting Tools and Computational Strategies</p> <ul style="list-style-type: none"> • Use manipulatives and/or technology to develop understanding of new concepts, for communicating, or for performing certain tasks 	<p>Materials</p> <ul style="list-style-type: none"> - mathies digital tools: Fraction Strips & Notebook - Laptops / ipads with access to digital learning tools
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Specific Expectations:

Grade 7:

- add and subtract fractions with simple like and unlike denominators, using a variety of tools (e.g., fraction circles, Cuisenaire rods, drawings, calculators) and algorithms;
- demonstrate, using concrete materials, the relationship between the repeated addition of fractions and the multiplication of that fraction by a whole number

Grade 8:

- solve problems involving addition, subtraction, multiplication, and division with simple fractions;

<p>Minds On 10 mins</p>	<p>Pairs → Visualization (10 mins)</p> <p>Have students close their eyes. Ask them to visualize the following problem in their mind. Read the problem to students. Pause. Reread the problem again. Pause. Partner A describes what he/she visualized in his/her mind, then partner B he/she visualized in his/her mind.</p> <p><i>You have 3 metres of ribbon. Each decoration needs 2/5 of a metre. How many decorations can you make?</i></p>	<p>SR Encourage visualization strategies</p>
<p>Action! 20 mins</p>	<p>Pairs → Problem Solving (20 mins)</p> <p>Pairs solve the problem in two different ways. One way <u>must</u> involve a concrete, visual or digital representation. Provide access to chart paper and markers, relational rods, mathies fraction strips, notebook (optional).</p> <p><i>Ministry developed digital learning tools can be accessed at www.mathies.ca</i></p>	<p>SR Provide meaningful opportunities to investigate mathematical concepts and problems by using manipulatives.</p> <p>SR Take advantage of technology</p>
<p>Consolidate Debrief 30 mins</p>	<p>Whole Group → Share (20 mins)</p> <p>Strategically select some students to recreate their solutions using one of the digital tools. Support students in making connections between the mathematical actions with the digital tools and key fraction concepts (e.g. equi-partitioning, unit fraction, unitizing, iteration) and operations (repeated addition \leftrightarrow multiplication)</p> <p>A for L: <i>What gestures / mathematical actions with tools / digital tools are evident as students solve the problem? What are these revealing about students' understanding about important fraction concepts and operations with fractions?</i></p> <p>Whole Group → Discussion (10 mins)</p> <p>With a partner, discuss: What is similar / different about the solutions presented for this problem? What fraction concepts emerged from today's problem? Invite students to share whole group. Record summary of learning on chart paper.</p>	<p>SR Emphasize spatial language (for fractions)</p> <p>SR Use gestures and encourage students to use gestures [and/or mathematical actions with tools]</p>
<p>Home Activity / Further Classroom Consolidation Concept Practice</p>	<p>Individual → Exit Task (10 mins)</p> <p>Create a new (contextual) problem that involves operations with fractions. Solve your problem using a visual / concrete / digital tool representation.</p>	<p>A for L Exit Task</p> <p>SR Provide meaningful opportunities to investigate mathematical concepts and problems by using manipulatives.</p> <p>SR Take advantage of technology</p>