TIPS 2.0 Lesson Template

Operations with Fractions – A Focus on Spatial Reasoning

<table>
<thead>
<tr>
<th>Math Learning Goals</th>
<th>Materials</th>
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| • Unitizing is an important concept when adding fractions; common units help us to add fractions.  
• There is a relationship between repeated addition and multiplication | - Mathies digital tools:  
  - Fraction Strips & Notebook  
  - Laptops / ipads with access to digital learning tools |

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<th>Math Process Focus: Selecting Tools and Computational Strategies</th>
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<tr>
<td>• Use manipulatives and/or technology to develop understanding of new concepts, for communicating, or for performing certain tasks</td>
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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;

Minds On

10 mins

Pairs ➔ Visualization (10 mins)

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.

You have 3 metres of ribbon. Each decoration needs 2/5 of a metre. How many decorations can you make?

Action!

20 mins

Pairs ➔ Problem Solving (20 mins)

Pairs solve the problem in two different ways. One way must involve a concrete, visual or digital representation. Provide access to chart paper and markers, relational rods, mathies fraction strips, notebook (optional).

Ministry developed digital learning tools can be accessed at www.mathies.ca

Consolidate Debrief

30 mins

Whole Group ➔ Share (20 mins)

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 ↔ multiplication)

ACL: 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?

Whole Group ➔ Discussion (10 mins)

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.

Home Activity / Further Classroom Consolidation Concept Practice

Individual ➔ Exit Task (10 mins)

Create a new (contextual) problem that involves operations with fractions. Solve your problem using a visual / concrete / digital tool representation.

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