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| **Fractions of a Set**  **Developed by:** Travis Carr **School:** Island View School  **Date:** Last Modified January 27, 2014 **Grade level:** 4  **Subject:** Math **Unit:** Fractions |

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| **Outcomes: N8**  Demonstrate an understanding of fractions less than or equal to one by using concrete and pictorial representations to: name and record fractions for the parts of a whole or a set; compare and order fractions; model and explain that for different wholes, two identical fractions may not represent the same quantity; provide examples of where fractions are used.  **I can statements**  **N8 I can demonstrate an understanding of fractions less than or equal to one.**  I can represent fractions using objects, or concrete materials (Cuisenaire rods, pattern blocks etc.)  I can represent a given fraction pictorially by shading parts of a given set.  I can name and record the shaded and non-shaded parts of a given set | **Materials:**  **Golf balls**  **Pattern blocks**  **3 colours of paint**  **Paint brushes**  **Paper**  **Computers**  **4 in a Row Game**  [**Fraction Video**](http://www.pinterest.com/pin/105834659965694326/) | |
| **Technology** *(Check all that apply)* | |
| X Teacher laptop  X SMART Board  X LCD projector   * SMART Senteos (class set)   X Computers   * iPad or tablet * iPod or mp3 player(s) | * Webcam * Digital camera * Document camera * Digital microscope * Video camera * Scanner * Colour printer * Calculators * FM system |

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| **Prior Learning Connections**  **Students would be better prepared for this lesson if they already have an understanding of fractions of a whole and have been introduced to fractions of a set.** |

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| **Differentiation/Accommodations/Multiple Intelligences**  **Paint, video, oral, picture presentations will be used to represent the information** |

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| **Special Concerns**  (Classroom management items, medication information, etc). |

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| **Assessment**  **Formative Assessments:**  Observation of students painting the picture of the leaves on the tree  **Summative Assessment:**  Exit slip |

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| **Procedure** | | |
| **Before the lesson** | **Student Activity:** | **Teacher Activity:**  Prepare a Paint Station for a group of 4 or 5 students. This station will include a picture of a tree without leaves, 3 different colours of paint |
| **During the lesson** | Students will manipulate the materials in order to make connections. | **Whole class exploration:** A box of golf balls was used for this lesson. The golf balls were packages as 5 sleeves of three for a total of 15 golf balls. Place the box of golf balls on the floor or a table, and place a pile of 15 pattern blocks beside the golf balls for comparison. And pose these questions:  How many golf balls are there in 2/5 of the set?  How many pattern blocks are there in 2/5 of the set?  Key points for the discussion:   * Definition of Numerator and denominator * Grouping a set into parts and counting a specified part   Students will need support making the connection between, fractions of a whole and fraction of a set. The golf balls in this situation will be used to provide a concrete example of how to group items. The golf balls can be removed from the sleeves and then the situation of the golf balls and the pattern blocks become similar. Guide the class through the process of dividing the pattern blocks in to 5 groups so the fraction 2/5 can be counted. |
| **After the lesson** | Using a classroom management system that allows for student rotation, or student choice, begin the guided lessons while the other students work through their lesson responsibilities.  In this situation, a menu style balanced Math approach was used with a focus on: Math by yourself (Calculation), Writing Math (responding to Math), Math with Someone (interactive problem solving), Math with the teacher (guided Math).  **Math by Yourself:** Students were required to solve the following problem: In autumn, a tree still had 30 leaves on its branches. Half of the leaves were orange, one sixth of the leaves are yellow, and a third of the leaves are red. How many leaves are there of each colour?  **Math Writing:** [http://www.pinterest.com/pin/105834659965694326/](https://exchange.nbed.nb.ca/owa/redir.aspx?C=X8oAItW8RUGlHyhZdjkLXlRpMabr7tAIV_2kT6O3ogp1dIWdysS2YYzLFbRwp89i3_hBojVxcOU.&URL=http%3a%2f%2fwww.pinterest.com%2fpin%2f105834659965694326%2f) students watch this video and respond in their journal to the following question: Did you like the strategy “Multiply then Divide?” Why or why not? Use pictures numbers and words to explain your answer.  **Math with Someone**: Four in a Row – multiplication game  **Guided Math:** Students will bring their response to the question from Math by Yourself. Conduct a guided process of the same question with the students and use this opportunity to monitor understanding of the group. Once there is agreement about the number of each colour of the leaves, students can paint the leaves on the tree and record the information of the fractions of the set. Rotate through the class until all students have had a guided Math session.  **Extension activities** of Math games related to the concepts taught were available if students competed the tasks quickly. Available at: <http://mrcarrsgrade4class.blogspot.com>  **Exit slip** - Tommy and his dad were baking cookies for Tommy’s friends and they were able to make a batch of 36 cookies. 2/3 of the cookies ended up being packaged for his friend and the remaining 1/3 were left for Tommy’s family. How many cookies went to Tommy’s friends, and how many were left for his family? Please use pictures, numbers and words. | |

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| **Notes/Reflections** |

**Four in a Row**

**Instructions**

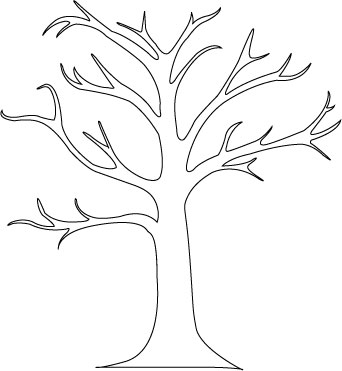
Provide pairs of students with counters (different color for each player), two paper clips and a game board (see below) showing the products of various multiplication facts. Below the board are 7 factors which correspond with the products on the grid. Player A places a paper clip on one of the factor numbers and Player B then places a paper clip on another factor. Player A multiplies both factors and places his colored counter over the product on the grid. The games continues as Player B chooses a factor, Player A chooses another factor, Player B multiplies both factors, finds the product, covers it, and so on. The winner is the first person to connect four of their counters in a row, horizontally, vertically or diagonally. As you observe the students playing, ask “What strategies helped you with that one?”

**Four in a Row Gameboard**

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| **9** | **15** | **16** | **20** |
| **21** | **24** | **25** | **27** |
| **28** | **30** | **32** | **35** |
| **36** | **40** | **42** | **45** |
| **48** | **49** | **54** | **56** |
| **63** | **64** | **72** | **81** |

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| **3** | **4** | **5** | **6** | **7** | **8** | **9** |

**Fraction of a set of 30 Leaves**



Half of the leaves are orange = \_\_\_\_\_\_ leaves

One sixth of the leaves are yellow = \_\_\_\_\_\_ leaves

One third of the leaves are red = \_\_\_\_\_\_ leaves

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| Exit Slip: N8  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_  Tommy and his dad were baking cookies for Tommy’s friends and they were able to make a batch of 36 cookies. 2/3 of the cookies ended up being packaged for his friend and the remaining 1/3 were left for Tommy’s family. How many cookies went to Tommy’s friends, and how many were left for his family? Please use pictures, numbers and words. | Exit Slip: N8  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_  Tommy and his dad were baking cookies for Tommy’s friends and they were able to make a batch of 36 cookies. 2/3 of the cookies ended up being packaged for his friend and the remaining 1/3 were left for Tommy’s family. How many cookies went to Tommy’s friends, and how many were left for his family? Please use pictures, numbers and words. |
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