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| **Lesson Title**: Which Bag Would You Choose? | | Date: February , 2015 | | Grade(s): 4/ 5 |
| Curriculum Expectations:  Data Management and Probability  Gr. 4- predict the frequency of an outcome in a simple probability experiment, explaining their reasoning  Gr. 5- pose and solve simple probability experiments and solve them by conducting experiments and selecting appropriate methods of recording the results | | | | |
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| Lesson Components | | Anticipated Student Responses | | |
| Part One – Introduction (Whole Class/Small Group) 90 min (Getting Started / Minds On) | | | | |
| Setting the Stage: Discuss the concept of a ‘fair game’. List the student criteria. Arrange students in groups of 4. Distribute paper bags with an unknown assortment of coloured tiles. Each group has a different combination of tiles but all groups have 20 tiles in total. Tell students they will be playing a game where drawing a blue tiles earns them one point. All other colours are no points. Instruct them to give each player 10 turns. Record the results. Determine if you think your game is fair or not. Show your reasoning.  The bags contain the following:  Group 1: 20 Blue CERTAIN  Group 2: 10 Red 10 Blue EQUAL CHANCE/FAIR  Group 3: 15 Blue 5 Yellow LIKELY  Group 4: 12 Red 8 Blue UNLIKELY  Group 5: 12 Blue 8 Red LIKELY  Group 6: 0 Blue (7 Yellow, 7 Red, 6 Green) IMPOSSIBLE  **Extension-**  Can you match your bag to your data? (reveal what was in each bag, but not to which group it belonged)  Can you sketch a spinner that matches your bag of tiles. | | Fair means:   * each player has an equal chance of winning * you cannot cheat * everyone gets a turn * equal amount of blues and other colours   FAIR- we always win  FAIR- we have an equal chance  UNFAIR-blue comes up more times  UNFAIR- red comes up more times  UNFAIR/FAIR- blue comes up the same or more than others  UNFAIR-it is impossible to get a blue tile | Prompting Questions:  How will you record your results?  How did you convert your numbers? (e.g. 10/10 means a 50/50 chance)  How can you convert your outcomes to a fraction? (Gr. 5) | |
| Part Two – Teaching and Learning (Whole Class / Small Group) 45 min (Work On It / Action) | | | | |
| Problem and Context: You now have a choice of 3 bags today.  Bag 1: 6 Red 4 Blue  Bag 2: 15 Red 15 Blue  Bag 3: 12 Red 8 Blue  Which one would you choose if you get 1 draw and red is the winner? | | Anticipated Student Responses:   * I will choose 15/15 because there are more red tiles than in the other bags * I will choose 12/8 because the difference between the two colours is the greatest * students might recognize doubling between the 6/4 and 12/8 bags * students will represent the 6/4 bag as percentage- 60% and 40% * students will convert the 6/4 and 12/8 bags into equal fractions out of 20 | Prompting Questions:  Does the 15/15 bag have the same probability as the 10/10 bag from yesterday? How do you know?  Is the 6/4 bag the same as the 12/8 bag? How do you know?  Teacher annotates the progression from 15/15 as 15 out of 30 which is equivalent to 1/2, then to 50 out of 100 to explain the 50/50 relationship.  Then to change 6/4 to the fraction 6 out of 10 and 12/8 to the fraction of 12 out of 20 and compare the two fractions (doubling or converting to a percentage). | |
| After – Consolidation (Whole Class) 15 min | | | | |
| Using a gallery walk, have students walk around the room to determine which conclusion they agree with most (i.e. which bag has the most chance of winning based on the reasoning provided by each group) | |  | | |
| After (Highlights and Summary) | | | | |
| Teacher Action: Create an anchor chart with students about new learning. | | | | |
| After (Practice & Inquiry) | | | | |
| Assessment:  Student Action – Ask them to write in the form of a reflection about the activity and what bag they would now choose with reasoning from themselves and/or others. Use the descriptive feedback from the teacher (in the form of teacher annotations on student work). | | Teacher Action: Possible questions, which can be asked, to deepen student understanding as well as help make connections. | | |