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Greedy Pig!

Adapted from: Lovitt, C., *Greedy Pig*, The Task Centre Collective, Curriculum Corporation, Melbourne
The Task Centre Collective has computer simulation software for the Mac to support this activity.

Objective:	The students will gain a sense of the meaning of expected value, learn to find the median and the construction of a back-to-back stemplot. In addition they will generate some data for later use.
Materials:	One die. The activity is most effective if it is a very large foam die, but any die will do. One worksheet per student.
Time:	1 period
Instructions:	<p>All students stand, and the die is rolled twice. Each student gets the total of the two numbers.</p> <p>From now on, before each toss, a student has two choices.</p> <p>A. They can sit down, and record their total score on their sheet.</p> <p>B. They can choose to stand. For those students still standing, the die is tossed. If the number is a two, all students still standing lose all of their points. They sit and record a score of 0.</p> <p>If the number is not a five, the number is added to their total score.</p> <p>Repeat until all students are seated. This completes a round.</p> <p>The students play five rounds. At the end of the fifth round each student adds the score for the five rounds</p>

<p>Stemplots:</p>	<p>While the students are adding their scores, the teacher is drawing a stemplot on the board, with the stems ranging from 0 to 9, to represent the 10s unit of the total score.</p> <p>As each student finishes, they come to the front of the room and record their score on the stemplot. Below is a sample stemplot.</p> <pre> 0 0 1 7 2 0 1 7 3 2 2 7 4 3 8 6 4 3 5 7 2 1 4 5 6 0 2 6 6 7 8 0 9 </pre> <p>After all students have recorded their scores, discuss the method used to construct a stemplot.</p>
<p>Round Two:</p>	<p>Repeat the above steps, with the second set of data added to the left of the stem creating a back to back stemplot.</p> <p>Here is a sample back-to-back stemplot.</p> <pre> 0 0 0 1 7 2 0 2 4 1 7 3 2 8 2 2 7 4 3 8 6 4 9 0 8 2 3 5 7 2 1 9 5 5 0 0 1 4 7 4 6 5 6 0 2 0 1 6 6 4 7 4 7 8 0 9 </pre> <p>Discuss any patterns. Hopefully the scores are higher on the second round. Discuss whether the difference appears to be significant, or if the difference could be due to chance. Later the students will use inferential statistics to quantify this.</p>
<p>Modifications</p>	<p>You could modify the rules for different classes to see if that changes the students' strategies. For example, in class A, there may be a prize for only the highest score, while in class B prizes are offered to the top 50%. Would class A scores have a greater spread since taking a risk increases the probabilities of both winning the prize and scoring zero? How might this affect the average score for the class? And which 'average' would be most appropriate?</p>

Greed - Recording Sheet

Name: _____

Background Information

Year / Class:	8	9	10	11 Maths A	11 Maths B
Teacher:					
Gender:	Male		Female		

Game 1	Score	Game 2	Score
Round 1		Round 1	
Round 2		Round 2	
Round 3		Round 3	
Round 4		Round 4	
Round 5		Round 5	
TOTAL		TOTAL	

Greedy Pig!

Name: _____

Game #	Score
1	
2	
3	
4	
5	
Total	

Game #	Score
1	
2	
3	
4	
5	
Total	

Game #	Score
1	
2	
3	
4	
5	
Total	

Game #	Score
1	
2	
3	
4	
5	
Total	