

High School Mathematics Transition Course

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| Theme: 4 Statistics | Number of Class Periods: 2 (45 min) |
| Lesson Title: Are Double Stuf Oreos™ Actually Double Stuffed? | |
| Summary: This is a three-act task where students determine if Double Stuf Oreos™ are really double the cream as compared to regular Oreos™. A three-act task is a whole group mathematics task consisting of 3 distinct parts. Act One is an engaging intro to a lesson (a video in this lesson). Act Two requires students to find the information needed and solve the problem in groups or as a whole group. Act Three is a discussion of the solution and the solution is revealed. | Standards of Mathematical Practices: MP.3 MP.5 |
| Goals and Objectives: Decide whether a claim is true based on hypothesis testing. | |
| Concepts from Previous Mathematical Experiences to be Applied: Measures of center Measure of spread | |
| Instructional Procedures: ACT ONE: Show the video: Double Stuf Oreos™ Commercial . Then show the students this picture:  In a whole class setting, ask students “What do you notice? What do you wonder?” Make a list of the notices and wonders on the board. Students should ask if Double Stuf Oreos™ are really double the cream as compared to regular Oreos™. Lead them to this question; don’t tell them. ACT TWO: After students decide on a question they want to answer, ask the following to the students in a whole class setting: <ul style="list-style-type: none">• What do you need to know to answer the question?• What can you do to answer the question? The class must decide on a way to measure the amount of stuff. This way, the data will be consistent. Some ways of measuring are measuring the cookies in short stacks then measuring just the cookie part and subtracting or scrapping the cream from the cookies and measuring the stuff. Now split the students into groups. Give them Double Stuf Oreos™ and regular Oreos™. Give them access to scales and rulers. Have students decide how to measure the cream in the middle and compare it to regular Oreos™. Let students experiment with ways to measure and reach a conclusion. Students should add their data to the class data. Using the whole data, students should choose whether the hypothesis is “Double Stuf cookies are double stuffed” or that “Double Stuf cookies are not double stuffed.” Either way, the normal curve will show the same thing. Compute with technology the mean and standard deviation of both types of | |

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| cookies and generate bell curve (graph) for both. Using the two distributions, compare the means to see if one is double the other. | | |
| ACT THREE: In a whole class setting, discuss the results the students reached. Then show the video from CNN: CNN Video on Double Stuf Oreos™ | | |
| Compare and critique your group's strategy with the one used in the CNN video. What could be done to adapt the experiment to make it more accurate? | | |
| Differentiation Strategies: <ul style="list-style-type: none"> Some classes may need to be led to the question more than other groups. Some classes may also need more direction in measuring. Some students may need help finding the measures of center and analyzing their data. | | Assessment: <ul style="list-style-type: none"> Assessment can be based on the evaluation of the data and their conclusion. |
| Extension Suggestions: Students can study Oreo Thins™ to see how they are related to regular Oreos™ or Double Stuf Oreos™. Somewhere in this lesson, after students collect data and calculate the measures of center, if the students have a statistics background, the teacher may include a discussion of the purpose of a t-test. We suggest students generate the results of a t-test using technology. | Materials and Resources: Double Stuf Oreos™ Regular Oreos™ Scales Paper Towels Rulers <i>*Note: Flavored versions of Oreos™ may not have the same weight as regular Oreos™</i> | Supporting Documents: AMSTAT Lesson Jeremy F. Strayer, & Michael Todd Edwards. (2015). Smarter Cookies. <i>The Mathematics Teacher</i> , 108(8), 608-615. doi:10.5951/mathteacher.108.8.0608 |
| Ohio Learning Standards: S.ID.1 S.ID.2 S.ID.3 S.IC.1 S.IC.5 | Remediation-Free Standards: Create and/or interpret graphical displays to describe sets of data with distributions (e.g., box-and-whisker, scatterplot, frequency distribution, normal distribution). <ul style="list-style-type: none"> Find and interpret measures of central tendency and variability for sets of data. Use the context to determine appropriate way(s) to represent data and understand the advantages and disadvantages of various representations. | Notes: |

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