





HASTI 2014 Uncertainty

What is Uncertainty?





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How do we decide how many decimal places do we include when we measure? How do we know what numbers are significant when we are measuring?





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On your table you will find a “stick” this is a non-standard measuring tool, called a “glug”.





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Use the “glug” to measure the length and width of your whiteboard
Write your measurements on your whiteboard.



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Use your length and width to calculate the area of your whiteboard. Show your work on your whiteboard.



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Improving the “glug”




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Tape 2 pieces of notebook paper together. Number the paper from 1- 20 for regular ruled paper or 1 – 30 college ruled paper.



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What is the precision of the improved “glug”?



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Use the “glug” to measure the length and width of your whiteboard to the nearest part of a glug. Write your measurements on your whiteboard.




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Use your length and width to calculate the area of your whiteboard. Show your work on your whiteboard.



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Can you suggest a “rule of thumb” that could be used to determine how many digits to carry in a measurement? ... in a calculated answer?



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Other things to remember about numbers .






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Numbers obtained by counting have no uncertainty unless the count is very large. There are 16 letters in the word sesquicentennial.



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16 is an exact number here.

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Numbers obtained from definitions have no uncertainty



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A foot is exactly 12 inches.



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Which of the following quantities can be determined exactly?



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A. The number of light switches in the room you're sitting in now.
 B. The number of ounces in one pound.
 C. The number of stars in the sky.
 D. The number of inches per meter.
 E. The number of red blood cells in exactly one quart of blood.

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Example of Modeling activity
what makes an activity “modeling”?

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