

Measuring with Significant Figures

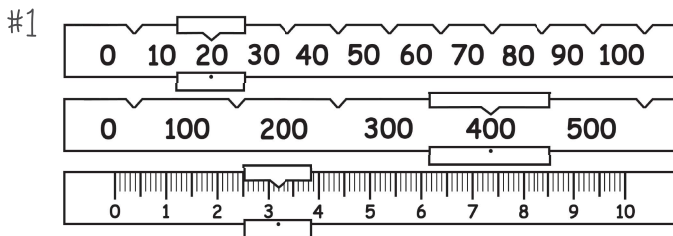


When scientists measure the quantity of something, they need to make sure that they measure with correct number of significant figures. The **significant figures** include all of the digits that they can read directly off of the measuring device, plus one more estimated digit. Some commonly used measuring tools are triple beam balances, graduated cylinders, thermometers, metric rulers, and beakers. **Triple-beam balances** measure mass (g), **graduated cylinders** and **beakers** measure volume (mL), **metric rulers** measure length (cm) and **thermometers** measure temperature ($^{\circ}\text{C}$). How many significant figures each tool will have will vary depending upon its level of sensitivity. Scientists strive to be both precise and accurate when taking measurements. **Precision** refers to how close a group of measurements are to each other. **Accuracy** refers to how close a measurement is to the true or accepted value. It is also important that scientists include the appropriate **units** when recording any type of measurement. A number by itself tell us nothing, it is the unit that gives the number value.



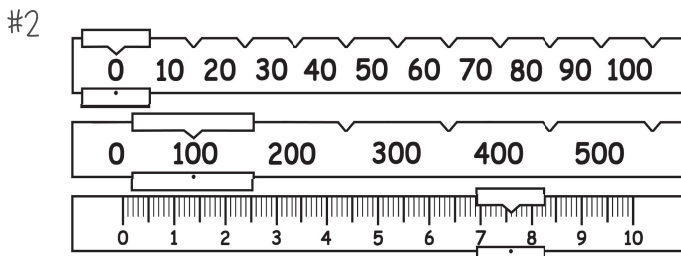
Measure It

Record the measurement for each device given. Make sure to use the correct number of significant figures and include the appropriate units.

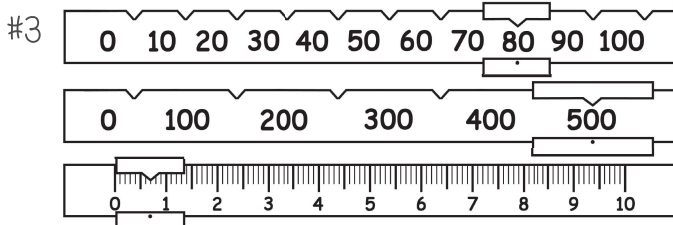


1. _____

2. _____

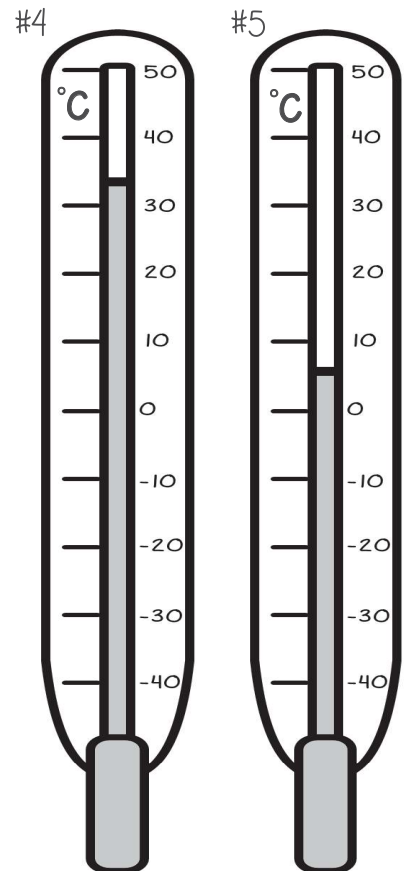


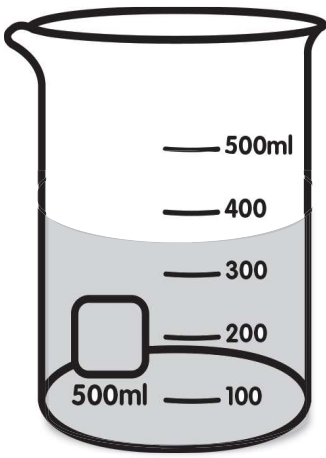
3. _____



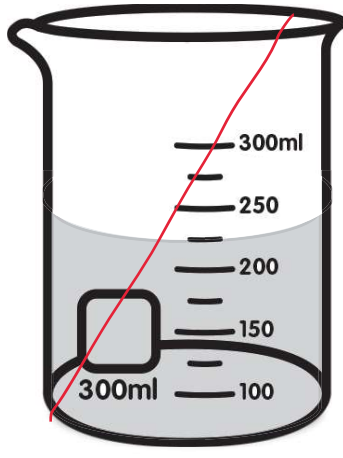
4. _____

5. _____

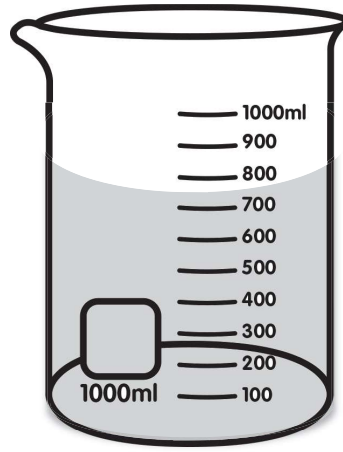




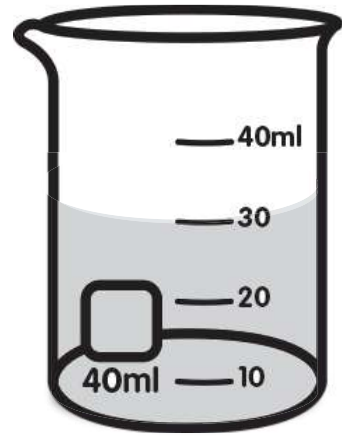
6. _____



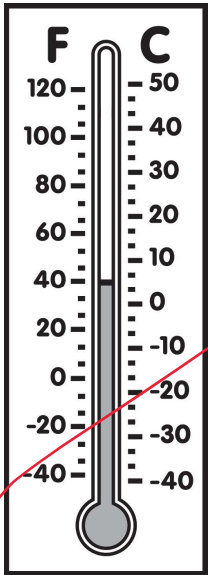
7. _____



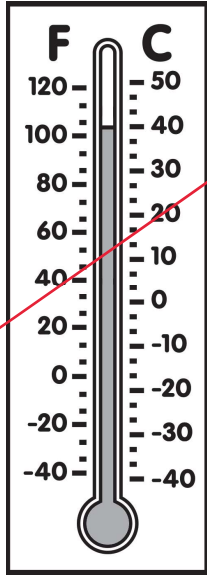
8. _____



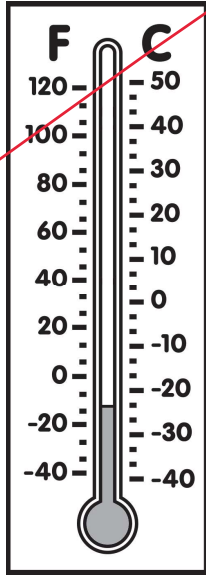
9. _____



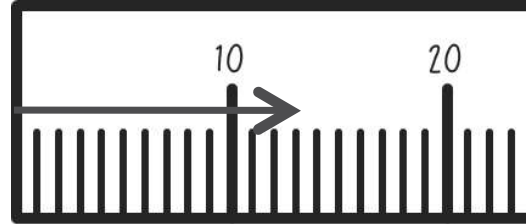
10. _____



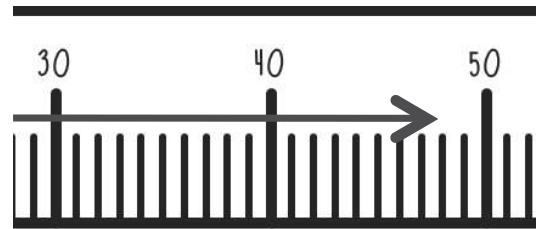
11. _____



12. _____



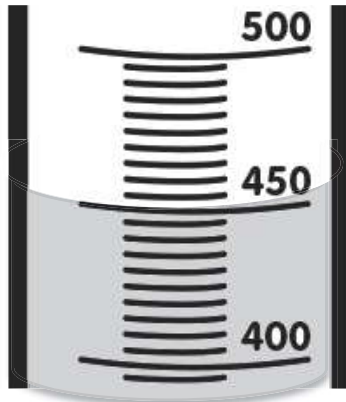
13. _____



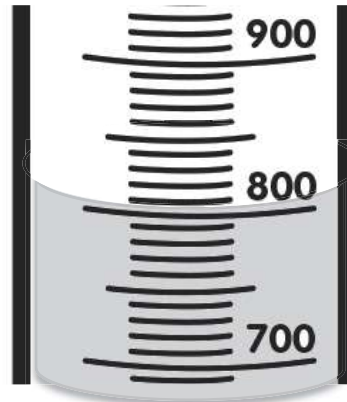
14. _____



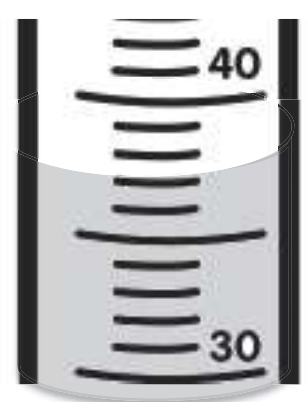
15. _____



16. _____



17. _____



18. _____

Measuring with Significant Figures

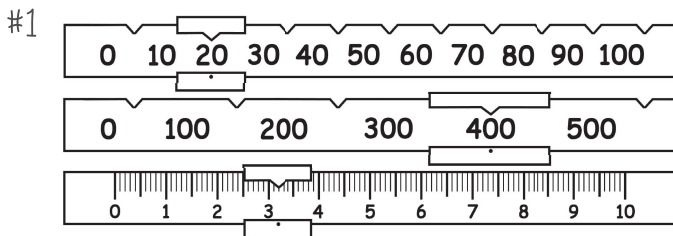


When scientists measure the quantity of something, they need to make sure that they measure with correct number of significant figures. The **significant figures** include all of the digits that they can read directly off of the measuring device, plus one more estimated digit. Some commonly used measuring tools are triple beam balances, graduated cylinders, thermometers, metric rulers, and beakers. **Triple-beam balances** measure mass (g), **graduated cylinders** and **beakers** measure volume (mL), **metric rulers** measure length (cm) and **thermometers** measure temperature (°C). How many significant figures each tool will have will vary depending upon its level of sensitivity. Scientists strive to be both precise and accurate when taking measurements. **Precision** refers to how close a group of measurements are to each other. **Accuracy** refers to how close a measurement is to the true or accepted value. It is also important that scientists include the appropriate **units** when recording any type of measurement. A number by itself tell us nothing, it is the unit that gives the number value.

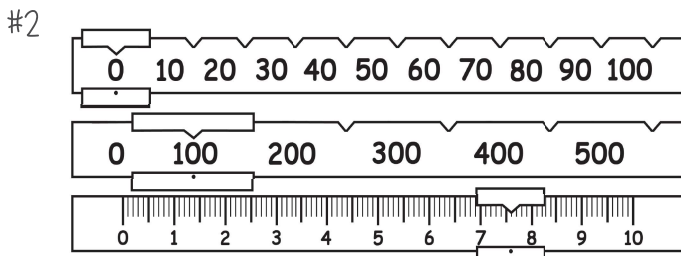


Measure It

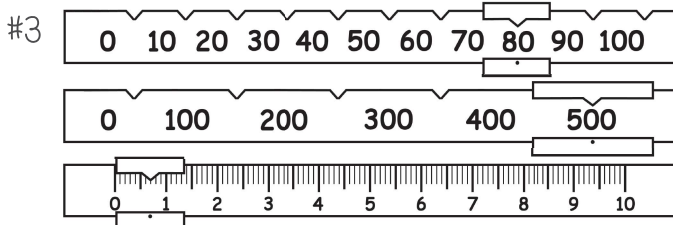
Record the measurement for each device given. Make sure to use the correct number of significant figures and include the appropriate units.



1. 423.20 g



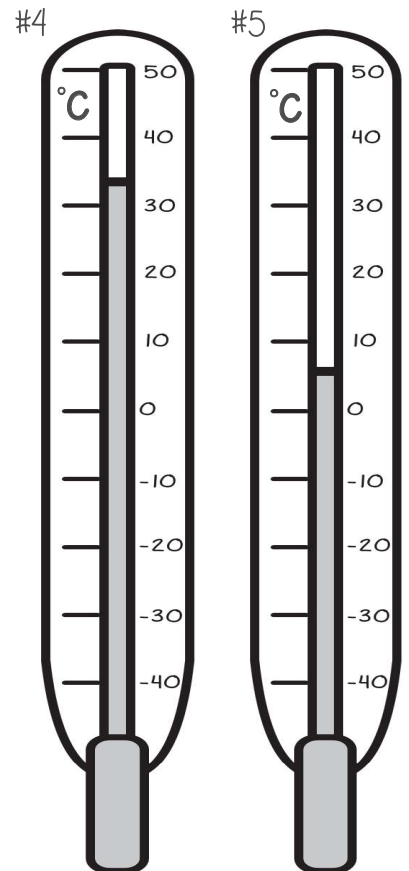
2. 107.60 g

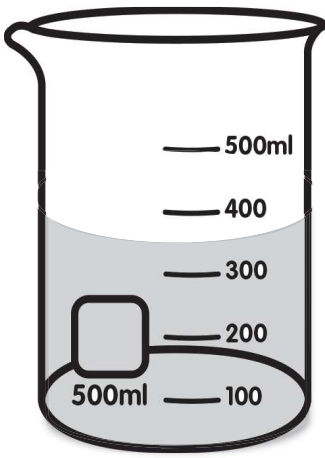


3. 580.70 g

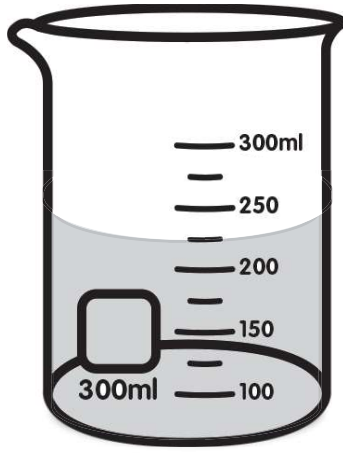
4. 34 °C

5. 5 °C

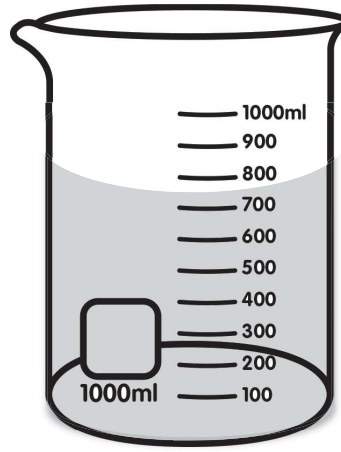




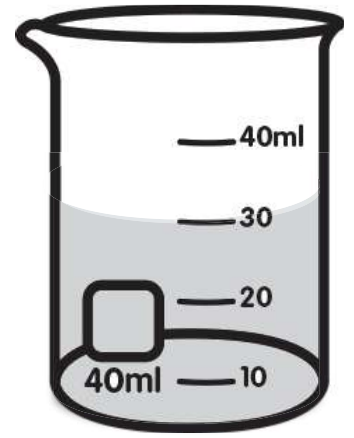
6. 350 mL



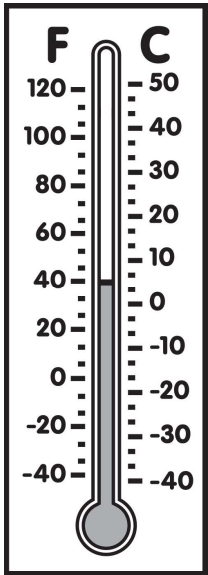
7. 225 mL



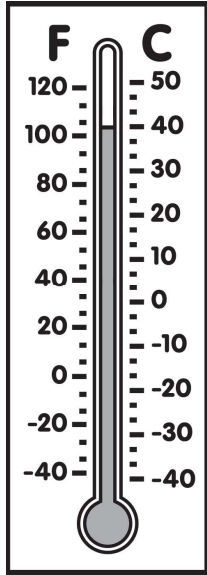
8. 750 mL



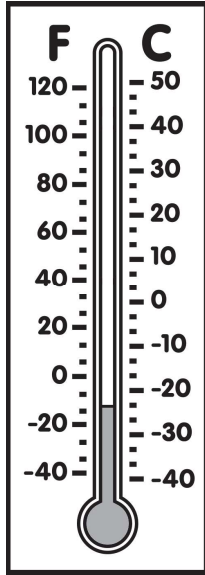
9. 30 mL



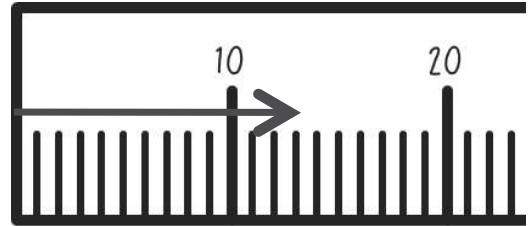
10. 5 °C



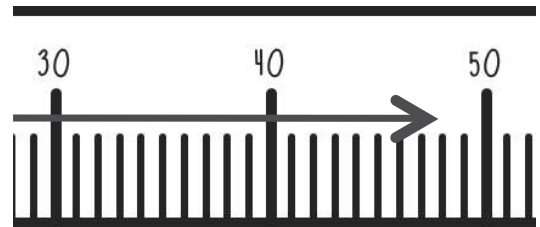
11. 40 °C



12. -23 °C



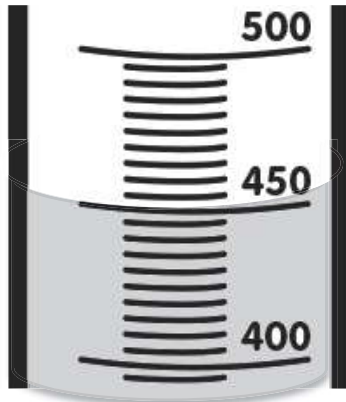
13. 13.1 cm



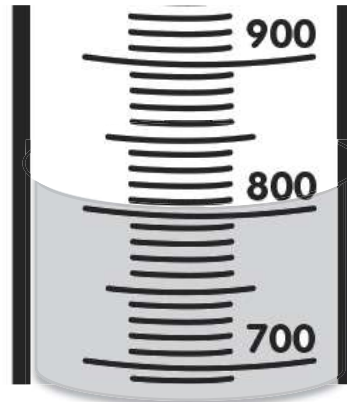
14. 47.9 cm



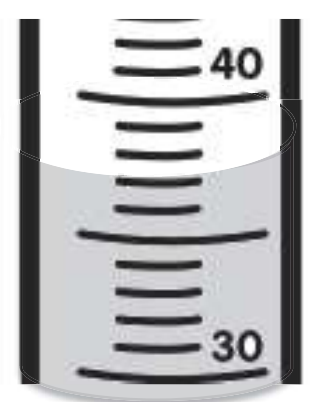
15. 18.5 mL



16. 450 mL



17. 805 mL



18. 37.0 mL

Credits



Thank you for your purchase!
-Adventures in Science