

3.3 Accuracy, Precision and Uncertainty Practice

1. Runa used a metre stick marked off in centimetres to measure the length of the classroom. What is the precision and the uncertainty?
2. Examine the following measurement:



- a. What is the precision of the measuring device?
 - b. What is the length of the measured item, including its uncertainty?
3. The odometer on Sam's car measure distances to the nearest tenth of a kilometer. What is the precision and the uncertainty of the odometer?
 4. Ming is a veterinary nurse. He measured a dog's temperature to be 38.8°C . What is the precision and the uncertainty?

5. Frank measured his height as 1.75m using a tape measure marked in centimetres.
 - a. Write his height as: measured value $\pm$ measurement uncertainty.
 - b. What is the range of possible values of his actual height?
6. Marcia's oven indicates temperatures to the nearest 10°C. She sets it at 160°C.
 - a. What is the precision and uncertainty of the oven thermometer?
 - b. What is the maximum possible temperature in the oven? What is the minimum possible temperature?
7. Canadian swimmer Anna may Pierse recorded a time of 2:20.12 (recorded as min:sec) in the 200-metre breaststroke.
 - a. What is the precision of the measurement?
 - b. What is the range of possible values for her actual time?
8. Craig and Steph's wedding rings are being made by a jeweller. Craig's ring weighs 9.22g and Steph's weighs 5.73g.
 - a. What is the precision and uncertainty for the weight of each ring?
 - b. What are the maximum and minimum possible combined weights of the two rings?

9. Com is preparing liquid fertilizer to apply to his garden. He has filled a bucket marked in half-litres with 4 L of the fertilizer mixture.
- Write the volume of liquid in the bucket in the form: measured value $\pm$ measurement uncertainty.
 - Com uses a small jug marked in 125 mL increments to remove 275 mL of the mixture from the bucket. Write the volume of the liquid in the small jug in the form measured value $\pm$ measurement uncertainty.
 - What is the volume of the liquid in the bucket? Write your answer in the form: measured value $\pm$ measurement uncertainty.
10. Sam is a nurse, and she is filling a syringe with medicine for a patient. The dose required is 24mL. The syringe is marked in 2 mL units.
- What is precision and uncertainty in Sam's measurements?
 - What are the maximum and minimum amounts of medicine that could be in the syringe?