Significant Digits

Consider the Bounce that Ball Lab:

$h_b = 39.25735921$ cm

↑ totally unreasonable if using a metre stick with mm markings.

a more reasonable measurement would be:

$h_b = 39$ cm

↑ certain digit ↑ guess (uncertain digit)

↑ there can only be 1 uncertain digit.

$h_b = 25.3$ cm

certain digits. ↑ uncertain

Every measurement can only have 1 uncertain digit.

Depends on the precision of the measuring instrument.

When counting significant digits, you count all the certain digits and the one uncertain digit.

23.5 cm ~> 3 sd

39 cm ~> 2 sd

Basic Skill Sheet:

17. 2.9910 m ~> 5 sd

certain ↑ uncertain

19. 0.00670 kg ~> 3 sd

↑ leading zeros don't count. certain ↑ uncertain

20. 809 g ~> 3 sd

certain ↑ uncertain

18. 5600 m ← ambiguous. (2, 3 or 4 sd)

5.600×10^3 m → 4 sd

5.60×10^3 m → 3 sd

5.6×10^3 m → 2 sd

better to write in sci. notation to clearly show the intended # of sds

The number of sds depends on the precision of the measuring instrument used.

Calculations Involving Significant digits

Multiplying and Dividing

12.31 cm (4sd)
× 2.1 cm (2sd) ← round final answer to the least number of significant digits

1231
2462
25.851 cm^2

↑ can only have one uncertain digit

26 cm^2

2sd

Adding and Subtracting

253.491 cm
15.9 cm ← least precise place value
+ 3.25 cm
272.641 cm

↑ can only have 1 uncertain digit.

Round your final answer to the least precise place value.

272.6 cm

TO DO

① Finish Review Sheet (#1 and #2) – HW

② Finish Bounce that Ball – class.

③ Graph data using Graphical Analysis.