Physics 2111
Physics for Scientists & Engineers I (Mechanics)

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Topics for Today

- Scientific Notation & Units
- Linear Dynamics
  - Describing Motion
  - Position & Displacement
  - Average Velocity
  - Instantaneous Velocity
  - Average Acceleration
  - Instantaneous Acceleration

Significant Digits

- All nonzero digits are significant.
- Zeros between nonzero digits are significant.
- Zeros to the left of the first nonzero digit are not significant.
- Zeros at the end of a number that are to the right of the decimal point are significant.
- Zeros at the end of a number that are to the left of the decimal point may or may not be significant.

Arithmetic Operations

- Multiplication & Division:

  Final answer should have the same number of significant figures as the measurement with the fewest number of sig figs.

- Addition & Subtraction:

  Final answer should have the same number of decimal places as the measurement with the least number of decimal places.

- DO NOT CONFUSE "SIG FIGS" WITH DECIMAL PLACES!!

Example #1

A rectangle is measured to have a length of 10.1 cm and a width of 7.2 cm. Calculate the area of the rectangle to the proper number of sig figs.

A) 73 cm^2

B) 72.7 cm^2

C) 72.72 cm^2

D) 72.720 cm^2

Example #2

Find the sum of

5.1 + 18.563 + 0.07

to the proper number of sig figs.

A) 23

B) 23.7

C) 23.73

D) 23.733

Example #3

Which of the following measurement (if any) have 3 sig figs?

A) 4.27 LY

B) 42.7 kg

C) 427 hr

D) 0.427 m

E) Any of these.

Example #4

A student walking along a flat street notices that at one point, the top of a lamp pole lines up exactly on the line of sight to the top of a nearby building. The student knows that her eyes are 5.0 ft above the ground and that the lamp pole is 25 ft tall. She then measures the distance between the sighting location and the lamp pole as 50 ft and the distance between the lamp pole and the building as 70 ft.

How tall is the building?

Example #4 cont'd

How tall is the building?

A) 32 ft

B) 48 ft

C) 53 ft

D) 60 ft

E) 65 ft.