Dimensional Analysis
Group Practice

- 4 timed rounds plus a bonus round (difficulty increases each round!)

- Rotate writer each round (other team members can help!)

- Complete the dimensional analysis problem on the whiteboard

- Follow rules for showing math work

- Get work checked
  - First two teams: 2 points
  - All other teams: 1 point

Round 1

93.6 s = ? ns

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$$93.6\text{s} \times \frac{10^9 \, \text{ns}}{1\text{s}} = 9.36 \times 10^{10} \, \text{ns}$$

Round 2

7.2 mi = ? in

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$$7.2\text{mi} \times \frac{5280\text{ft}}{1\text{mi}} \times \frac{12\text{in}}{1\text{ft}} = 460000\text{in} \text{ or } 4.6 \times 10^{5}\text{in}$$

Round 3

3.89×10^{-3} cm = ? μm

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$$3.89 \times 10^{-3} \text{cm} \times \frac{1\text{m}}{100\text{cm}} \times \frac{10^{6}\,\mu\text{m}}{1\text{m}} = 38.9\mu\text{m}$$

Round 4

0.007 km/s = ? mi/min

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$$\frac{0.007\text{km}}{1\text{s}} \times \frac{1\text{mi}}{1.61\text{km}} \times \frac{60\text{s}}{1\text{min}} = 0.3\text{mi/min}$$

Bonus Round

Suppose that a standard snail's pace is measured to be 0.040 feet per minute. Measured in centimeters per second, what is the value of the snail's pace?

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$$\frac{0.040\text{ft}}{1\text{min}} \times \frac{12\text{in}}{1\text{ft}} \times \frac{2.54\text{cm}}{1\text{in}} \times \frac{1\text{min}}{60\text{s}} = 0.020\text{cm/s}$$