

Today in this class...

1. How to do HW
2. How to use iClicker
3. Chapter 1. Introduction

1

How to use iClicker

1. Press On/Off button to turn on
2. Frequency setting: Press and hold ON/OFF button until power light flashes.

Enter 2 key frequency code : A A

2

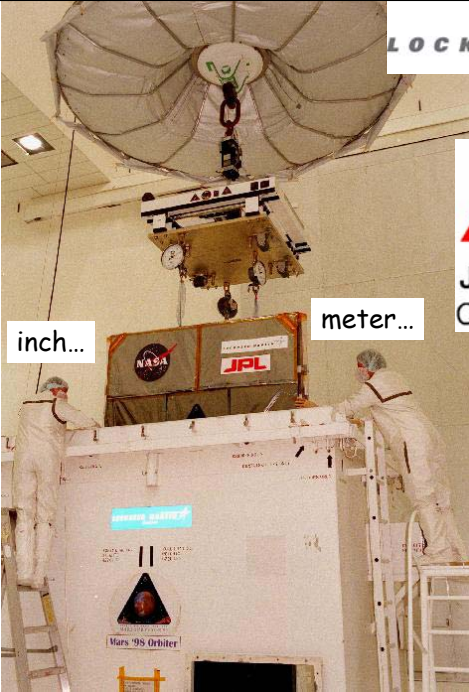
Last class...

Chapter 1. Introduction

Fundamental quantities in Physics: Length, Mass, Time

Unit is important !

3



LOCKHEED MARTIN

(British unit system, inch,...)


JPL

Jet Propulsion Laboratory
California Institute of Technology

(SI system, meter...)

inch... meter...

Did not convert units!
→ Lost \$1M Mars Climate Orbiter!



4

iClicker Quiz

What are the three basic units in the SI Unit system?

(a) pound, inch, hour

(b) m, kg, s

(c) m, g, s

(d) km, g, s

(e) m, cm, km

Ans: (b)

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Today, we will learn

Prefixes for units

Conversion of units

Dimensional analysis

6

Math Review: Powers and Exponents

See notes and Appendix A.2 in B1

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iClicker Quiz

- $10^{-4} = ?$
- (a) 10,000
 - (b) 6
 - (c) -10,000
 - (d) 0.0001
 - (e) 0.00001

Ans: (d)

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iClicker Quiz

$$(10^{-2})^3 = ?$$

(a) 10^{-6}

(b) 10^1

(c) 0.1

(d) -60

(e) -10

Ans: (a)

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Prefix for SI unit

$$3000 \text{ m} = 3 \times 1,000 \text{ m} = 3 \times 10^3 \text{ m} = 3 \text{ km} \quad (1000 = \text{kilo} = \text{k})$$

$$1,000,000,000 = 10^9 = \text{giga} = G$$

$$1,000,000 = 10^6 = \text{mega} = M$$

$$1,000 = 10^3 = \text{kilo} = k$$

$$0.005 \text{ s} = 5 \times 0.001 \text{ s} = 5 \times (1/1000) \text{ s} = 5 \times 10^{-3} \text{ s} = 5 \text{ ms}$$

$$0.01 = 10^{-2} = \text{centi} = c$$

$$0.001 = 10^{-3} = \text{mili} = m$$

$$0.000\ 001 = 10^{-6} = \text{micro} = \mu$$

$$0.000\ 000\ 001 = 10^{-9} = \text{nano} = n$$

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Example of Other units and conversion of units

$$1 \text{ mile} = 1609 \text{ m} \approx 1.6 \text{ km}$$

$$1 \text{ g} = 0.001 \text{ kg} = 10^{-3} \text{ kg}$$

$$1 \text{ hour} = 60 \text{ min} = 60 \times 60 \text{ sec}$$

Conversion factors

→ See Table A.1 in Appendix A in B2

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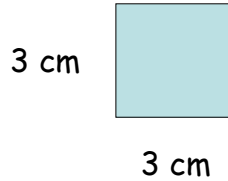
Example 1

$$1 \text{ mile} = 1609 \text{ m.}$$

$$4.1 \text{ mile} = ? \text{ m}$$

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Example 2:



Find the area in m^2

Assignment

Create UT EID, request enrollment for the course, download and start HW #1: Introduction (Due 11 am, 9/16, Tuesday).

Announcement

Written quiz on Tuesday (9/9), which will include Appendix A in B1, "Mathematical Review" and what we learned so far.