

# GENERALPHYSICS 1

*PHYS 110*

Get some strategies  
and Ideas in order to  
have a successful  
teaching experience.  
These can be relevant  
for all grade levels and  
subject areas whether  
you teach in public  
schools, private  
schools, or even  
homeschool.

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Read the book

Think!

Ask questions

Attend the Sand

Information is key

No pain no gain ☺

# Important Information

- توزيع الدرجات:
  - الدوري الاول 30 درجه
  - نصفي 30 درجه
  - النهائي 40 درجه
- مواعيد الاختبارات وأماكنها تحدد لاحقاً من قبل الشؤون التعليميه وستعلن في موقع المنسقه في حينه
- نظام الحضور والغياب هو نفس نظام الجامعه ساند.

JEARL WALKER | DAVID HALLIDAY | ROBERT RESNICK

# Principles of Physics

Tenth Edition

EXCLUSIVE TO THIS VERSION

- New Problem Sets

- Concise Coverage



INTERNATIONAL STUDENT VERSION

WILEY

# • ماذا سندرس في منهج فيزياء 110؟

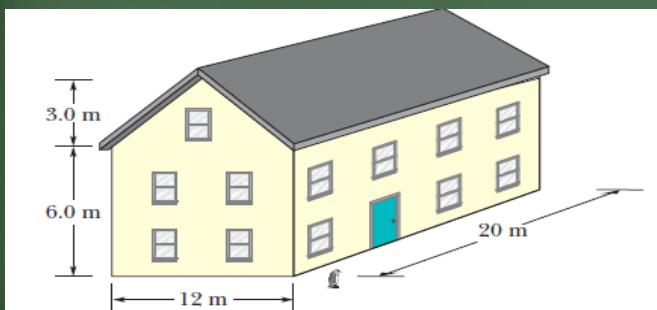
• المنهج هو عبارة عن علم الميكانيكا.

• ما هو علم الميكانيكا؟

علم الميكانيكا علم يختص بدراسة حركة الأجسام والقوى المسببة لها.

C H A P T E R      1

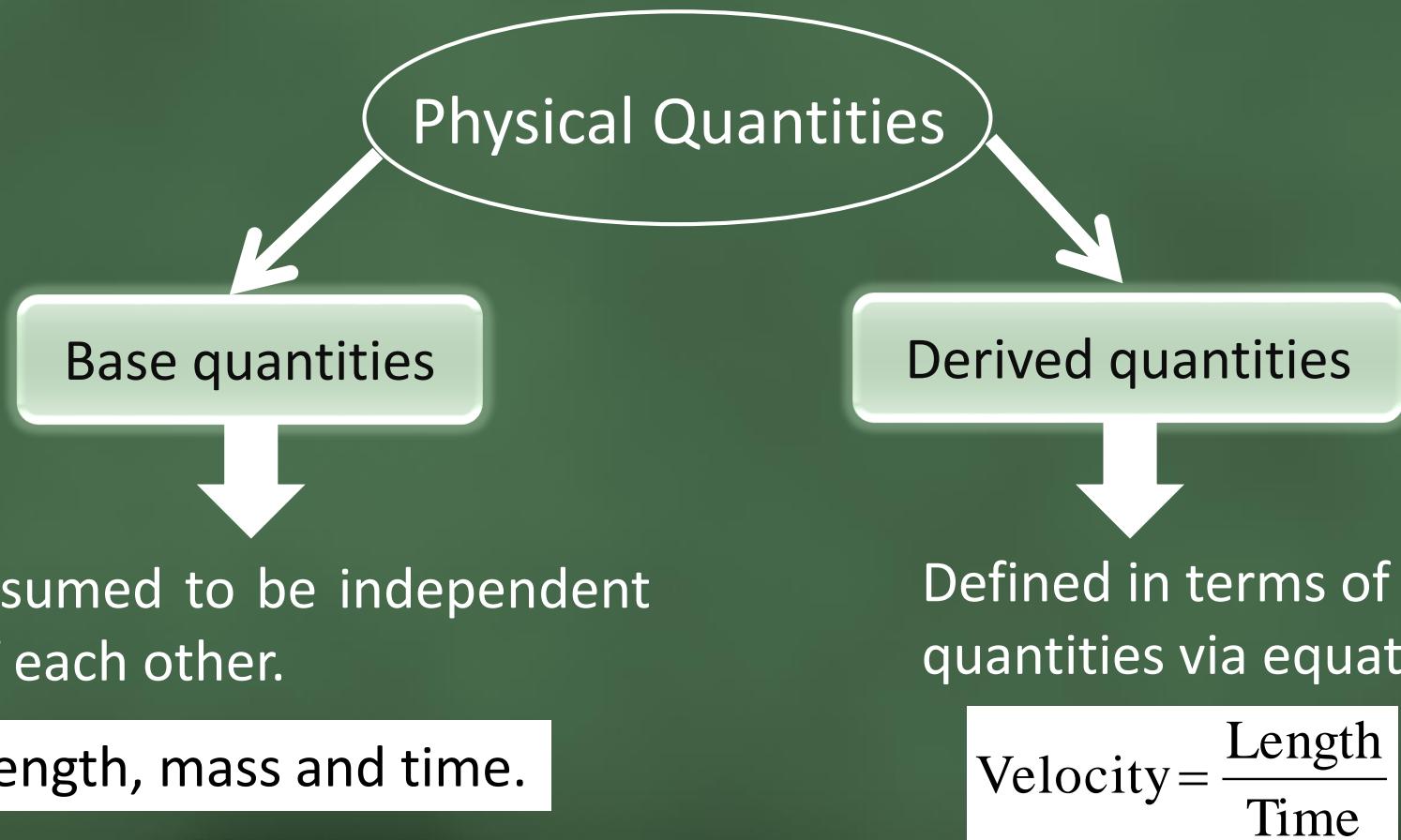
# Measurement



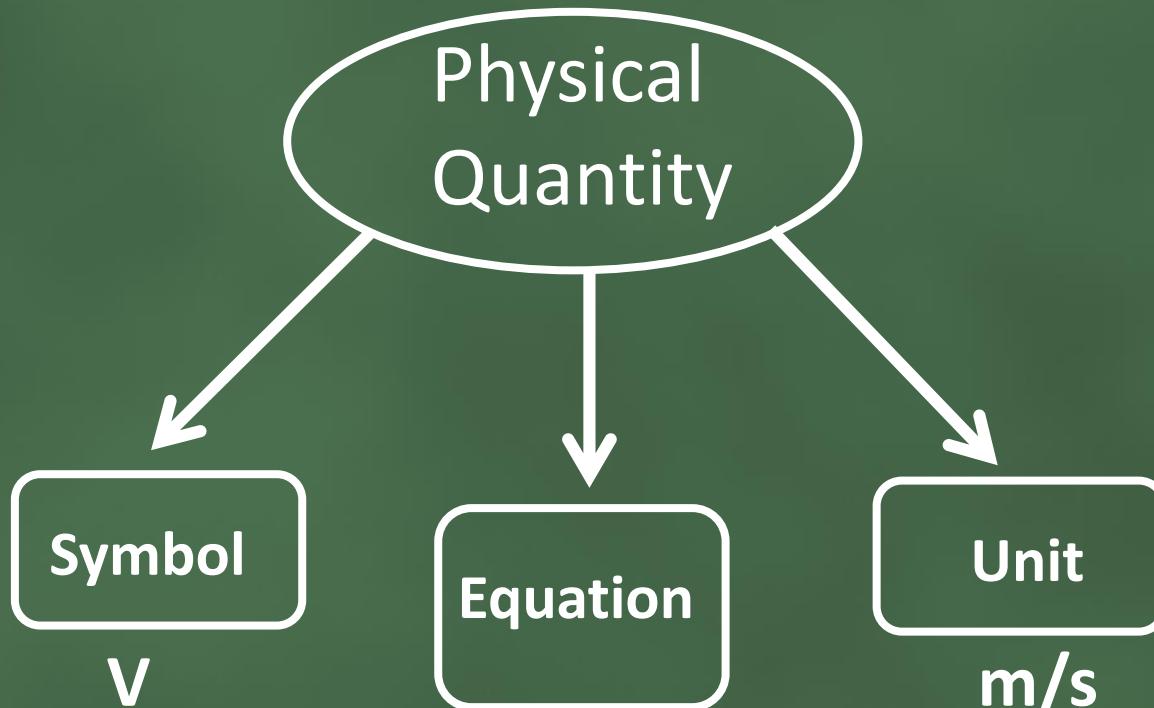
# Physical Quantities

Physics is based on measurement of Physical Quantities.

For example: length, time, mass, temperature, pressure.



# Physical Quantities



$$V = \text{Length}/\text{time}$$

# The International System of Units (SI)

Based on the General Conference on Weight and Measurements In 1971.

Base  
Quantities

Units of base  
quantities

Physical Quantity	Name of Unit	Abbreviation
Mass	Kilogram	Kg
Length	Meter	m
Time	Second	s

Many SI derived units are defined in terms of these base units.

Example:

$$1 \text{ watt} = 1 \text{ W} = 1 \text{ Kg} \cdot \text{m}^2/\text{s}^3$$

# Scientific Notations

To express the very large and very small quantities we usually use ***scientific notation***, which employs powers of 10

$$\text{➤ } \overbrace{3560000000.0}^{\leftarrow} \text{ m} = 3.56 \times 10^{+9} \text{ m}$$

$$\text{➤ } \overbrace{0.00000492}^{\rightarrow} \text{ s} = 4.92 \times 10^{-6} \text{ s}$$

# Scientific Notations

- Example

Express 0.00592 in scientific notation.

- a)  $5.92 \times 10^3$
- b)  $5.92 \times 10^{-3}$
- c)  $5.92 \times 10^{-2}$
- d)  $5.92 \times 10^{-5}$
- e)  $5.92 \times 10^5$

# Scientific Notations

- Example

Express 0.00592 in scientific notation.

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# Scientific Notations

Using prefixes

$3.56 \times 10^9 \text{ m}$

giga → G

3.56 Gm

$$4.92 \times 10^{-6} \text{ s} = 4.92 \mu \text{ s}$$

## Prefixes for SI Units

Factor	Prefix <sup>a</sup>	Symbol
$10^{24}$	yotta-	Y
$10^{21}$	zetta-	Z
$10^{18}$	exa-	E
$10^{15}$	peta-	P
$10^{12}$	tera-	T
<b><math>10^9</math></b>	<b>giga-</b>	<b>G</b>
<b><math>10^6</math></b>	<b>mega-</b>	<b>M</b>
<b><math>10^3</math></b>	<b>kilo-</b>	<b>k</b>
$10^2$	hecto-	h
$10^1$	deka-	da
$10^{-1}$	deci-	d
<b><math>10^{-2}</math></b>	<b>centi-</b>	<b>c</b>
<b><math>10^{-3}</math></b>	<b>milli-</b>	<b>m</b>
<b><math>10^{-6}</math></b>	<b>micro-</b>	<b><math>\mu</math></b>
<b><math>10^{-9}</math></b>	<b>nano-</b>	<b>n</b>
<b><math>10^{-12}</math></b>	<b>pico-</b>	<b>p</b>
$10^{-15}$	femto-	f
$10^{-18}$	atto-	a
$10^{-21}$	zepto-	z
$10^{-24}$	yocto-	y

<sup>a</sup>The most frequently used prefixes are shown in bold type.

# Conversion between units

Chain-link conversion

Convert 2 min to s?

$$1 \text{ min} = 60 \text{ s}$$

$$\frac{1 \text{ min}}{1 \text{ min}} = \frac{60 \text{ s}}{1 \text{ min}}$$

$\Rightarrow$

$$1 = \frac{60 \text{ s}}{1 \text{ min}}$$

Conversion factor:  
is the ratio of units  
that equal unity

$$2 \text{ min} \times \frac{60 \text{ s}}{1 \text{ min}} = 120 \text{ s}$$

~~$$1 = \frac{60}{1}$$~~

1. ايجاد العلاقة بين الوحدات المراد تحويلها.
2. نقسم على الوحدة المراد التخلص منها.
3. نختصر و نوجد معامل التحويل المساوي للواحد.
4. نضرب الكمية المراد تحويلها بمعامل التحويل.
5. نختصر و نبسط النتيجة.

# Unit Conversion

- Example

Convert 2 s to min?

- a) 120 min
- b)  $0.333 \times 10^2$  min
- c) 60 min
- d)  $3.33 \times 10^{-2}$  min

# Unit Conversion

- Example

Convert 2 s to min?

- a) 120 min
- b)  $0.333 \times 10^2$  min
- c) 60 min
- d)  $3.33 \times 10^{-2}$  min

# The End

