PhET™ INTERACTIVE SIMULATIONS

Explore Science With Phet

विद्यया ऽमृतमश्नुते

एन सी ई आर टी
NCERT

Mrs. Kabita Kar

NATIONAL ICT AWARDEE

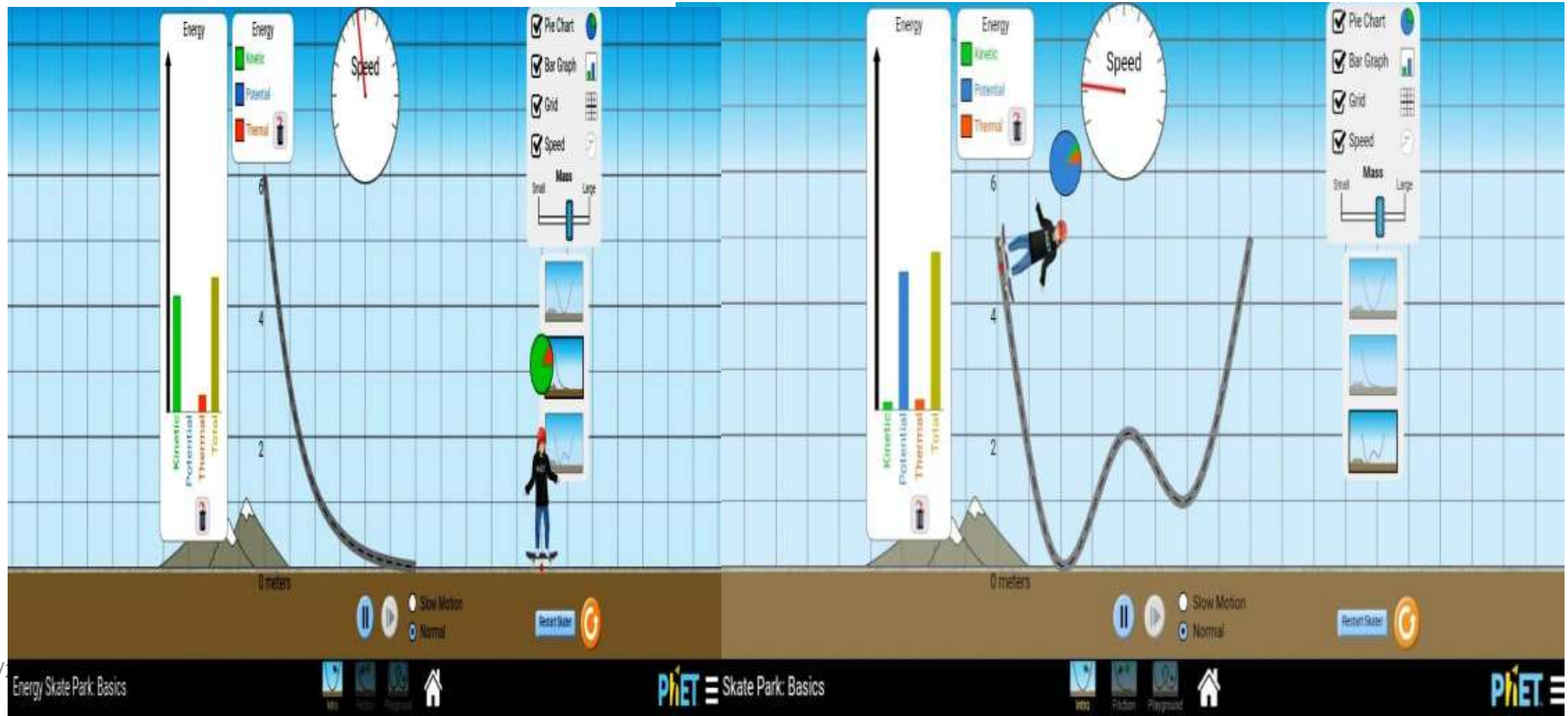
Vice Principal , JNV Ganjam Odisha

SIMULATIONS

- A tool of experimentation
- Go beyond lab
- Easy to use
- Fun

Next

Energy Skate Park



CONTENTS

- Introduction
- Goals of using PheT simulations
- Utilisation
- Practicing and operating online and offline uses

PHET –USE FROM GRADE TO GRAD SCHOOL

- What is PheT ?
- Why teach with PheT ?
- How to teach with PheT ?

What is PhET → Physics Education Technology

. Interactive description in mobile also

Visualizing the Invisible

.Compatible and easily accessible to student

.Now include chem,bio,math,earth science

WHY PHET ?

PhET™ INTERACTIVE SIMULATIONS

- Virtual Laboratories
- Embedded Games and Challenges
- Helps in enjoying learning concept
- Translated into different languages
- Interactive learning environments

WHY TEACH WITH PHET ?

- By using sims as an animated illustration, it is easier to communicate effectively with students.
- Show dynamic processes which can slowed down, speed up, or paused, depending on the concept
- Flexibility in sims is more effective for learning
- more practical to use than static drawings or live demos.

HOW TO USE PHET SIMULATION ?

- . On the web portal type Phet or https://phet.colorado.edu
- Log in to phet page
- Fill all the information box
- Get the confirmation page from the site
- Download the PhET topic wise or grade wise.

THE IMMEDIATE INTERESTS ARE:

- Use of analogy to construct understanding
- Simulations as tools for changing classroom norms.
- Specific features of sims that promote learning and engaged exploration.
- Integrating simulations into homework

USE OF PHET SIMULATION

- Subject/topic
- Grade
- Sim (java, HTML5,flash)
- Device

Projectile Motion

Horizontal

$$\Delta x = v_{0x}t$$

$$v_x = v_{0x}$$

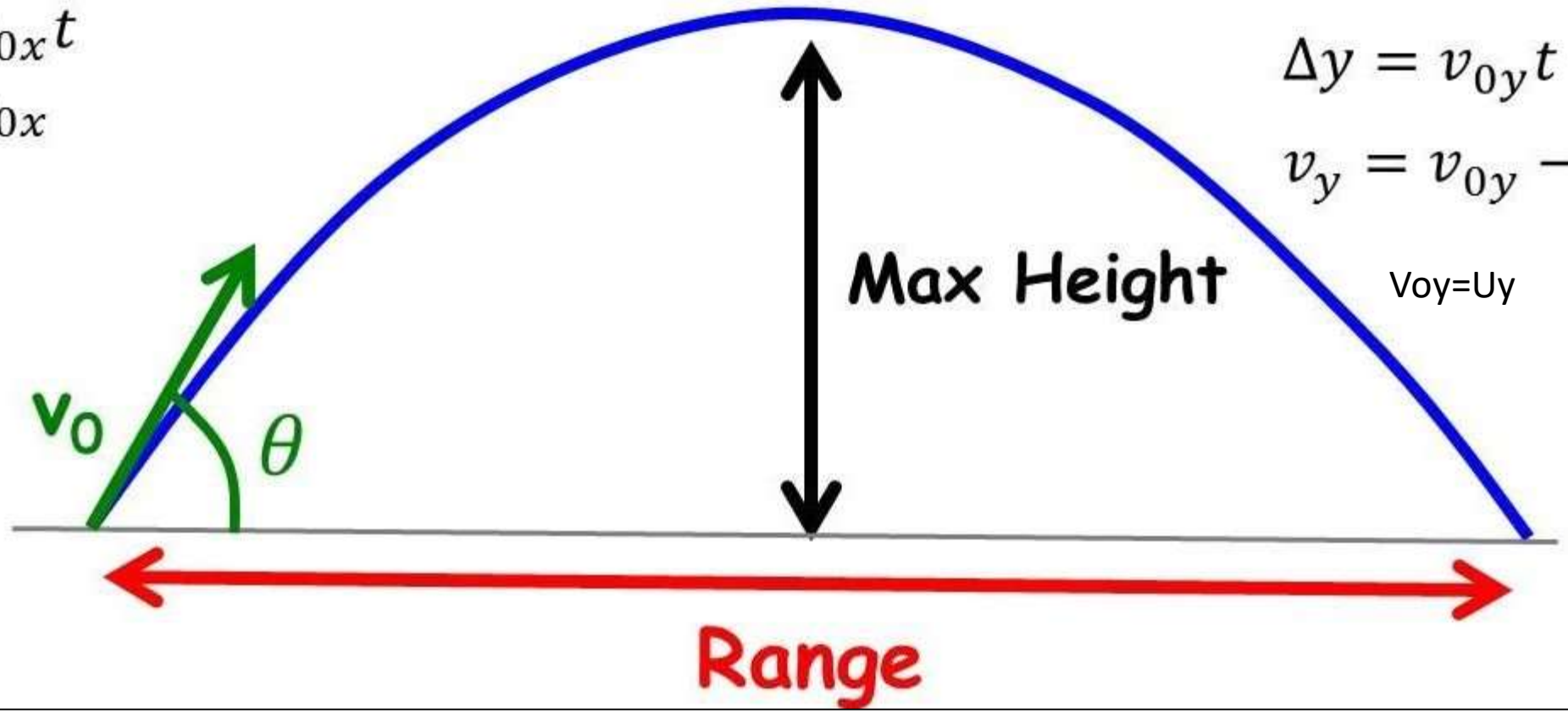
Vox=Ux

Vertical

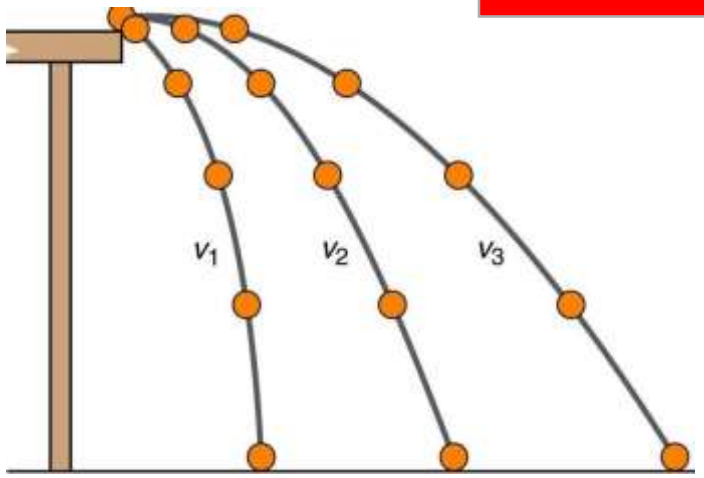
$$\Delta y = v_{0y}t - \frac{1}{2}gt^2$$

$$v_y = v_{0y} - gt$$

Voy=Uy



RANGE IN PROJECTILE MOTION

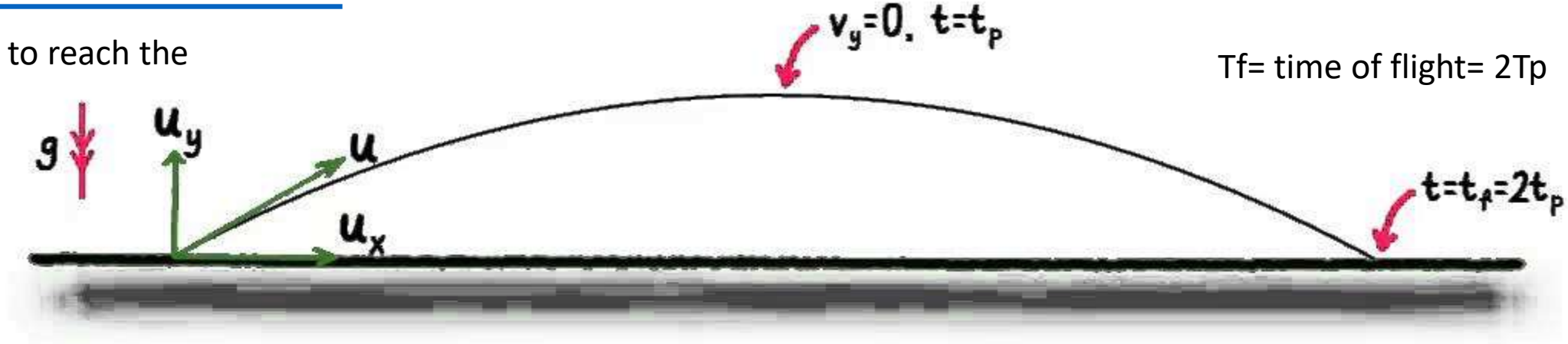


- Range is the distance covered in the horizantal plane .
- Projectile is any body which is thrown to space and comeback of its own to ground .

DERIVATION :

Tp= time to reach the top

Tf= time of flight= 2Tp



$$+\uparrow \quad (v_y = u_y + a_y t)$$

$$0 = u_y + (-g)t_p$$

$$t_p = \frac{u_y}{g}$$

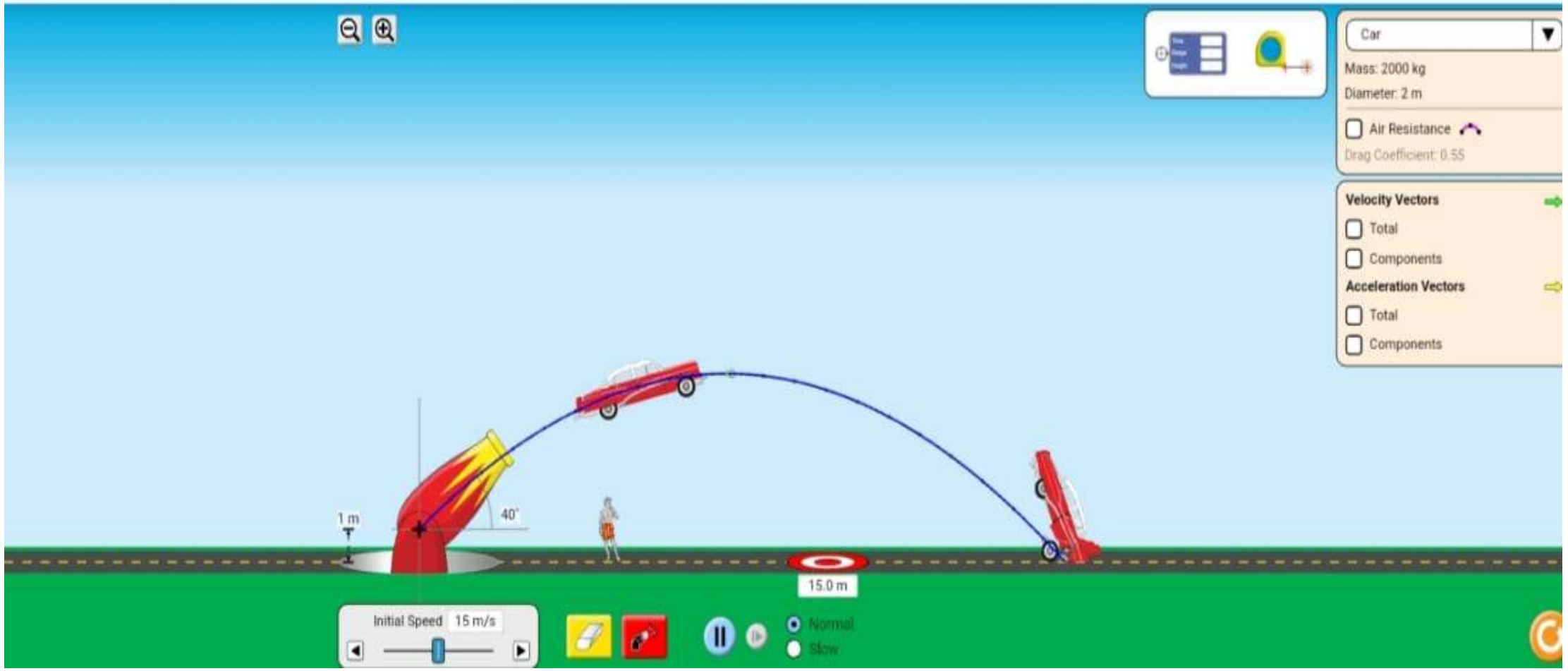
$$(s_x = u_x t)$$

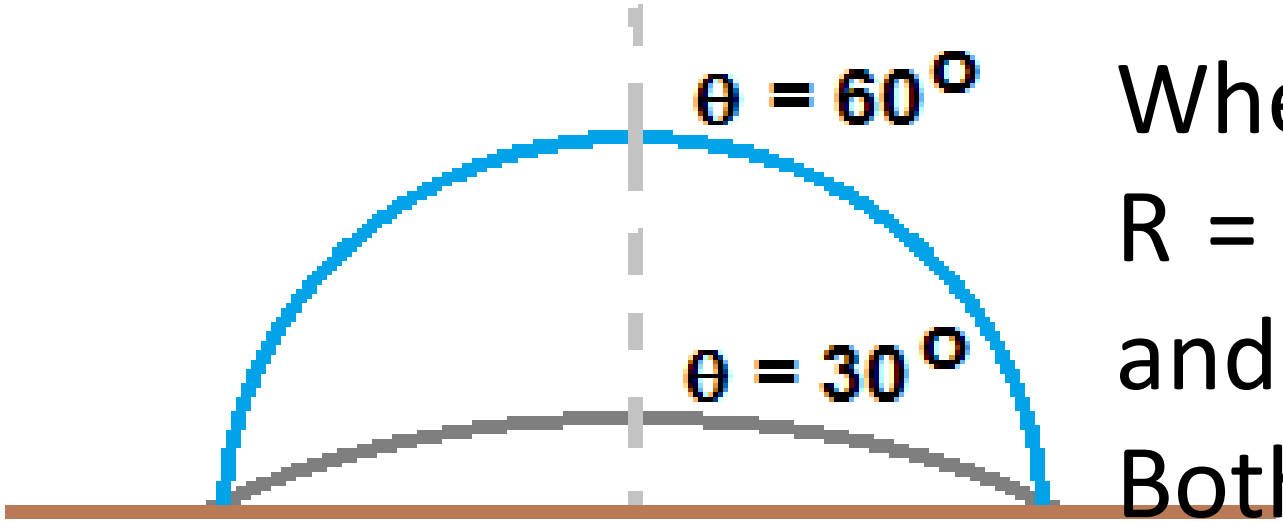
$$\rightarrow + \quad R = u_x t_f = u_x \frac{2u_y}{g}$$

$$= \frac{2(u\cos\theta)(u\sin\theta)}{g}$$

$$= \frac{u^2 \sin 2\theta}{g}$$

Uses In Gungame





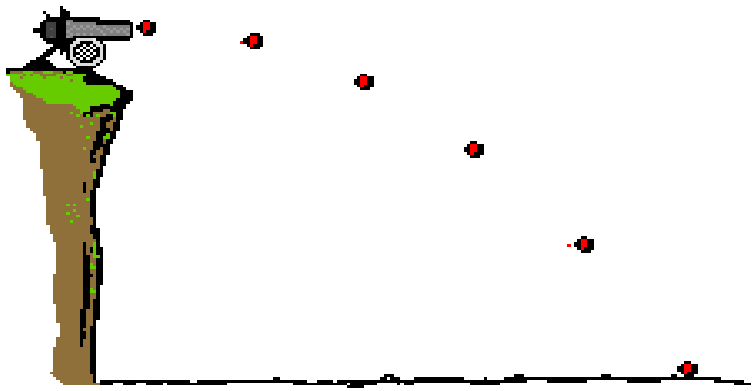
θ - Angle of Projection

When Ɵ is angle in degree

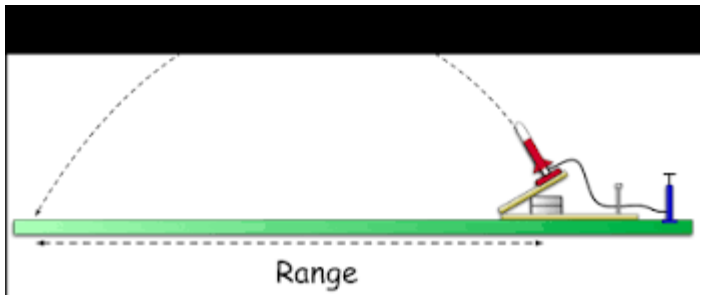
$R = u^2 \sin 2Ɵ / g$ Hence at 30 and 60 angle

Both covers same distance

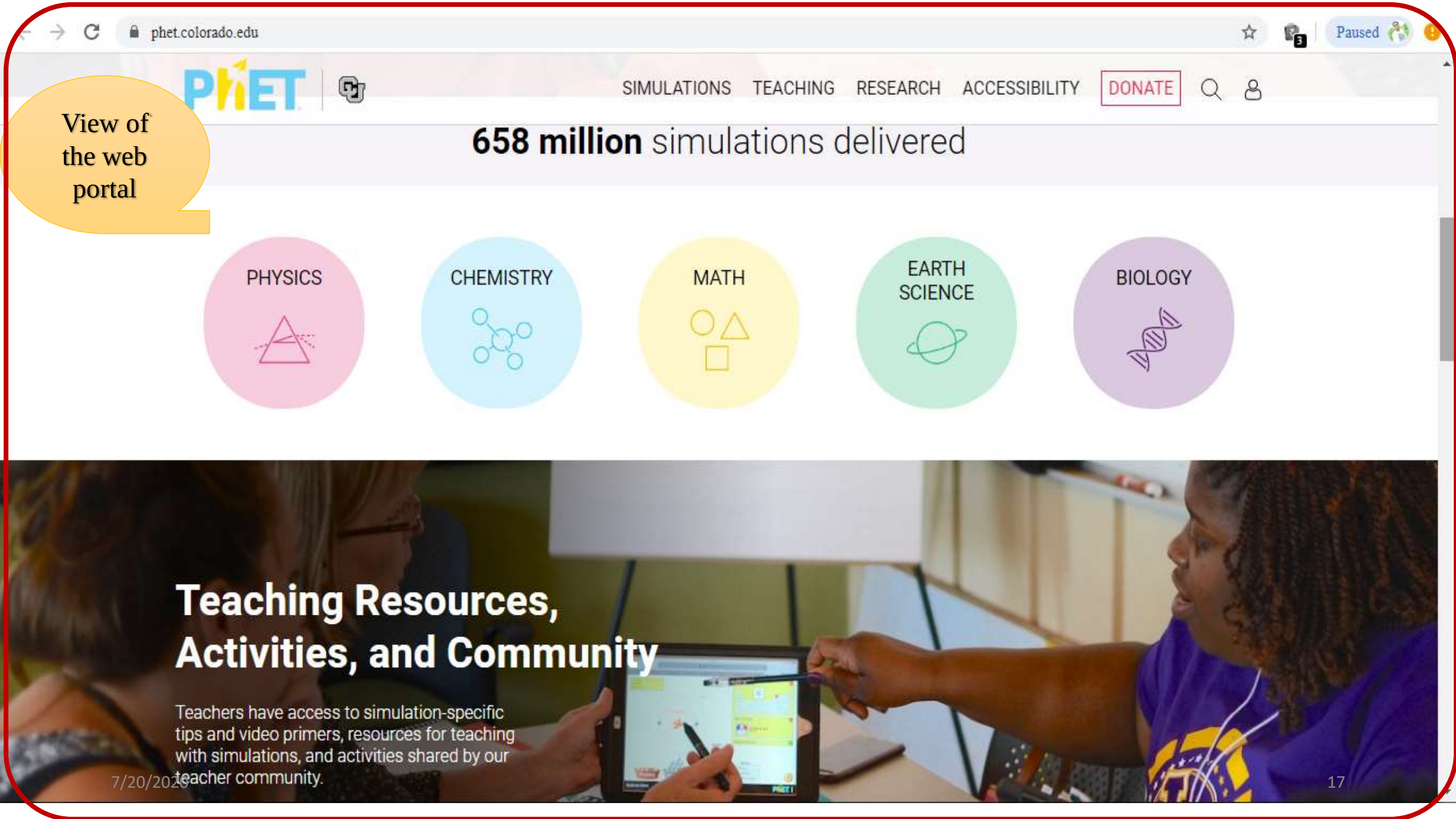
Here object is thrown from ground.

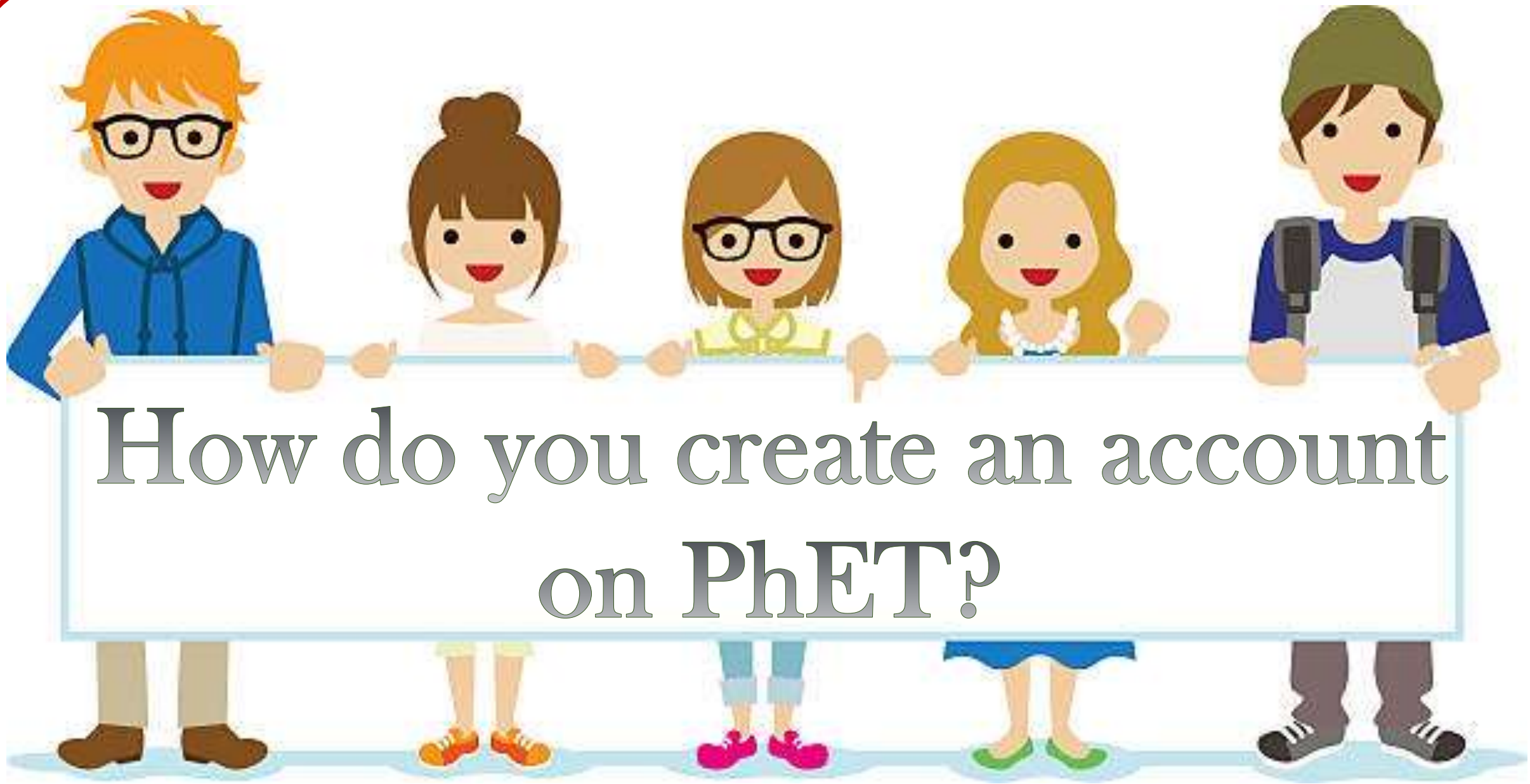


This projectile is launched with an initial horizontal velocity from an elevated position.

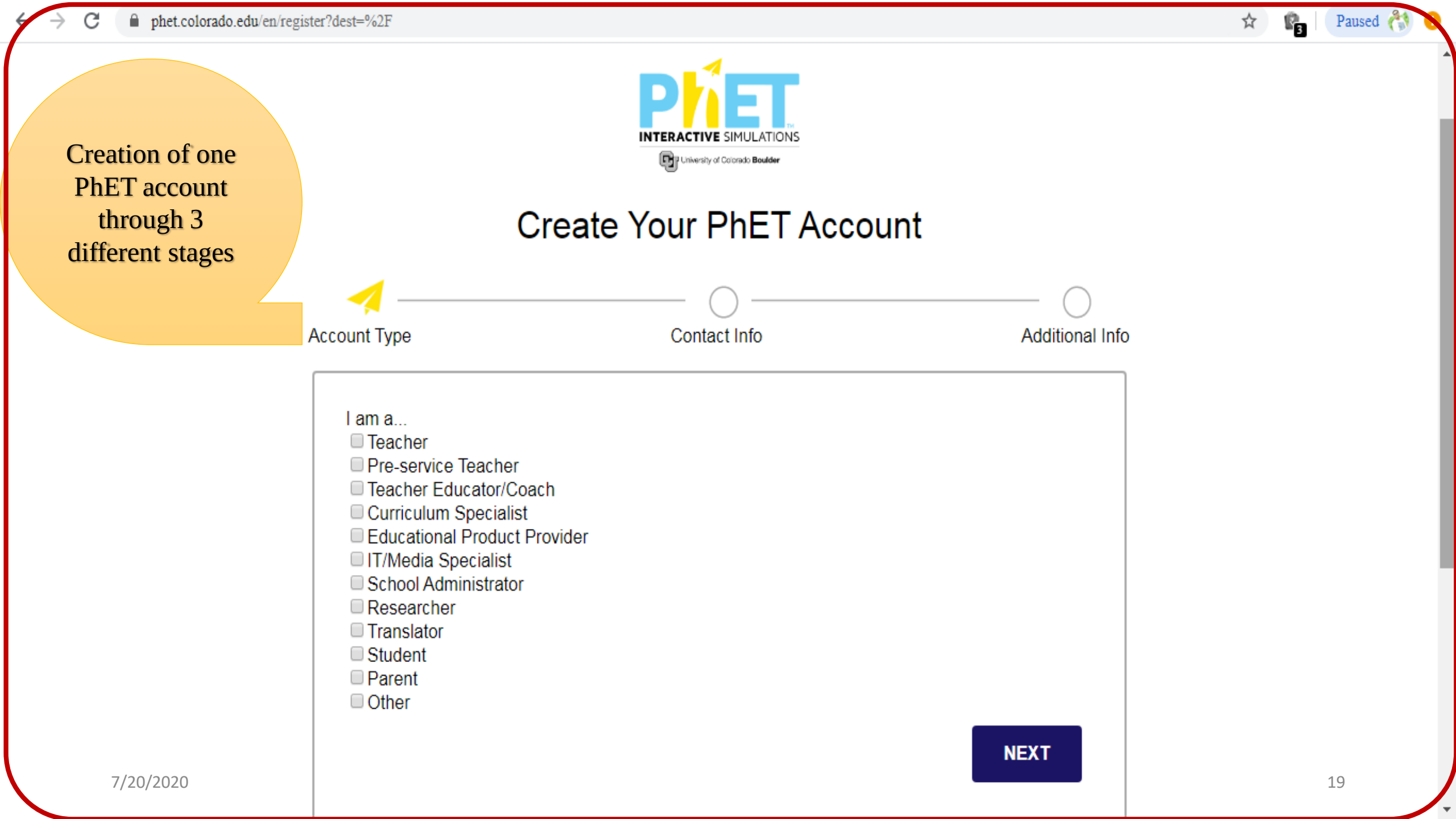


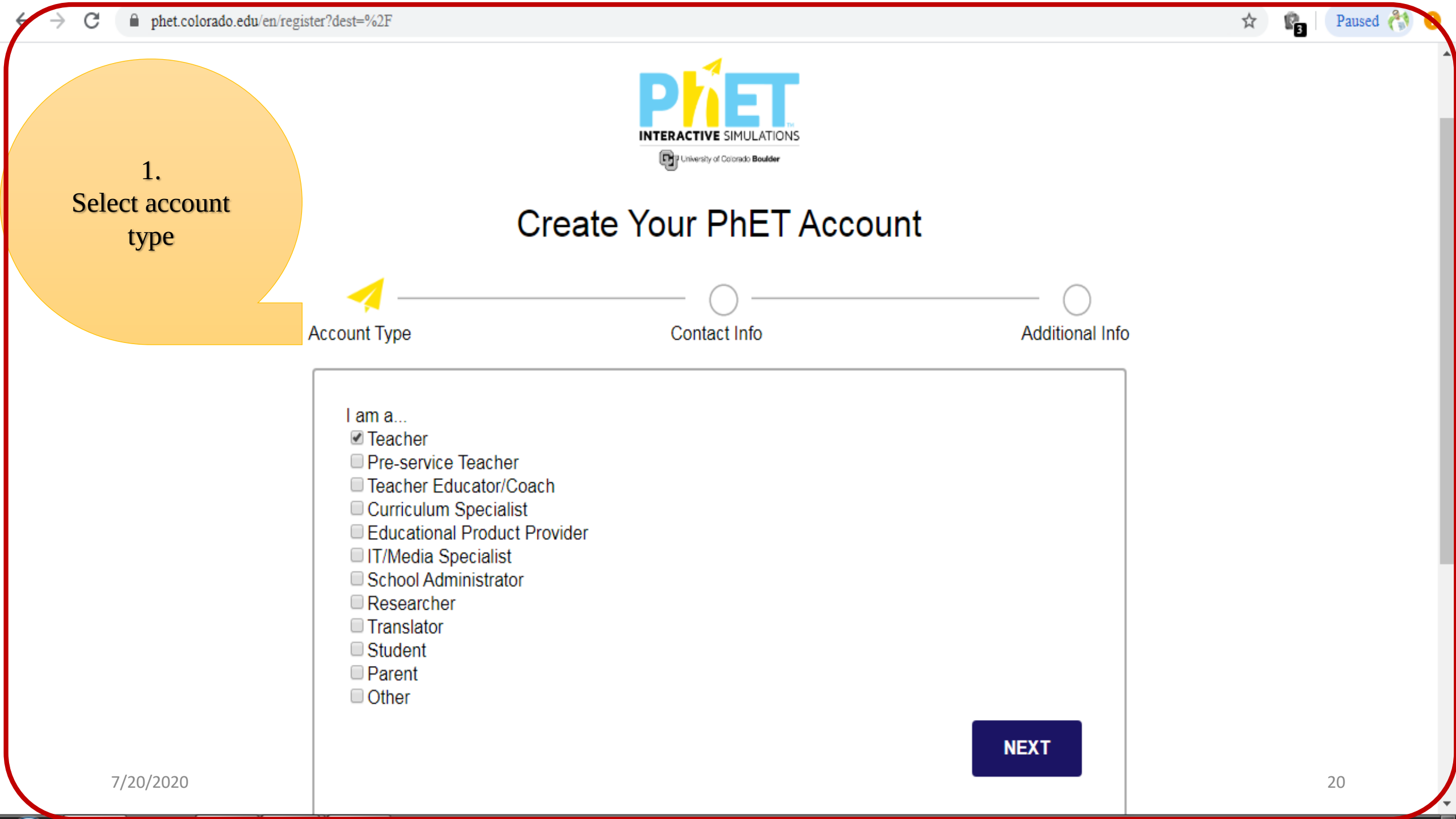
View of the web portal



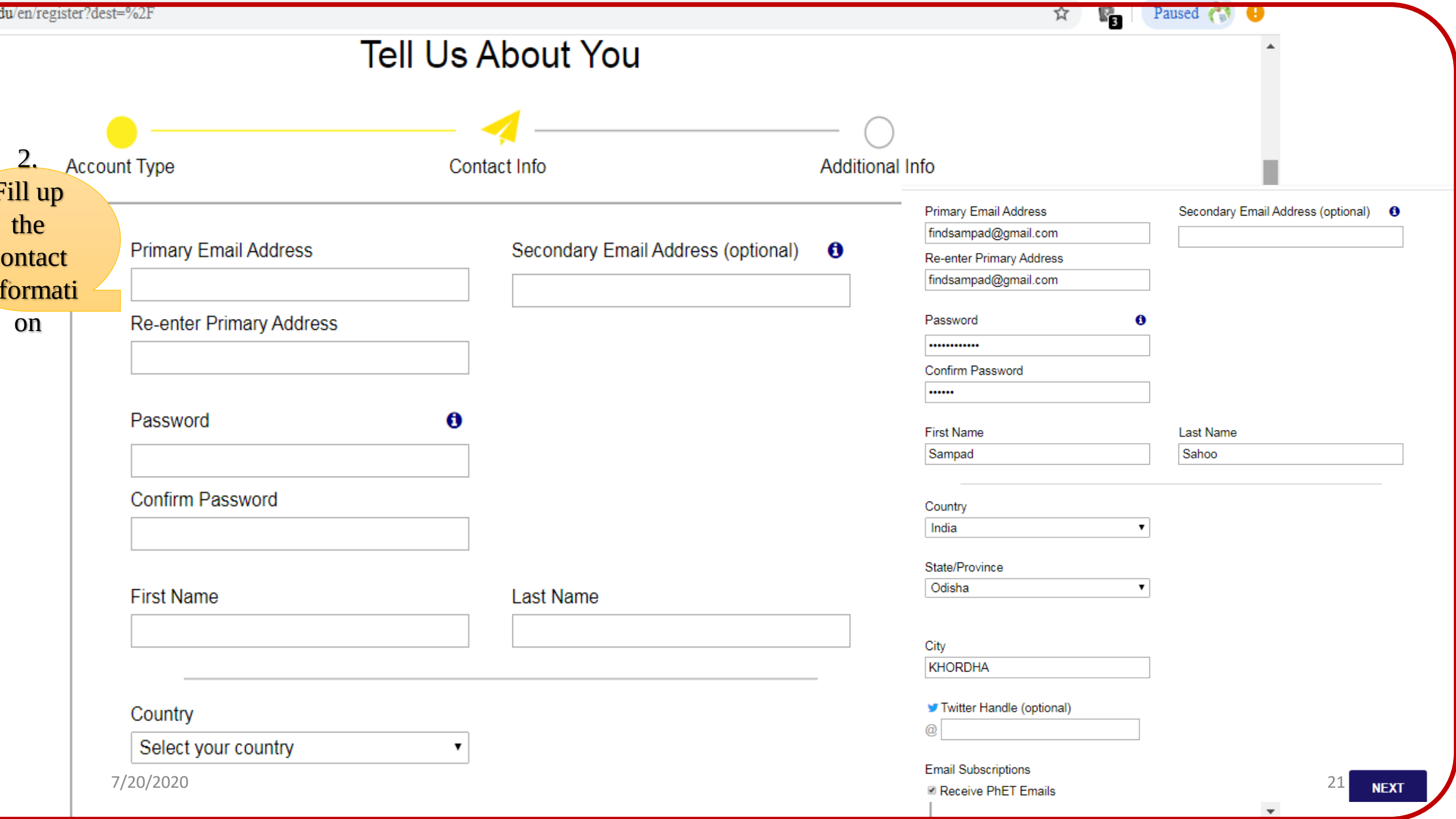


How do you create an account on PhET?


phet.colorado.edu/en/register?dest=%2F
Paused
Creation of one PhET account through 3 different stages
PhET
INTERACTIVE SIMULATIONS
University of Colorado Boulder
Create Your PhET Account
Account Type
Contact Info
Additional Info
I am a...
Teacher
Pre-service Teacher
Teacher Educator/Coach
Curriculum Specialist
Educational Product Provider
IT/Media Specialist
School Administrator
Researcher
Translator
Student
Parent
Other
NEXT


phet.colorado.edu/en/register?dest=%2F
Paused
1.
Select account type
PhET
INTERACTIVE SIMULATIONS
University of Colorado Boulder
Create Your PhET Account
Account Type
Contact Info
Additional Info
I am a...
Teacher
Pre-service Teacher
Teacher Educator/Coach
Curriculum Specialist
Educational Product Provider
IT/Media Specialist
School Administrator
Researcher
Translator
Student
Parent
Other
NEXT

2. Fill up the contact formation



3.
Fill up few additional information

phet.colorado.edu/en/register?dest=%2F

School

Please select a school

JAWAHAR NAVODAYA VIDYALAYA, GURUJANG KHOI Can't find your school?

Subject(s)

- [ ] General Sciences
- [ ] Astronomy
- [ ] Earth Science
- [ ] Biology
- [x] Physics
- [ ] Chemistry
- [ ] Math
- [ ] Other

Grade(s)

Please select a grade

- [ ] Elementary (K-5)
- [ ] Middle (6-8)
- [x] High (9-12)
- [ ] University
- [ ] Other

Teaching Experience

20 years

In the classroom, I am a ... (select all that apply)

Please select at least one type

- [x] General Education teacher
- [ ] Special Education teacher
- [ ] Paraprofessional Educator
- [ ] Substitute teacher
- [ ] Student teacher
- [ ] Other

PhET Experience

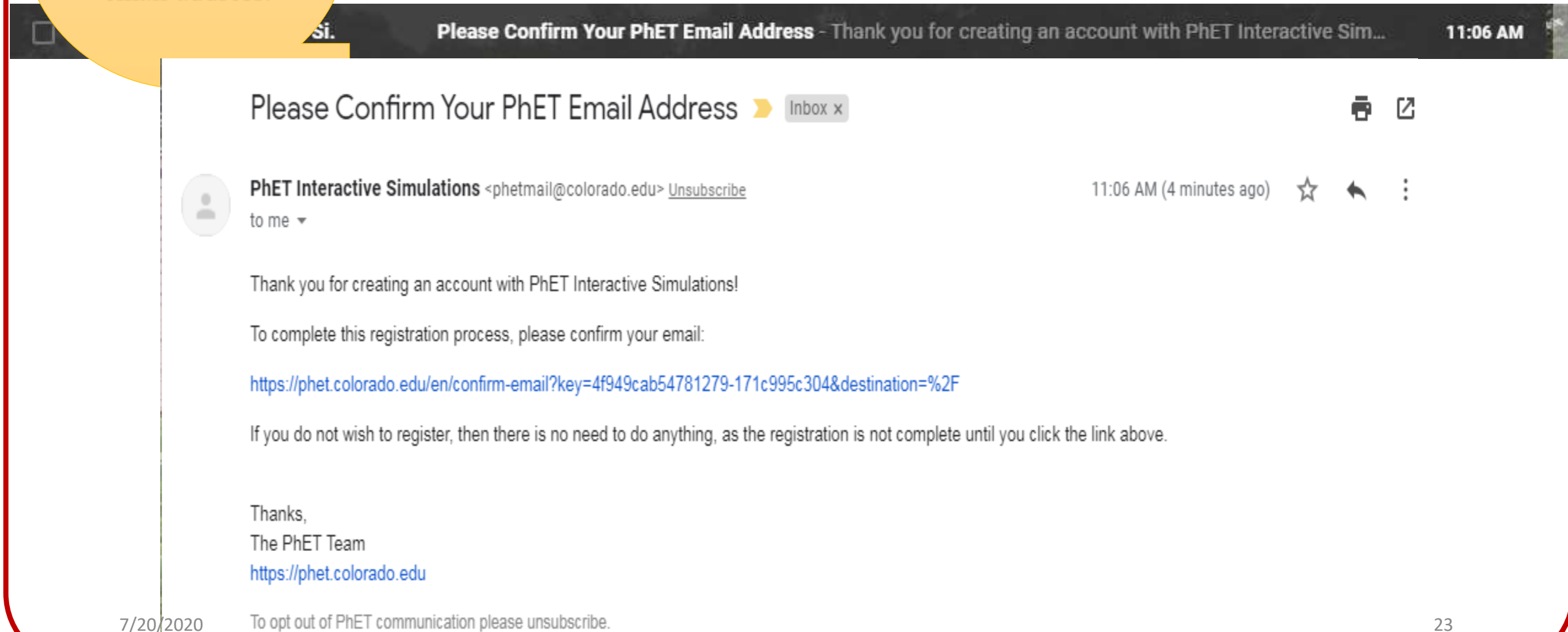
- (•) New User
- ( ) Occasional User (I've used a few sims)
- ( ) Experienced User (I regularly use sims)
- ( ) Power User (I tell everyone about PhET)

REGISTER NOW

By clicking register, you agree to the University of Colorado's privacy policy

CONFIRMATION PAGE

Check your email inbox to confirm the email address.



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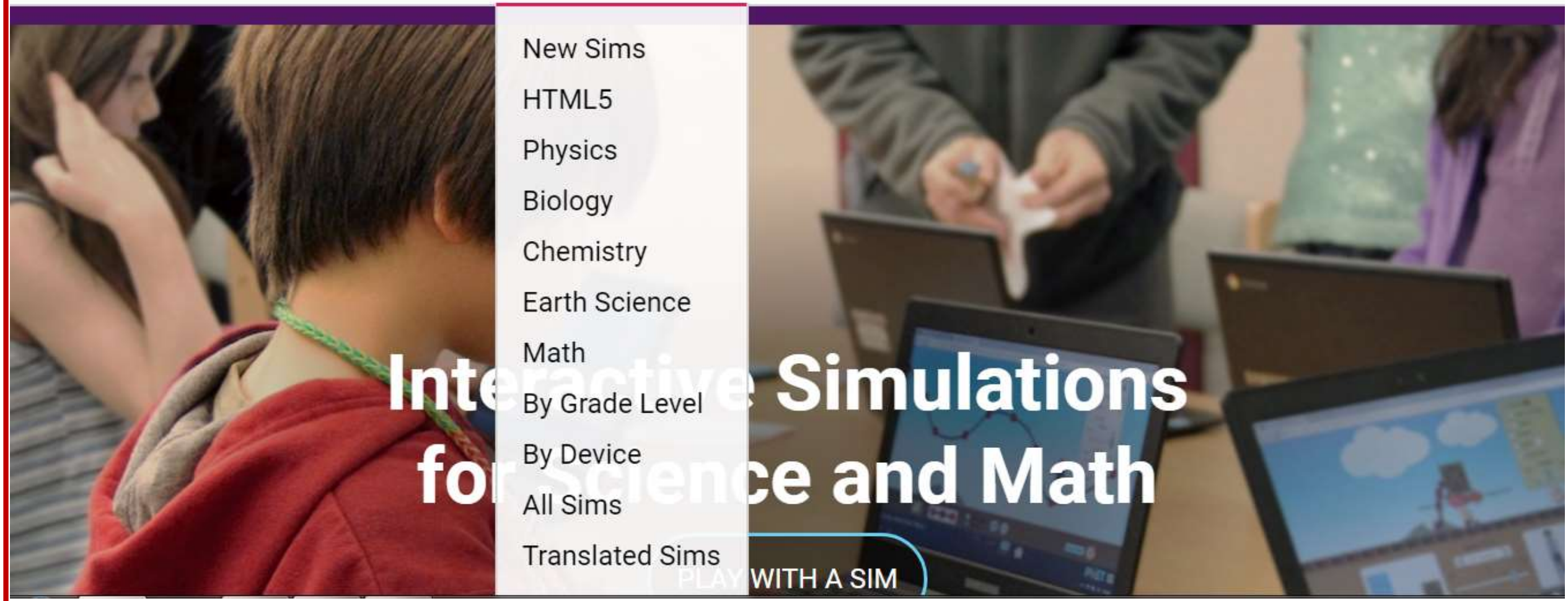
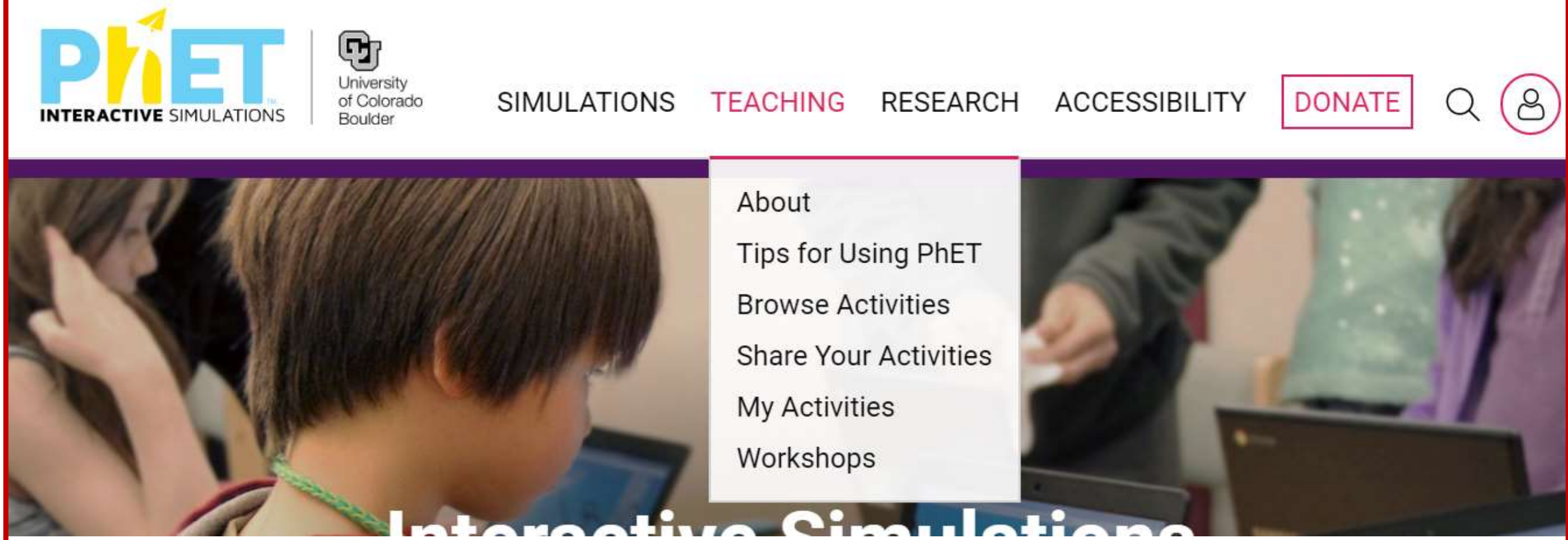
SIMULATIONS TEACHING RESEARCH ACCESSIBILITY DONATE

Next


PhET
INTERACTIVE SIMULATIONS
University of Colorado Boulder
SIMULATIONS
TEACHING
RESEARCH
ACCESSIBILITY
DONATE
New Sims
HTML5
Physics
Biology
Chemistry
Earth Science
Math
By Grade Level
By Device
All Sims
Translated Sims
Interactive Simulations for Science and Math
PLAY WITH A SIM

Next

Phet (Physics Educational Technology)



Next

Physics

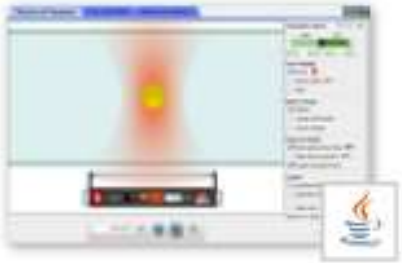
- Motion
- **Sound & Waves**
- Work, Energy & Power
- Heat & Thermo
- Quantum Phenomena
- Light & Radiation
- Electricity, Magnets & Circuits

Physics | Sound & Waves

Waves Intro

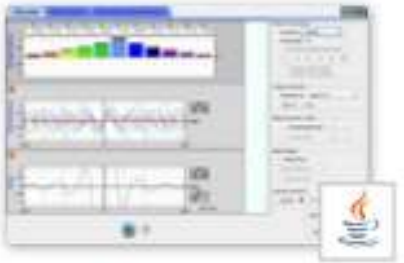
Wave Interference

Normal Modes



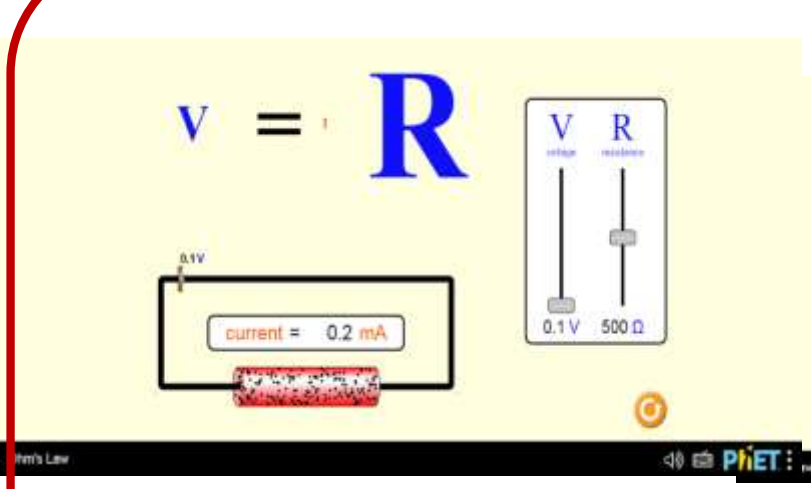
Optical Tweezers and Applications

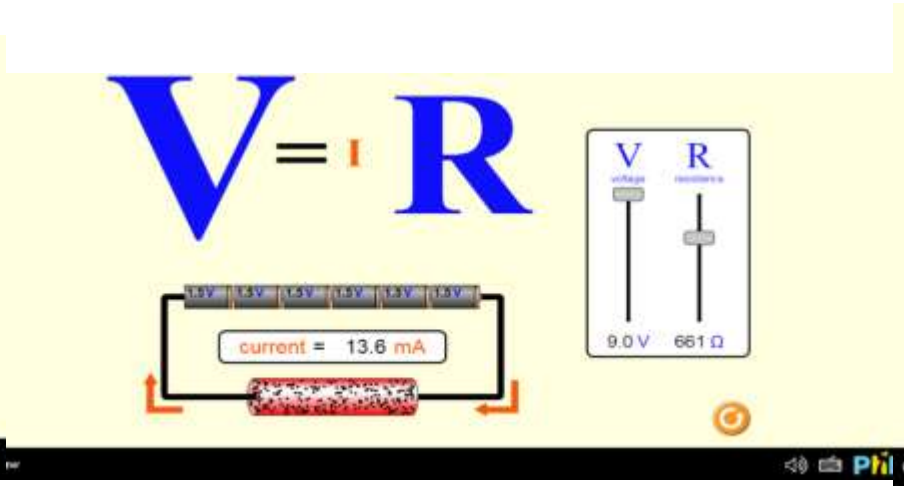
Radio Waves & Electromagnetic Fields

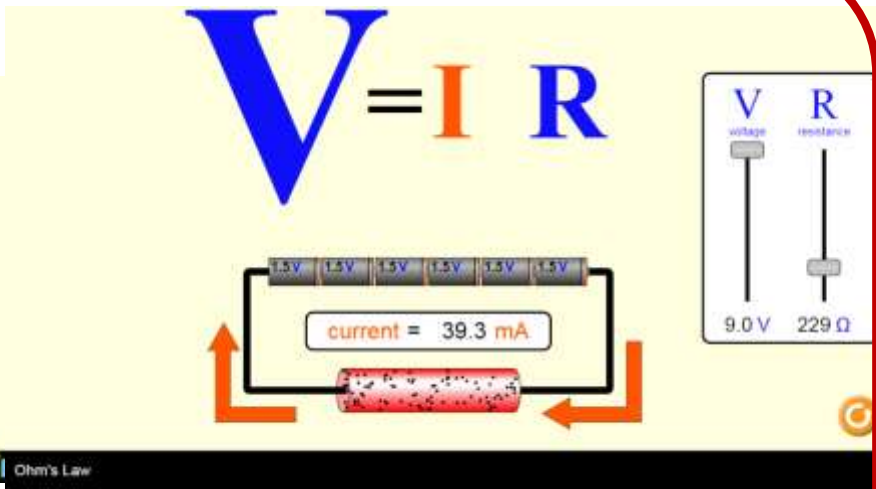


Fourier: Making Waves

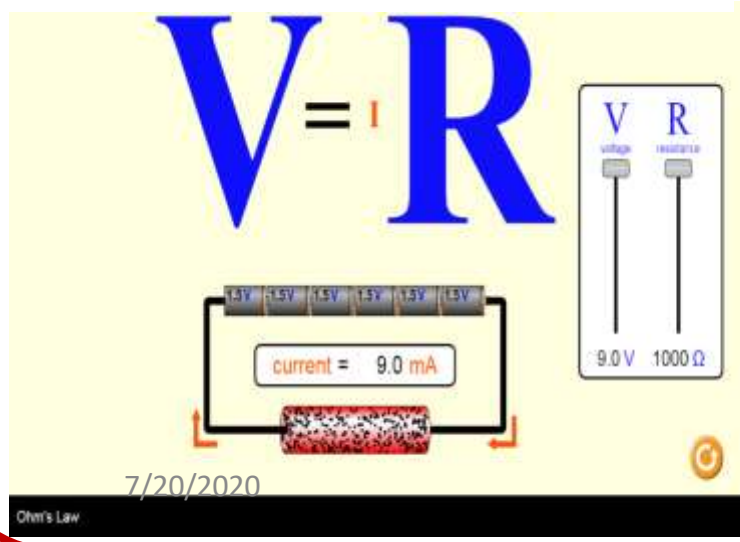
Next

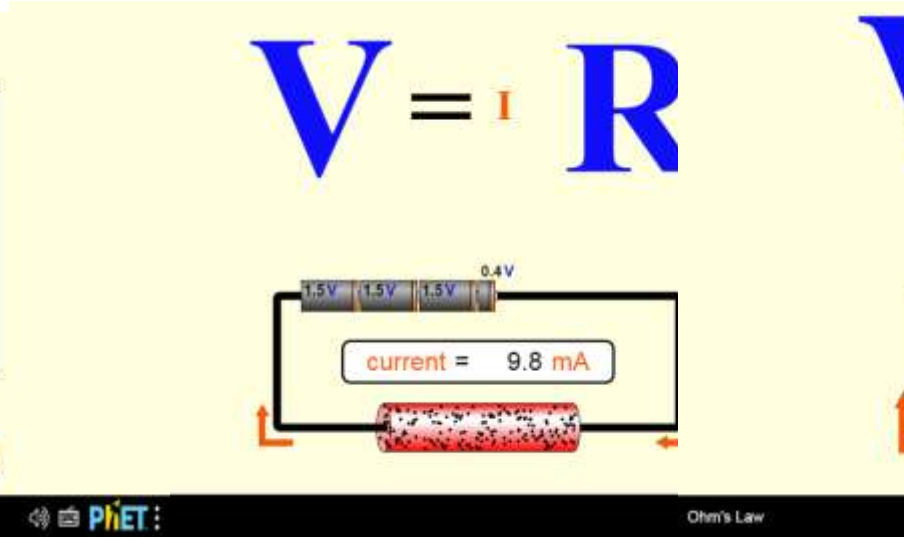


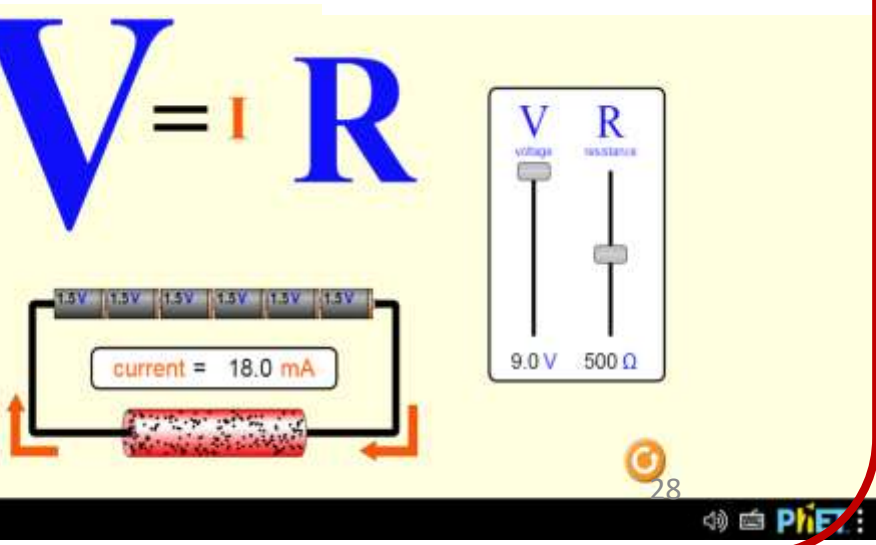




Thus, use of PhET is easy to verify Ohm's law.

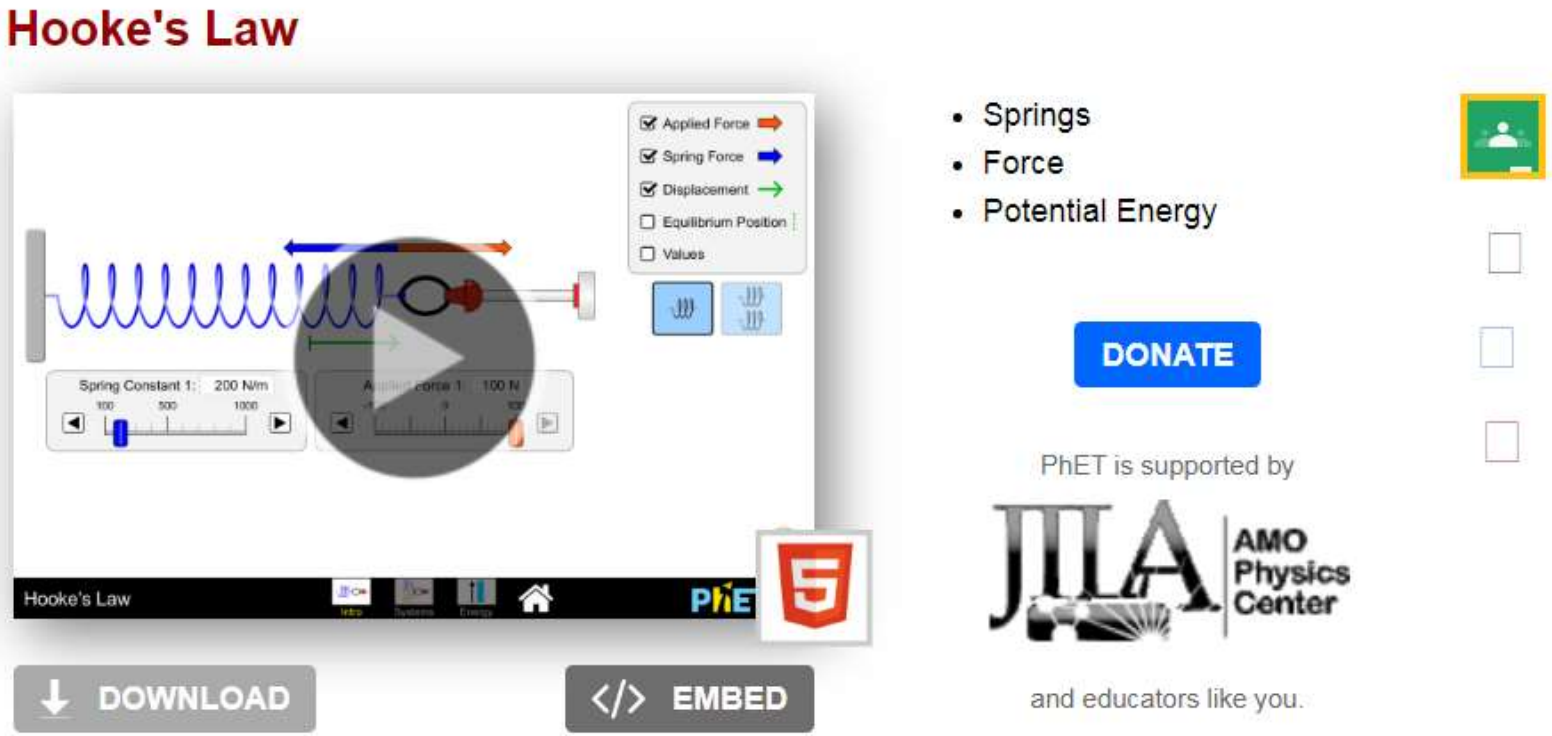






HOW DO ONE USE PHET SIMULATIONS OFFLINE?

- If Java, Flash, and a web browser such as Firefox or Internet Explorer ,you can use offline.



Next

HELP FOR STUDENTS AND TEACHERS

It includes hundreds of :

- Lesson plans,
- Homework assignments,
- Lab activities
- Clicker questions, and more
- Anyone can contribute to the database

Thank you