Textbooks in Browsers

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My Background

Kathi Fletcher
Connexions PM and Technical Director 4 Yrs
Shuttleworth Foundation Fellow 3 Yrs

Tools for Remixing Open Education Resources
Vision for learning

My classes and my past knowledge

Content with connections

Everywhere I am, on all my devices
Learning content

classes, textbooks, articles
Transmogrified

classes, textbooks, articles

Collabo
rative
Stats

=>

College
Physics

Collaborative Stats

Online, mobile, print

Everywhere

classes, textbooks, articles

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Books & courses in - flash cards out

Collabo

Stats

Books & courses in - flash cards out

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Stats
Consider the circuit which contains one resistor below.

Calculate the resistance $R$ of the resistor. Round your answer to 2 decimal places.

**Answer:** resistance $= \boxed{70} \, \Omega \quad [2/2 \text{ marks}]$
How? Find definitions for flash cards.

Velocity

Your notion of velocity is probably the same as its scientific definition. You know that if you have a large displacement in a small amount of time you have a large velocity, and that velocity has units of distance divided by time, such as miles per hour or kilometers per hour.

**Average Velocity:**

**Average velocity** is displacement (change in position) divided by the time of travel,

$$
\bar{v} = \frac{\Delta x}{\Delta t} = \frac{x_f - x_0}{t_f - t_0},
$$

where $\bar{v}$ is the average (indicated by the bar over the $v$) velocity, $\Delta x$ is the change in position (or displacement), and $x_f$ and $x_0$ are the final and beginning positions at times $t_f$ and $t_0$, respectively. If the starting time $t_0$ is taken to be zero, then the average velocity is simply
How? Find learner's notes
How? Find exercises and problems

A commuter train travels from Baltimore to Washington, DC, and back in 1 hour and 45 minutes. The distance between the two stations is approximately 40 miles. What is (a) the average velocity of the train, and (b) the average speed of the train in m/s?

Solution

(a) The average velocity of the train is zero because $\mathbf{\mathbf{v}}_f = \mathbf{\mathbf{v}}_0$; the train ends up at the same place it starts.

(b) The average speed of the train is calculated below. Note that the train travels 40 miles one way and 40 miles back, for a total distance of 80 miles.

$$\frac{\text{distance}}{\text{time}} = \frac{80 \text{ miles}}{105 \text{ minutes}}$$

$$\frac{80 \text{ miles}}{105 \text{ minutes}} \times \frac{5280 \text{ feet}}{1 \text{ mile}} \times \frac{1 \text{ meter}}{3.28 \text{ feet}} \times \frac{1 \text{ minute}}{60 \text{ seconds}} = 20 \text{ m/s}$$
What is needed to achieve the vision?

Common Format

- Recognizable structure (definitions, exercises, etc.)

Easy to use editor for authors

Easy to extend

Publicly available books
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- HTML5 (language of the web)
  - Separate structure and style
  - HTMLBook, TextbookHTML
- EPUB3 (language of mobile web)
- Browser-based technology
  - Create, annotate, view on the web
- Content hosts
  - Github, Connexions
**Definition**: Einstein field equation

Here is the definition.

\[ \theta = x^2 + \sin y \] (1)

**General relativity**

Two-dimensional analogy of spacetime distortion generated by the mass of an object. Matter changes the geometry of space, this (curved) geometry being interpreted as gravity. White lines do not represent the curvature of space but instead represent the coordinate system imposed on the curved spacetime, which would be rectilinear in a flat spacetime.

In general relativity, the effects of gravitation are ascribed to the curvature of spacetime instead of a force. The starting point for general relativity is the equivalence principle, which equates free fall with inertial motion, and describes free-falling inertial objects as being accelerated relative to non-inertial observers on the ground.\[8\] In Newtonian physics, however, no such acceleration can occur unless at least one of the objects is being operated on by a force.

Einstein proposed that spacetime is curved by matter, and that free-falling objects are moving along locally straight paths in curved spacetime. These straight paths are called geodesics. Like Newton’s first law of motion, Einstein’s theory states that if a force is applied on an object, it would deviate from a geodesic. For instance, we no longer follow geodesics while standing because the mechanical resistance of the Earth exerts an upward force on us, and we are non-inertial on the ground as a result. This explains why moving along the geodesics in spacetime is considered inertial.

Einstein discovered the field equations of general relativity, which relate the presence of matter and the curvature of spacetime and are named
Similarly, the third rule promises us that \((7^{12})^4 = 7^{48}\)

These rules can be used to combine and simplify expressions.

Theoretical Perspectives on Education

**Functionalism**

Functionalists view education as one of the more important social institutions in a society. They contend that education contributes two kinds of functions: manifest (or primary) functions, which are the intended and visible functions of education; and latent (or secondary) functions, which are the hidden and unintended functions.

**Manifest Functions**

There are several major manifest functions associated with education. The first is socialization. Beginning in preschool and kindergarten, students are taught to practice various societal roles. The French sociologist Émile Durkheim (1858-1917), who established the academic discipline of sociology, characterized schools as "socialization agencies that teach children how to get along with others and prepare them for adult economic roles" (Durkheim 1898).
Principle: support attribution

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Describe the image for someone who cannot see it aloud, making it possible for visually impaired learners to understand it.

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Save Cancel
Principle: born accessible
Images, tables, mathematics
Principle: Mathematics editing support

Gravity and quantum mechanics

In the decades after the discovery of general relativity it was realized that general relativity is incompatible with quantum mechanics.\[18\] It is possible to describe gravity in the framework of quantum field theory like the other fundamental forces, such that the attractive force of gravity arises due to exchange of virtual gravitons, in the same way as the electromagnetic force arises from exchange of virtual photons.\[19\][20] This reproduces general relativity in the classical limit. However, this approach fails at short distances of the order of the Planck length.\[18\] where a more complete theory of quantum gravity (or a new approach to quantum mechanics) is required.

Atomic theory

Math Cheat Sheet: Copy the "code" that matches the display you want. Paste it into the math entry box above. Adjust as needed.

Display: \( \frac{\sqrt{2}}{2} \), \( \pi r^2 \), \( x \leq 0 \), \( x \to \infty \), \( \frac{A + X}{2}, \frac{B + Y}{2} \), \( \sum_{k=0}^{s-1} \)
Principle: drag and drop examples, exercises, notes

Momentum

Momentum is a physical quantity which is closely related to forces. Momentum is a property which applies to moving objects, in fact it is mass in motion. If something has mass and it is moving then it has momentum.

Definition

Momentum

The linear momentum of a particle (object) is a vector quantity equal to the product of the mass of the particle (object) and its velocity.

\[ \vec{p} = m\vec{v} \]

Momentum is directly proportional to both the mass and velocity of an object. A small car travelling at the same velocity as a big truck will have a smaller momentum than the truck. The smaller the mass, the smaller the momentum for a fixed velocity. If the mass is constant then the greater the velocity the greater the momentum. The momentum will always be in the same direction as the velocity because mass is a scalar not a vector.
Principle: Support collaboration

**Definition**

Einstein field equation

Here is the definition.

$$\theta = x^2 + \sin y$$

**General relativity**

Two-dimensional analogy of 4D space-time distortion generated by the mass of an object. Matter changes the geometry of space-time, this (curved) geometry being interpreted as gravity. White lines do not represent the curvature of space but instead represent the coordinate system imposed on the curved space-time, which would be rectilinear in a flat space-time.

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Einstein proposed that space-time is curved by matter, and that free-falling objects are moving along locally straight paths in curved space-time. These straight paths are called geodesics. Like Newton's first law of motion, Einstein's theory states that if a force is applied on an object, it would deviate from a geodesic. For instance, we are no longer following geodesics while standing because the mechanical resistance of the Earth exerts an upward force on us, and we are non-inertial on the ground as a result. This explains why moving along the geodesics in space-time is considered inertial.

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- Usability, accessibility
- Books stored on github
- Format EPUB3/HTML5 (TextbookHTML)
- Edit in the browser
- Open source (github.com/oerpub)
- Based on Aloha
- Embeddable, adaptable
Introduction

In Grade 10 we studied motion but not what caused the motion, in Grade 11 we learnt about forces and how they can alter the motion of an object. In this chapter we will focus on what happens when two bodies undergo a contact interaction and how their motion is affected. We learn more about how force and motion are related. We are introduced to two new concepts, momentum and impulse.

We can begin by considering some scenarios to set the context. Most people have some intuition for physics based on their everyday experiences but they haven't formalised it. We can use our intuitive answers to lead into more structured thinking about physical events.

Momentum transfer doesn't require a contact interaction but we won't consider any non-contact scenarios in this chapter.

Everyone has experienced a mosquito landing on their arm and it can happen quite unnoticed. Consider the case of a falcon landing on your arm (ignore the sharp claws for now). You would definitely notice, why? What makes a mosquito different to a falcon? Would you still notice if the mosquito flew the same way as a falcon, or if the falcon copied the flight of a mosquito before landing? You probably would still notice, but try to think about what makes them so different.

<table>
<thead>
<tr>
<th>Table 1</th>
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</table>

Look at a motorcycle, motorcar and truck. Which of them is more likely to result in less damage in a collision situation, why? What factors would you change to reduce potential damage.

<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
</table>
has a circular orbit. Using the equation for the circumference, C, of a circle in terms of its radius, we can determine the distance travelled by the Moon in one orbit:

\[ C = 2\pi r \]
\[ = 2\pi(3,844 \times 10^8) \]
\[ = 2,42 \times 10^9 \text{ m} \]

Combining the distance travelled by the Moon in an orbit and the time taken by the Moon to complete one orbit, we can determine the magnitude of the Moon's velocity or speed,

\[ v = \frac{\Delta x}{\Delta t} \]
\[ = \frac{C}{T} \]
\[ = \frac{2,42 \times 10^9 m}{2,36 \times 10^6 s} \]
\[ = 1,02 \times 10^3 \text{ m/s} \]

Finally calculate the momentum and quote the answer

The magnitude of the Moon's momentum is
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Theoretical Perspectives on Education

Functionalism Demo

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Manifest Functions

There are several major manifest functions associated with education. The first is socialization. Beginning in preschool and kindergarten, students are taught to practice various societal roles. The French sociologist Émile Durkheim (1858-1917), who established the academic discipline of sociology, characterized schools as "socialization agencies that teach children how to get along with others and prepare them for adult economic roles" (Durkheim 1898).
Title: Chapter 1. Loomings

Call me Ishmael.

Some years ago—never mind how long precisely—having little or no money in my purse, and nothing particular to interest me on shore, I thought I would take ship on board a whaler, and make my vocation that of a whale-boat man.

There now is your insular city of the Manhattoes, belted round by wharves as Indian isles by coral reefs—commerce between Orient and Occident flows in never-ceasing streams; and what is called the money of China is current in the market.

Circumambulate the city of a dreamy Sabbath afternoon. Go from Corlears Hook to Coenties Slip, and from thence, by way of the Elbow, to the Battery; or else take the opposite direction: the choice is yours.

But look! here come more crowds, pacing straight for the water, and seemingly bound for a dive. Strange! Nothing was socertified of the whaleman—nothing so much in his environment—nothing so much a part of his idea—nothing so much the object of his aspirations.

Once more. Say you are in the country; in some high land of lakes. Take almost any path you please, and ten to one you will come at length to a lake.

But here is an artist. He desires to paint you the dreamiest, shadiest, quietest, most enchanting bit of romantic landscape. Now, when I say that I am in the habit of going to sea whenever I begin to grow hazy about the eyes, and begin to be

Another adaptation: DHWriter

Welcome to DHwriter

Why should I try DHwriter?

As you know, every year, reformatting the abstracts from their original submission formats (Word, PDF, etc.) into TEI (for publishing the on-line version and the book of abstracts) is a long and tedious process. Previous local organisers all agree that this task is one of the most time-consuming of the entire local organisation "adventure". In order to progress in making the process smoother, our local team has been actively working since the Nebraska meeting to build a web interface for writing the abstracts in a format that would make possible:

- the reviewing process as usual using Contool
- an exploration in TEI for publishing the proceedings.

This tool, completely independent from Contool, should deal with all the key features you may want to include in an abstract (citations, figures, etc.). It can export in TEI and in a format we call "review PDF" which is contains an automatically rendered layout of the abstract and on-line link to check a clean TEI-based version. The first version of this tool is accessible on dhwriter.org. It is far from perfect as it has been developed in just a few weeks. We made the code open-source and already available on GitHub.

How should I use DHwriter to publish in DH2014?

You can think of DHwriter as a simplified version of Google docs. You can insert section, figures, lists, etc. A word counter indicates how long is currently your text.

1) Click on the Sign In button above.
Try it out

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October 26, San Francisco

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