



## MOUNT NOTRE DAME

*Empowering Young Women*

### Physics Summer Assignment Mount Notre Dame High School

Welcome to Physics at MND!

To begin physics we will depend on the strong science and math classes that you have already had at MND. There are three objectives for this summer assignment. The first objective of this assignment is to review basic math skills using **unit conversions**. The next objective is to introduce the concept of a **vector**. The final objective is to provide an overview of the **history of physics**.

#### 1 Unit Conversions and Fractions

**TASK: Please review unit conversions and then complete the worksheet on page 3. The worksheet is due the first day of class.**

To succeed in physics, we must be able to apply the skills you have developed in Algebra, Geometry, and Chemistry. You will need all of these skills to do work in physics. But don't worry, if you are rusty we will review and re-develop these skills!

You have learned unit conversions in both Algebra and Chemistry. The technique you use is not important, but the ability to correctly convert units is very important.

A few videos are listed below for your convenience. These videos cover unit conversions in slightly different ways.<sup>1</sup> Please review unit conversions using your own resources or one of these videos and then complete the worksheet on page 3.

Links:

<http://www.youtube.com/watch?v=XKCZn5MLKvk>

<http://www.youtube.com/watch?v=5Cd0VlyB0io>

<http://www.youtube.com/watch?v=qWPF3p-oVww>

#### 2 Vectors

**TASK: Please look at the references below and begin to get a feel for vectors as a concept.**

You will also look at one new concept: the idea of a vector. We will learn vectors very early in the year and use them for the entire year. Understanding vectors are critical to your success in physics. We will spend considerable time on this topic during our year together.

Please look at the links below. The first link is a good, descriptive introduction to vectors. Do not worry if terminology is unfamiliar—this is what we will be learning during the year! The second link uses Geometer's Sketchpad, which you have on your MND tablet. Just play with the examples and begin to get a feel for vectors.

Links:

<http://www.youtube.com/watch?v=EUrMIODlh40> <http://mathforum.org/~klotz/Vectors/vectors.html>

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<sup>1</sup> If you receive this electronically the links are active and can be accessed by clicking the reference



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### 3 The History Of Physics

**TASK:** Please watch the first 14 minutes and 50 seconds of the video below. Write down which (if any) of these topics interested you. If none of these interests you, please find and write down a topic in physics you would like to cover.

<https://www.youtube.com/watch?v=J6qtNLZIWd0>

If you have any questions on this assignment please email any of the physics teachers listed below. Have some fun with this assignment and enjoy your summer!

Sincerely,

Dr. Fletcher

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AP and Honors Physics

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Honors, CPX and CP Physics

# Unit Conversion Worksheet

## Conversion Factors

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1 hour = 3600 seconds	1 mile = 5280 feet	1 yard = 3 feet
1 meter = 3.28 feet	1 km = 0.62 miles	1 light second = 300,000,000 meters
1 kg = 2.2 lbs	1 lb = 0.45 kg	1 quart = 0.946 liters
1 m/s = 2.2 miles/hour	1 foot = 12 inches	1 inch = 2.54 cm = 25.4 mm

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Convert 565,900 seconds into days

Convert 17 years into minutes

Convert 43 miles into feet

Convert 165 pounds into kilograms

Convert 100 yards into meters

Convert 2678 cm into feet

Convert 60 miles per hour into meters per second

Convert 130 meters per second into miles per hour

Convert 12080 gallons per month into liters per hour

Convert 27 miles per gallon into kilometers per liter