Prelims Practice Test

Name: _____

Date: _____ Period: _____

I. VOCABULARY

If the underlined word is used incorrectly, cross it out and replace it with the correct word.

1. The word "science" comes from the Latin word for discovery.

2. A scientific hypothesis is an explanation of a phenomenon that agrees with all known evidence.

3. Speed, distance, and time are all examples of a unit of measure.

4. The Metric System designates an agreed upon standard division for each physical quantity.

5. Multiplying a number by ten causes the decimal place to move one space to the left.

II. SYMBOLS AND ABBREVIATIONS

6. For each measurement write the symbol for the physical quantity and the abbreviation of the unit.

(a) The mass of an ant is about 3 milligrams.

☐ = 3 ☐

(b) LeBron James is 2.03 meters tall.

☐ = 2.03 ☐

(c) Food is heated in a microwave for 30 seconds.

☐ = 5 ☐

III. CONVERTING FRACTIONS

7. Write each fraction as a decimal value rounded to two decimal places.

(a) $\frac{2}{3} =$

(b) $\frac{4}{5} =$

(c) $\frac{7}{4} =$

(d) $\frac{8}{18} =$

IV. SCIENTIFIC NOTATION

8. Write each measurement in scientific notation. (Don't forget to write the unit!)

(a) $52{,}000$ m = _____

(b) 0.0032 s = _____

(c) 20×10^5 J = _____

(d) 0.5×10^{-6} N = _____

(e) 4.8 kW = _____

(f) 0.2 mm = _____

V. SHORT ANSWER QUESTION

9. What is the difference between a physical quantity and a unit? Provide an example of each.

_____

_____

_____

_____

Prelims Study Guide

VOCABULARY

Physics – The study of matter and its motion through space and time; in other words the study of the physical world.

Scientific Theory – An explanation of a natural phenomenon which is supported by evidence; a theory cannot be proven, only disproven.

Physical Quantity – Any characteristic of an object that can be measured. (Example: distance, time, speed, weight, etc.)

Unit of Measure – A standard used to measure a physical quantity. (Example: meters, seconds, newtons, kilograms, etc.)

THE METRIC SYSTEM

A standard set of units and prefixes that are used in measurements all around the world.

International Standard Units		
Quantity	**Symbol**	**Unit (Abbr.)**
distance	*x*	meter (m)
time	*t*	second (s)
force	F	newton (N)
mass	m	kilogram (kg)
temperature	T	kelvin (K)
frequency	*f*	hertz (Hz)

SI Prefixes		
Prefix	**Abbr.**	**Power of Ten**
giga-	G	10^9
mega-	M	10^6
kilo-	k	10^3
milli-	m	10^{-3}
micro-	μ	10^{-6}
nano-	n	10^{-9}

HOW TO WRITE MEASUREMENTS

In physics, we always write measurements as a mathematical statement using symbols to represent physical quantities and abbreviations for the units. Here are two examples:

You drop a baseball from the top of a 10 meter tall building.

$$x = 10 \text{ m}$$

You measure that it takes 1.4 seconds for the baseball to hit the ground.

$$t = 1.4 \text{ s}$$

SCIENTIFIC NOTATION

Numbers in scientific notation are written in the form: $A \times 10^n$; where A is a number greater than or equal to one but less than ten and n is a positive or negative whole number. Here are some examples:

$25{,}000{,}000$ m — seven spaces

Start by writing the number 25. Next, place a decimal point so the number is between 1 and 10. In this case, 2.5. Finally count how many spaces the decimal was moved.

$$2.5 \times 10^7 \text{ m}$$

320×10^4 — two spaces

320 is too large by two spaces. We change this to 3.20 and then add the extra two spaces onto the power of ten, which makes it to the 6th power.

$$3.2 \times 10^6$$

0.24 nm — one space

Replace the nano prefix with 10^{-9}. Since 0.24 is one space too small we write it as 2.4 and take away 1 from the power of ten.

$$2.4 \times 10^{-10} \text{ m}$$

Answers: 1) knowledge; 2) theory; 3) distance, physical quantity; 4) metric system, unit; 5) dividing, left; 6) $m = 3$ mg, $x = 2.03$ m, $t = 30$ s; 7) 0.67, 0.80, 1.75, 0.44; 8) 5.2×10^4 m, 3.2×10^{-3} s, 2×10^6], 5×10^{-7} N, 4.8×10^3 W, 2×10^{-4} m