

# 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.

$$\boxed{\phantom{00}} = 3 \boxed{\phantom{00}}$$

(b) LeBron James is 2.03 meters tall.

$$\boxed{\phantom{00}} = 2.03 \boxed{\phantom{00}}$$

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

$$\boxed{\phantom{00}} = 5 \boxed{\phantom{00}}$$

## 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)  $20 \times 10^5$  J = \_\_\_\_\_

(d)  $0.5 \times 10^{-6}$  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.

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# 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.

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

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

**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-	$\mu$	$10^{-6}$
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:

$25,000,000 \text{ m}$   


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.

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

$320 \times 10^4$   


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 6<sup>th</sup> power.

$$3.2 \times 10^6$$

$0.24 \text{ nm}$   


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; (5) dividing left; (6)  $3 \text{ m} \times 10^3 \text{ m} = 3000 \text{ m}$ ; (7)  $0.08 \text{ m} \times 10^{-2} = 0.0008 \text{ m}$ ; (8)  $2.5 \times 10^4 \text{ m} \times 10^{-2} = 250 \text{ m}$ ; (9)  $10^3 \times 10^4 = 10^7$ ; (10)  $10^3 \times 10^4 = 10^7$ ; (11)  $10^3 \times 10^4 = 10^7$ ; (12)  $10^3 \times 10^4 = 10^7$ ; (13)  $10^3 \times 10^4 = 10^7$ ; (14)  $10^3 \times 10^4 = 10^7$ ; (15)  $10^3 \times 10^4 = 10^7$ ; (16)  $10^3 \times 10^4 = 10^7$ ; (17)  $10^3 \times 10^4 = 10^7$ ; (18)  $10^3 \times 10^4 = 10^7$ ; (19)  $10^3 \times 10^4 = 10^7$ ; (20)  $10^3 \times 10^4 = 10^7$ ; (21)  $10^3 \times 10^4 = 10^7$ ; (22)  $10^3 \times 10^4 = 10^7$ ; (23)  $10^3 \times 10^4 = 10^7$ ; (24)  $10^3 \times 10^4 = 10^7$ ; (25)  $10^3 \times 10^4 = 10^7$ ; (26)  $10^3 \times 10^4 = 10^7$ ; (27)  $10^3 \times 10^4 = 10^7$ ; (28)  $10^3 \times 10^4 = 10^7$ ; (29)  $10^3 \times 10^4 = 10^7$ ; (30)  $10^3 \times 10^4 = 10^7$ ; (31)  $10^3 \times 10^4 = 10^7$ ; (32)  $10^3 \times 10^4 = 10^7$ ; (33)  $10^3 \times 10^4 = 10^7$ ; (34)  $10^3 \times 10^4 = 10^7$ ; (35)  $10^3 \times 10^4 = 10^7$ ; (36)  $10^3 \times 10^4 = 10^7$ ; (37)  $10^3 \times 10^4 = 10^7$ ; (38)  $10^3 \times 10^4 = 10^7$ ; (39)  $10^3 \times 10^4 = 10^7$ ; (40)  $10^3 \times 10^4 = 10^7$ ; (41)  $10^3 \times 10^4 = 10^7$ ; (42)  $10^3 \times 10^4 = 10^7$ ; (43)  $10^3 \times 10^4 = 10^7$ ; (44)  $10^3 \times 10^4 = 10^7$ ; (45)  $10^3 \times 10^4 = 10^7$ ; (46)  $10^3 \times 10^4 = 10^7$ ; (47)  $10^3 \times 10^4 = 10^7$ ; (48)  $10^3 \times 10^4 = 10^7$ ; (49)  $10^3 \times 10^4 = 10^7$ ; (50)  $10^3 \times 10^4 = 10^7$ ; (51)  $10^3 \times 10^4 = 10^7$ ; (52)  $10^3 \times 10^4 = 10^7$ ; (53)  $10^3 \times 10^4 = 10^7$ ; (54)  $10^3 \times 10^4 = 10^7$ ; (55)  $10^3 \times 10^4 = 10^7$ ; (56)  $10^3 \times 10^4 = 10^7$ ; (57)  $10^3 \times 10^4 = 10^7$ ; (58)  $10^3 \times 10^4 = 10^7$ ; (59)  $10^3 \times 10^4 = 10^7$ ; (60)  $10^3 \times 10^4 = 10^7$ ; (61)  $10^3 \times 10^4 = 10^7$ ; (62)  $10^3 \times 10^4 = 10^7$ ; (63)  $10^3 \times 10^4 = 10^7$ ; (64)  $10^3 \times 10^4 = 10^7$ ; (65)  $10^3 \times 10^4 = 10^7$ ; (66)  $10^3 \times 10^4 = 10^7$ ; (67)  $10^3 \times 10^4 = 10^7$ ; (68)  $10^3 \times 10^4 = 10^7$ ; (69)  $10^3 \times 10^4 = 10^7$ ; (70)  $10^3 \times 10^4 = 10^7$ ; (71)  $10^3 \times 10^4 = 10^7$ ; (72)  $10^3 \times 10^4 = 10^7$ ; (73)  $10^3 \times 10^4 = 10^7$ ; (74)  $10^3 \times 10^4 = 10^7$ ; (75)  $10^3 \times 10^4 = 10^7$ ; (76)  $10^3 \times 10^4 = 10^7$ ; (77)  $10^3 \times 10^4 = 10^7$ ; (78)  $10^3 \times 10^4 = 10^7$ ; (79)  $10^3 \times 10^4 = 10^7$ ; (80)  $10^3 \times 10^4 = 10^7$ ; (81)  $10^3 \times 10^4 = 10^7$ ; (82)  $10^3 \times 10^4 = 10^7$ ; (83)  $10^3 \times 10^4 = 10^7$ ; (84)  $10^3 \times 10^4 = 10^7$ ; (85)  $10^3 \times 10^4 = 10^7$ ; (86)  $10^3 \times 10^4 = 10^7$ ; (87)  $10^3 \times 10^4 = 10^7$ ; (88)  $10^3 \times 10^4 = 10^7$ ; (89)  $10^3 \times 10^4 = 10^7$ ; (90)  $10^3 \times 10^4 = 10^7$ ; (91)  $10^3 \times 10^4 = 10^7$ ; (92)  $10^3 \times 10^4 = 10^7$ ; (93)  $10^3 \times 10^4 = 10^7$ ; (94)  $10^3 \times 10^4 = 10^7$ ; (95)  $10^3 \times 10^4 = 10^7$ ; (96)  $10^3 \times 10^4 = 10^7$ ; (97)  $10^3 \times 10^4 = 10^7$ ; (98)  $10^3 \times 10^4 = 10^7$ ; (99)  $10^3 \times 10^4 = 10^7$ ; (100)  $10^3 \times 10^4 = 10^7$ .