

# PHY 181: Summer 2023

## Worksheet 2

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### 1 Order of Operations

Evaluate the following expressions using the order of operations. Suppose that  $y$  is 2.

Expression	$x = 0$	$x = 2$	$x = -2$
$3x + 3$			
$3(x + 1)$			
$4x - 7$			
$x^2 + 3$			
$(x + 2)^2$			
$x/2 + 3$			
$x^2/y + 2$			

### 2 Linear Equations

#### 2.1 Part 1

Solve the following equations for  $x$ .

$2x = 4$ : \_\_\_\_\_

$3x = 9$ : \_\_\_\_\_

$5x = 0$ : \_\_\_\_\_

$x/5 = 3$ : \_\_\_\_\_

$x/2 = 10$ : \_\_\_\_\_

$0.2x = 10$ : \_\_\_\_\_

$0.1x = 5$ : \_\_\_\_\_

#### 2.2 Part 2

Solve the following equations for  $y$ .

$y + 2 = 4$ : \_\_\_\_\_

$y + 4 = 0$ : \_\_\_\_\_

$$y + 3 = 8: \text{ _____}$$

### 2.3 Part 3

Solve the equations below for z.

$$3z - 5 = 4: \text{ _____}$$

$$5z + 3 = 8: \text{ _____}$$

$$2z + 3 = z + 4: \text{ _____}$$

$$2z - 4 = 4z + 2: \text{ _____}$$

$$3(z + 2) = 9: \text{ _____}$$

## 3 Scientific Notation

### 3.1 Part 1

Convert the following numbers from standard notation into scientific notation.

$$100: \text{ _____}$$

$$2200: \text{ _____}$$

$$0.001: \text{ _____}$$

$$4560000: \text{ _____}$$

### 3.2 Part 2

Convert the following numbers from scientific notation into standard notation.

$$5.0 \times 10^2: \text{ _____}$$

$$1.28 \times 10^{-2}: \text{ _____}$$

$$5.12 \times 10^3: \text{ _____}$$

$$8.15 \times 10^5: \text{ _____}$$

## 4 Metric Unit Conversion

Convert the following metric prefixes to scientific notation in terms of the base unit.

50kg: \_\_\_\_\_

100cm: \_\_\_\_\_

20km: \_\_\_\_\_

10ms: \_\_\_\_\_

100 $\mu$ s: \_\_\_\_\_

25mg: \_\_\_\_\_

## 6 Weight

Fill in the missing values in the table below. Assume that we are on Earth.

m (kg)	$\vec{W}$ (N Downward)
10	
21	
	19.6
	39.2
11	
	4.9

## 5 Force

Fill in the blanks in the following table.

$\vec{a}$ (m/s <sup>2</sup> North)	mass (kg)	$\vec{F}$ (N North)
10	25	
	3	21
20		40
	50	100
-5	5	
6		-30