

Vocabulary

Provide a short and specific definition in YOUR OWN WORDS. Do not use the definition from the book

Model _____

System _____

Hypothesis _____

Controlled Experiment _____

Accuracy _____

Precision _____

Significant Figures _____

Additional Notes:

Section 1.1

1. Complete the following table

Areas within Physics		
Area	Subjects covered	Examples (Your Own)

2. You find a sheet of metal and perform the following tests on this sheet of metal. Identify the area of physics involved in each test.

- a. Testing the effects of collisions _____
- b. Test the effects of heat and cold _____
- c. Test the magnetic properties _____

3. Which areas of physics deal with the following?

- a. how fast things move _____
- b. how the shape of a cave affects an echo _____
- c. which sunglasses are best for cutting the glare on a ski slope _____
- d. how the cooling system in a refrigerator works _____
- e. what lightning is _____
- f. how energy is produced by the sun _____

4. Come up with your own problem and design an experiment to test this problem. Make sure you apply the steps of the scientific method as well as identify your independent variable, dependent variable, and your control group (with specifics on your constants).

5. Complete the Scientific Method Worksheet

Section 1.2

6. Which SI units would you use for the following measurements? Explain why you chose this measurement.
- The length of a desk
 - The mass of a pencil
 - The mass of a house
 - The time it takes you to walk across the room
7. Convert the following numbers into scientific notation
- 4557 m = _____
 - 54.6 cm = _____
 - 0.00866 h = _____
 - 0.068 mL = _____
8. If a substance weighs 2.00 grams and you need the mass in kilograms, will the number appear to become smaller or larger? Explain your answer.
9. If a liquid has a volume of 5800 mL and you need the mass in Liters, will the number appear to become smaller or larger? Explain your answer.
10. If a substance has a mass of 0.00235 grams and you need the mass in milligrams, will the number appear to become smaller or larger? Explain your answer.

11. Convert the following:

a. 900 km = _____ m

h. 568 mm = _____ m

b. 200 kg = _____ g

i. 52 mg = _____ g

c. 5.00 m = _____ km

j. 0.025 J = _____ mJ

d. 7000 J = _____ kJ

k. 0.859 s = _____ ms

e. 800 cm = _____ m

l. 0.0256 m = _____ μ m

f. 20 cg = _____ g

m. 0.000589g = _____ ng

g. 2.0 L = _____ cL

n. 0.00005987 m = _____ pm

Power	Prefix	Abbreviation
10^{-18}	atto-	a
10^{-15}	femto-	f
10^{-12}	pico-	p
10^{-9}	nano-	n
10^{-6}	micro-	μ
10^{-3}	milli-	m
10^{-2}	centi-	c

Power	Prefix	Abbreviation
10^{-1}	deci-	d
10^1	deka-	da
10^3	kilo-	k
10^6	mega-	M
10^9	giga-	G
10^{12}	tera-	T
10^{15}	peta-	P
10^{18}	exa-	E

12. How many picoseconds are there in 1 Ms? _____

13. How many micrograms make 1 kg? _____

14. How many nanometers are there in 1 cm? _____

15. Rewrite the following quantities in scientific notation without prefixes.

a. 3582 gigabytes _____

b. 0.0009231 milliwatts _____

c. 53657 nanoseconds _____

d. 5.32 milligrams _____

e. 88900 megahertz _____

f. 0.00000083 centimeters _____

16. Express the measurement 4.29478416 kg with 8, 6, 4, and 2 significant figures.

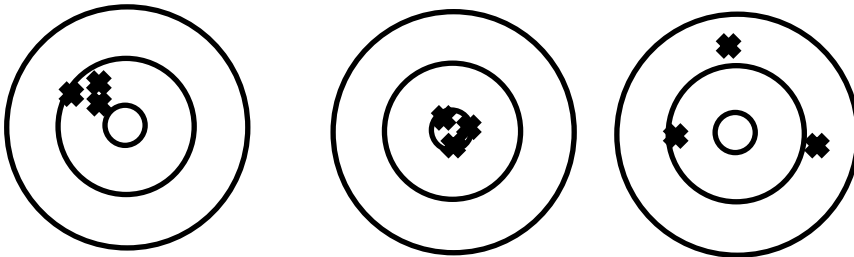
8 - _____ 4 - _____

6 - _____ 2 - _____

17. What is the difference between accurate and precise?

18. You throw 3 darts into the bullseye. You were aiming for the double 20 (On the top of the board). Where you accurate? Where you precise? Explain your reasoning.

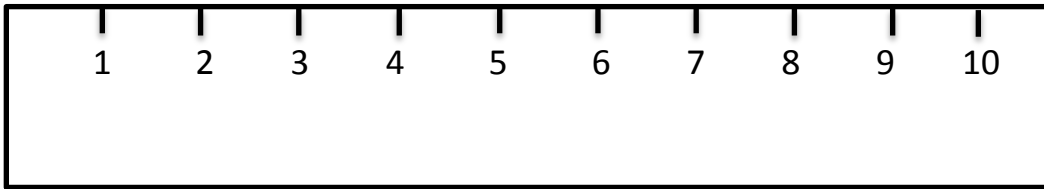
19. Labe the following as accurate, precise, both or neither. You are aiming for the bullseye.



20. Measure a large paper clip using the following rulers. The measurement is in “Samson’s” the abbreviation is “Sa” The measurements should NOT be the same due to precision.



Answer: _____



Answer: _____

21. A student finds the mass of a solid using 4 balances. Explain the findings in terms of precision and accuracy.

- a. Mass 1 = 52.66 grams
 - b. Mass 2 = 52.6 grams
 - c. Mass 3 = 52.669532 grams
 - d. Mass 4 = 52.6695 grams
22. A beaker has marks every 50mL. A cylinder has marks every 10mL. A pipette has marks every 1mL. Is the pipette the most accurate or precise tool? Explain your answer.

23. Determine the number of Sig Figs.

15 cm _____

150 mm _____

2.50 m _____

0.02 cm _____

1000 km _____

5.522 L _____

1050 mL _____

6.0×10^3 m _____

120 s _____

10.020 L _____

0.0052020 hL _____

500.0 mm _____

0.0550 mL _____

5800 m _____

2.202×10^3 m _____

2.202×10^{-3} m _____

24. Round each number to 4 sig figs.

a. 548.220 cm _____

b. 0.025186 cm _____

c. 1000.25 m _____

d. 0.025454 km _____

25. Complete the following mathematical calculation using sig fig rules.

$2.4 + 1.59$ _____

$91.2 - 12$ _____

$100 + 55$ _____

$50 - 2.22$ _____

$1.02 + 5.0$ _____

$51.2 + 3 - 18.66$ _____

$15 - 9.22$ _____

$0.00450 + 0.5866$ _____

26. Complete the following mathematical calculation using sig fig rules.

$12.3 * 6$ _____

$91.2 / 12$ _____

$1.25 * 0.55$ _____

$50 / 2.22$ _____

$50 / 2$ _____

$589 / 11$ _____

$3.60 * 1234$ _____

$0.00450 * 0.5866$ _____

27. Round to the correct number of sig figs. Also, make sure you have to correct label!

$12.3 \text{ mm} * 6 \text{ mm}$ _____

$2.0 \text{ m} / 1.25 \text{ s}$ _____

$1.25 \text{ m} * 0.55 \text{ cm}$ _____

$3.5 \text{ km} / 2.22 \text{ h}$ _____

$50 \text{ g} / 2 \text{ mL}$ _____

$589 \text{ mm} * 11 \text{ cm}$ _____

Section 1.3

28. Create a line graph for the following data and answer the following questions:
- What position was the object at 20 seconds?
 - How much time had passed when the object was at 21 meters?
 - Do you think the graph is useful? Explain.

Position (m)	Time (s)
5	4
10	10
15	18
20	25
25	32
30	38
35	38
40	40

29. Create a bar graph for the following data and answer the following questions:
- Think about the data and graph, what type of information could you be graphing?
 - Do you think this graph is useful? Explain.
 - When would this type of graph be useful? Explain

Attendance	Day
10522	M
10600	T
10610	W
10602	H
10440	F
5	Sat
0	Sun
10599	M

1. Create a circle graph for the following data and answer the following questions:
 - a. Think about the data and graph, what type of information could you be graphing?
 - b. Do you think this graph is useful? Explain.
 - c. When would this type of graph be useful? Explain

Color	Cars
Green	15
White	25
Black	30
Red	8
Blue	19

** When making a circle graph you must first determine the percentages for each data entry. You cannot just use the numbers.