Name: Hour:

**Study Guide: Section 2.3 Using Scientific Measurements**

**Completion**

*Complete each statement.*

1. A measure that closely agrees with an accepted value is best described as .

2. A numerical result is said to have good if repeated measurements agree closely.

3. If repeated measurements agree closely but differ widely from the accepted value, these measurements are precise, but not .

4. The measurement 0.035550g rounded off to two significant figures not in scientific notation would be g.

5. When adding or subtracting numbers, the answer should be rounded so that the final digit is in the same place as the digit of the numbers added or subtracted.

6. 0.0037 has only zeros.

7. The number of significant figures in the measurement 0.000305kg is .

8. The number of significant figures in the measured value 0.03204g is .

9. The number of significant figures in the measured value 2710130 is .

10. The percent error will have a value if the accepted value is greater than the experimental value.

11. Percent is calculated by subtracting the accepted value from the experimental value, dividing the difference by the accepted value, and then multiplying by 100.

12. When rounding, if the digit following the last digit to be retained is greater than 5, then the last digit should be increased by .

13. In division and multiplication, the answer should have the same number of significant figures as the number in the calculation with the significant figures.

14. The measurement 0.000065 cm written in scientific notation is .

15. The measurement 0.020 L is the same as in scientific notation.

16. The product of 1.6 cm and 2.4 cm will have significant figures.

17. The capacity of a Florence flask is 250mL. Its capacity expressed in scientific notation is \_\_\_\_\_\_\_\_\_\_mL.

18. The average distance between the Earth and the moon is 386,000 km. Expressed in scientific notation, this distance is written as km.

19. If two quantities are directly proportional and one quantity increases by 10%, the other by 10%.

20. Two variables are directly proportional if their has a constant value.

21. Two variables are inversely proportional if their has a constant value.

22. The graph of two variables that are directly proportional to one another is a .

23. The graph of two variables that are indirectly proportional to one another is a .

**Short Answer**

24. Distinguish between precision and accuracy.

25. What is the percentage error for a mass measurement of 17.7g, given that the correct value is 21.1g? Show your work. Express the answer using the correct number of significant figures.

26. What is the sum of 3.089 g and 0.074 52 g? Show your work. Express your answer using the correct number of significant figures.

27. The dimensions of a rectangular solid are measured to be 1.27 cm, 1.3 cm, and 2.5 cm. What is the volume of the solid? Show your work. Express answer using the correct number of significant figures.

28. Express each number in scientific notation.

a) 30,000,000

b) 0.00068

29. Write each number in standard form.

a) 2.0 x 10

b) 3.4 x 10