

Name \_\_\_\_\_ Date \_\_\_\_\_ Bell \_\_\_\_\_

## **Unit 1: Lesson 4- Scientific Tools and Measurement**

### **Vocabulary**

1. Measurement (page 44)-

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2. Qualitative (page 44)-

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3. Quantitative (page 44)-

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4. Scientific Notation (page 46)-

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5. Accuracy (page 50)-

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6. Precision (page 50)-

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## How are Measurements and Observations Related? Page 44

1. What is the relationship between observations and measurements?

2. How do you make observations?

3. What do some observations involve? \_\_\_\_\_

4. What are measurements?

5. What is an example of a measurement in writing? \_\_\_\_\_

6. What is the difference between Qualitative and Quantitative measurements?

7. What is an example of a Qualitative measurement?

8. What is an example of a Quantitative measurement?

## How are Measurements Expressed? Page 45

- **By Using the International System of Units**

9. What do scientists use to express measurements?

10. What is a unit? \_\_\_\_\_

11. What is an example of a unit and what do we use it for?

12. Which system do scientists use most often and why?

13. What is the International System of Units?

14. How many base units does the SI system have? \_\_\_\_\_ How many based derived units does it have? \_\_\_\_\_

15. What is the Unit and Symbol used for the SI base units for each listed below?

Quantity	Unit and Symbol
Time	
Temperature	
Mass	
Length	
Area	
Volume	
Weight	

16. What unit is used for Temperature and Volume, but are not SI base units?

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● **By using Prefixes and Scientific Notation Page 46**

17. What is a prefix?

\_\_\_\_\_  
\_\_\_\_\_

18. Fill out the box below of SI prefixes and the meaning of the prefix

Prefix	Scientific Notation	Standard Notation	Name Meaning
Kilo-	$1 \times 10^3$	1,000	
Hecto-	$1 \times 10^2$	100	
Deca-	$1 \times 10^1$	10	
Grams/Meters	$1 \times 10^0$	1	
Deci-	$1 \times 10^{-1}$	0.1	
Centi-	$1 \times 10^{-2}$	.01	
Milli-	$1 \times 10^{-3}$	.001	

19. What is scientific Notation?

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20. What is the method of writing a quantity (equation)? \_\_\_\_\_

21. How do you find the letter a? \_\_\_\_\_

22. What is b? \_\_\_\_\_

23. If b is moved left, what does that make b? \_\_\_\_\_

24. If b is moved to the right, what does that make b? \_\_\_\_\_

25. Write the speed of light in scientific notation: 300,000,000 m/s. \_\_\_\_\_

## What Common Measurements are made with Scientific Tools? Page 47

26. When scientists use tools to measure, what are some things that they might measure?

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27. What is mass? What tool would you use? What unit?

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28. What is Volume? What tool would you use to measure a solid? A liquid? What units do you use for finding volume of a solid and liquid?

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29. What is temperature? What tool would you use? What unit?

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30. What is time? What tool would you use? What Unit?

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31. What is Position? What tool would you use? What Unit?

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32. What is weight? What tool would you use? What unit?

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33. Are Mass and Weight the same thing? How are they different?

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34. What is length? What tool would you use? What unit?

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## Why is Technology Important to Scientific Measurements? Page 48-49

35. Why is technology important to scientific measurements?

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36. What are Probes and Sensors?

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37. What are computers used for?

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38. What are some examples of things that scientists can use technology use today that would have been impossible to do 50-100 years ago?

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39. What are some ways we could use technology in scientific investigations in the classroom?

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40. How does technology improve measurements and save time?

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## How Do Measurements Evaluate Tools and Measurements? Page 50

- **By Considering Precision and Accuracy**

41. What can the tools and methods used affect?

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42. What is Accuracy?

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43. What is Precision?

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44. Finish the sentence: A measurement can be

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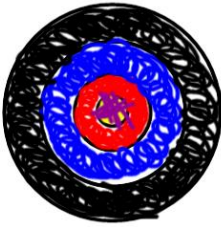
45. Are the trials accurate, precise, both, or neither? Write your answer on the line.



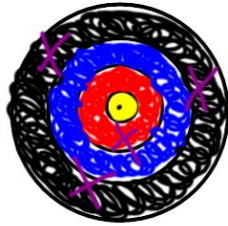
1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_



4. \_\_\_\_\_

### • With Estimates and Approximation

46. What is an approximation?

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47. What is an example of approximation?

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48. What is an estimate?

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49. What is an example of an estimate?

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50. What is the difference between an approximation and estimation?

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51. Imagine that I gave you directions to my house in kilometers but you assumed I meant miles. What is likely to happen when you try to come to my house?

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52. What does this tell us about the importance of using the same units when discussing measurements?

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