ADAPTED NJDOE ASSESSMENT

GRADE 8

(To be administered after NPS Grade 8 Scope and Sequence Unit 3)

Assessed Standards:

- 8.EE.1
- 8.EE.3
- 8.EE.4

Name _____ Period _____ Date _____

Grade 8 Unit 3

For multiple-choice questions, circle the best answer.
For all other questions, respond in the space provided.

1. Which of the following is equivalent to $5^2 + 5^2$?

   a. 2×5^2
   b. 10^2
   c. 5^4
   d. 20

2. Indicate whether each expression is equivalent to the product $8^3 \times 8^3$ by checking the appropriate box in the table below.

	Equivalent	Not Equivalent
64^3		
2^{12}		
2×8^3		
8^6		

3. Rewrite the expression $\frac{6^{10} \times 6^{-4}}{6^{-5} \times 6^{2}}$ as a single term of the form 6^{n}, where n is an integer. Show your work.

4. In the equation $9^{2} \times 27^{3} = 3^{x}$, what is the value of x ? Show your work.

5. The average distance from Venus to the Sun is 108,200,000 kilometers. Which of the following is the number expressed in scientific notation?

   a. 1.082×10^{5}
   b. 1.82×10^{6}
   c. 1.082×10^{8}
   d. 1.82×10^{8}

6. A scientist measured the wavelength of an X-ray as 0.0000000065 meters. Write the number in scientific notation.

7. The population of Greenville is approximately 75 times the population of Fairview. There are 3.75×10^5 people living in Greenville. Approximately how many people are living in Fairview?

   a. 5×10^3
   b. 5×10^4
   c. 3×10^6
   d. 3×10^7

8. A scientist measured the wavelength of an orange light wave as 0.000000615 meters. A second scientist measured the wavelength of a green light wave as 5.6×10^{-7} meters. How much longer, in meters, was the orange light wave than the green light wave?

   a. 5.5×10^{-14}
   b. 5.5×10^{-8}
   c. 5.5×10^{-7}
   d. 5.5×10^{-6}

9. Last year, Company *T* sold 2.8×10^6 vehicles, and Company *H* sold 15 percent of the number of vehicles that Company *T* sold. How many vehicles did Company *H* sell last year? Show your work, and give your answer in scientific notation.

10. What is the quotient of 2.408×10^{24} divided by 6.02×10^{23} ? Show your work.

11. One cubic meter contains 1×10^3 liters and one liter contains 1×10^3 milliliters. How many milliliters are in 2.5×10^2 cubic meters?

a. 2.5×10^{-4}
b. 2.5×10^4
c. 2.5×10^6
d. 2.5×10^8

12. An adult leatherback turtle weighs 750 kilograms. This is approximately 1.5×10^4 times its weight when it hatched. To express the weight of the turtle when it hatched so that the number of units will be the least possible whole number value, which of the following units of measure should be used?
(Note: 1 metric ton = 1,000 kilograms.)

a. Metric tons
b. Kilograms
c. Grams
d. Milligrams

13. The average distance from the Sun to Mars is 22,793,910,000,000 centimeters. The conversion factors between centimeters and four other units of measure are shown below.

9.46×10^{17} cm = 1 light-year
1.50×10^{13} cm = 1 astronomical unit
1×10^5 cm = 1 kilometer
1×10^2 cm = 1 meter

For the distance to be expressed as x units of measure, where $1 \leq x \leq 10$, which unit of measure must be used?

a. Light-years
b. Astronomical units
c. Kilometers
d. Meters

14. A plot of land has an area of 1,089,000 square feet. The conversion factors between different area measures are shown below.

27,878,400 square feet = 1 square mile
43,560 square feet = 1 acre
9 square feet = 1 square yard
1 square foot = 144 square inches

Part A Which unit listed above can be used to express the area of the plot of land so that the number of units will be between 10 and 100? Explain your answer.

Part B What is the area of the plot of land in terms of the unit you chose in part A ?