Math 8 Unit 1 quiz 3: Calculating in scientific notation, Significant figures

Name _____ Date _____ Period _____

8 questions, 22 points

1. In one year a city counted 3.2×10^7 bus rides and 5.2×10^6 tram rides. How many rides were there in all? Give the answer in scientific notation. (2 points)

2. Calculate. Give each answer in scientific notation.

(a) $(2 \times 10^{-3})(7.5 \times 10^8)(4 \times 10^2)$ (b) $(5 \times 10^{-4})^3$ (3 points)

3. A hair on a person's head grows about 4×10^{-9} meters each second. (3 points)

(a) A 30-day month is about 2.6×10^6 seconds. About how much does the hair grow in a month? Give the answer in meters, in scientific notation.

(b) About how many seconds does the hair take to grow 1×10^{-1} meters? Give the answer in scientific notation.

4. Mateo needs the product $(6 \times 10^{-4})(2 \times 10^{-8})$. He types it into a calculator as $6 \times 10^{-4} \times 2 \times 10^{-8}$, with no parentheses. (3 points)

(a) Using the order of operations, explain why the missing parentheses do not change his answer here.

(b) Find the product in scientific notation, and write how the calculator shows it with the letter E.

5. A timer shows only seconds, to the hundredth of a second, and never switches to minutes. It stops at exactly one minute. (3 points)

(a) Write the reading as the timer shows it, in seconds.

(b) How many significant figures does the reading have?

(c) Write the same reading in minutes, keeping its significant figures.

Free sample from math.wiki for classroom use. Do not post. math.wiki

6. On Monday a bean plant is 14.3 cm tall, measured with a ruler marked in millimeters. By Friday it is too tall for the ruler, and a tape marked only in whole centimeters reads 21 cm. (3 points)

(a) How much did the plant grow, reported honestly? How many significant figures does your answer have?

(b) Using the half-unit error of each reading, find the smallest and largest growth the readings allow.

7. Hannah's family fills the car's tank, drives until the trip meter shows 518 km (it shows whole kilometers), and then refills it with 43.06 L of fuel. Find how many kilometers the car went on one liter of fuel, to an honest number of significant figures. (2 points)

8. Hannah weighs a beaker of water at 125.6 g on a balance that reads tenths of a gram. She adds 0.48 g of salt, weighed on a balance that reads hundredths. She reports the total as 1.3×10^2 g, because "0.48 has only two significant figures." (3 points)

(a) What rule did Hannah use, and which rule applies instead?

(b) Report the total honestly.

(c) Use the greatest possible error of each reading to explain why your answer is the right size.

Free sample from math.wiki for classroom use. Do not post. math.wiki