Math 8 Unit 1 worksheet: Comparing numbers in scientific notation

Name _____ Date _____ Period _____

1. Write $<$, $>$ or $=$ in each blank. Rewrite any number that is not in scientific notation first.

(a) 7.1×10^5 ☐ 2.3×10^6

(b) 4.6×10^{-7} ☐ 4.06×10^{-7}

(c) 1.5×10^{-2} ☐ 9.5×10^{-3}

(d) 3.02×10^4 ☐ $30{,}200$

(e) 0.0061 ☐ 6.1×10^{-4}

(f) 52×10^3 ☐ 5.3×10^4

(g) -3.5×10^2 ☐ -8×10^1

(h) 9.1×10^{-1} ☐ 0.09×10^1

2. The table gives some very short times.

Event	Time (seconds)
one beat of a hummingbird's wings	0.02
one beat of a housefly's wings	0.5×10^{-2}
a camera shutter opening and closing	8×10^{-3}
a blink of an eye	3×10^{-1}
light crossing a classroom	15×10^{-9}

(a) Write each time in scientific notation. Then list the events from shortest to longest.

(b) About how many times as long as one beat of a housefly's wings is a blink of an eye?

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3. A city reservoir holds about 4×10^{10} liters of water. The town's outdoor swimming pool holds about 2×10^{5} liters. How many times as much water as the pool does the reservoir hold? Give your answer in scientific notation.

4. There are about 3.04×10^{12} trees on Earth and about 8.1×10^{9} people.

(a) Without dividing, between which two powers of ten must the number of trees per person lie? Explain.

(b) Round each leading part to one digit and estimate the number of trees per person.

5. (a) Find every integer n for which 3.6×10^{n} is greater than 0.0052 and less than 81,000.

(b) Find every digit d from 1 to 9 for which $d.5 \times 10^{-3}$ is less than 0.00407.

6. Maya says: "If one number in scientific notation has exponent 6 and another has exponent 5, the first is always at least 10 times the second."

(a) Give two such numbers that show Maya is wrong.

(b) Can the first number be 99 times the second? Can it be 100 times the second? For each, give an example or explain why not.

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