

Name _____

Math Worksheet

		Column 1	Column 2	Column 3	Column 4
Map or Image Used	What you measure	Distance in Meters	Scientific Notation for meters	Distance in Kilometers	Scientific Notation for kilometers
Chase Field Aerial Photograph	Distance from right side to left side of building				
Bisbee, Arizona Topographic Map	Distance between the letter "e" in Bisbee and the letter "W" in Warren				
Satellite Image of the Phoenix Area	Distance between the "S" in Sun City and the "a" in Mesa				
Aerial Photograph of Hollywood Sign	Length of the sign from the H to the D				
Aerial photograph of area around a neighborhood school	Distance between the apartment and the bike lock-up at the middle school				
Disneyland Aerial Photograph	Distance between where you park to the center of Disneyland. Measure the length of the black arrow to entrance and white arrow to the park center				
Arizona Mills Mall Aerial Photograph	Length of the entire mall				
Satellite Image of Imperial Valley/Mexico Border	Length of the Salton Sea (black image at top left)				

How to Convert within the Metric System

Metric Conversion Pneumonic

King	Henry	Died	Monday	Drinking	Chocolate	Milk
kilo	hecta	deca	meter (unit)	deci	centi	milli

To make the conversion:

- count from the measure where you start to the new unit
- move the decimal point that many spaces in the same direction


Example Problems

1. You are asked to convert 2 meters into kilometers.

First, look at the chart above.

Second, from **Monday** (meter): count left to the **King** (kilo) cell. You should move your finger 3 cells to the left.

Third, this means that you move the decimal point 3 spaces to the left.

2 meters
0.002 kilometers



So, 2 meters equals 0.002 kilometers.

2. You are asked to convert 543 kilometers into meters.

First, look at the chart above.

Second, from **King** (kilo) cell, count right to the **Monday** (meter) cell. You should move your finger 3 cells to the right.

Third, this means that you move the decimal point 3 spaces to the right.

543 kilometers
543,000 meters


So, 543 kilometers equals 543,000 meters.

How to Change Numbers from Standard form into Scientific Notation and Back

To convert a number from standard form into scientific notation you will move the decimal point until there is only 1 digit to the left of the decimal point. You will represent the move by also **writing x10 raised to a power**. If you move the **decimal point to the left, the power of ten is positive (ex. 10^6)**, if you move the **decimal point to the right the power of ten is negative (ex. 10^{-4})**. The power of ten is the number of times you move the decimal.

Example 1. 4,542,000 meters equals _____ in scientific notation.

Example 2. 0.00045 meters equals _____ in scientific notation.

To convert a number from scientific notation into standard form, you will move the **decimal point to the right if the power of ten is positive (ex. 10^3)** and you will move the **decimal to the left if the power of ten is negative (ex. 10^{-6})**. You will move the decimal point the same number as the power of ten.

Example 3. 7.49×10^3 meters equals _____ in standard form.

Example 4. 9.2×10^{-6} meters equals _____ in standard form.

Name _____

What Would You Pick—Besides Google Earth?

1. If you wanted to see your house, what sort of image or map would you use and why?
2. If you wanted to study a big city, what sort of image or map would you use and why?
3. If you wanted to study a big river or desert, what sort of image or map would you use and why?
4. If you wanted to take a trip to visit a friend somewhere in the United States, what sort of image or map would you use and why?

Math Worksheet **Answer Key**

		Column 1	Column 2	Column 3	Column 4
Map or Image Used	What you measure	Distance in Meters	Scientific Notation for meters	Distance in Kilometers	Scientific Notation for kilometers
Chase Field Aerial Photograph	Distance between America West Arena (X) and Bank One Ballpark (Y)	250	2.50×10^2	0.25	2.5×10^{-1}
Bisbee, Arizona Topographic Map	Distance between the letter "e" in Bisbee and the letter "W" in Warren	6500	6.5×10^3	6.5	6.5×10^0
Satellite Image of the Phoenix Area	Distance between the "S" in Sun City and the "a" in Mesa	65,000	6.5×10^4	65	6.5×10^1
Aerial Photograph of Hollywood Sign	Length of the Sign from the H to the D	300	3.0×10^2	0.3	3.0×10^{-1}
Aerial photograph of area around a neighborhood school	Distance between the apartment and the bike lock-up at the middle school	580	5.8×10^2	0.58	5.8×10^{-1}
Disneyland Aerial Photograph	Distance between where you park to the center of Disneyland. Measure the length of the black arrow to entrance and white arrow to the park center	420	4.2×10^2	0.42	4.2×10^{-1}

Arizona Mills Mall Aerial Photograph	Length of the entire mall	600	6.0×10^2	0.6	6.0×10^{-1}
Satellite Image of Imperial Valley/Mexico Border	Length of the Salton Sea (from upper left to lower right)	50,000	5.0×10^4	50	5.0×10^1

What Would You Pick Besides Google Earth? **Answer Key**

Note: The general concept is that images and maps exist at different scales. If you want to see details, you will have to use aerial photographs and city maps. If you want to see general features, you would use satellite images and state/country maps. If you want to see relationships among countries or river basins, you would have to use continent-scale maps or a globe.

1. If you wanted to see your house, what sort of image or map would you use and why?

ANSWER: You would probably want to use an aerial photograph that shows individual houses or buildings.

2. If you wanted to study a big city, what sort of image or map would you use and why?

ANSWER: You would probably want to use a satellite image that shows a whole city.

3. If you wanted to study a big river or desert, what sort of image or map would you use and why?

ANSWER: You would probably want to use a map of a continent or a country.

4. If you wanted to take a trip to visit a friend somewhere in the United States, what sort of image or map would you use and why?

ANSWER: You would probably want to use a map of the whole United States, or you could also get a map of the state your friend lives in.