

Name:		
Date:		

Intro to the Metric System

Answer these questions.	2 Answer these questions.		
Which metric unit is 10 times bigger than a meter?	Which metric unit is 1,000 times bigger than a gram?		
Which metric unit is 100 times smaller than a meter?	Which metric unit is 1,000 times smaller than a gram?		
Unit Abbreviation kilogram	How many meters are in each of the following units? kilometer hectometer centimeter millimeter Convert this metric unit. 36.2 kilograms = hectograms = dekagrams = grams		
7 Convert this metric unit. 0.71 meters = decimeters = centimeters = millimeters	8 Convert this metric unit. 128 milligrams = centigrams = decigrams = grams		



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Intro to the Metric System

1 Answer these questions.

Which metric unit is 10 times bigger than a meter? a dekameter

Which metric unit is 100 times smaller than a meter? a centimeter

2 List the abbreviations for each metric unit.

Unit	Abbreviation
kilogram	kg
meter	m
centimeter	_ cm
milligram	mg
millimeter	mm

Answer these questions.

Which metric unit is 1,000 times bigger than a gram? a kilogram

Which metric unit is 1,000 times smaller than a gram? a milligram

How many meters are in each of the following units?

kilometer1,000 mhectometer100 mcentimeter1/100 mmillimeter1/1,000 m

Convert this metric unit.

2,500 meters

6 Convert this metric unit.

36.2 kilograms

= 2.5 kilometers = 36,200 grams

7 Convert this metric unit.

0.71 meters

Convert this metric unit.

= 12.8 centigrams

128 milligrams

= 1.28 decigrams = 0.128 grams



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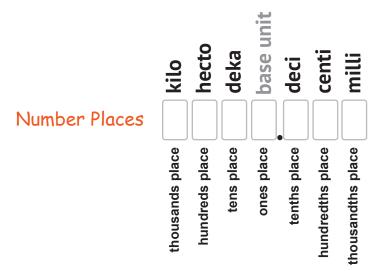
Basic Metric Prefixes

G-MS 1

This diagram lists the six metric prefixes that we learned about in the video and shows which power of 10 they correspond to. (There are other prefixes for bigger and smaller amounts, but you don't need to know about them for this lesson.*)

kilo	× 1000
hecto	× 100
deka	× 10
base unit	
deci	÷ 10
centi	÷ 100
milli	÷ 1000

Because these six metric prefixes represent amounts that are bigger or smaller than their immediate neighbors by a factor of 10, they map to the base-10 number places shown below. This diagram can help you understand the relationship between these basic metric units.



*Note: There are metric units that are larger and smaller than these units, and they are separated by factors of 1,000. But in this lesson, we're only focusing on the six prefixes shown.



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Basic Metric Unit Relationships

G-MS 2

Instructions: F	Fill in the blanks. (You can use the chart on page 1 to help you)
1	A kilometer is equal to meters.
2	A dekameter is equal to meters.
3	A meter is equal to centimeters.
4	A centimeter is equal to millimeters.
5	A meter is equal to millimeters.
6	A hectometer is equal to meters.
7	A meter is equal to decimeters.
8	A kilometer is equal to hectometers.
Instructions: F	Fill in the blanks. (You can use the chart on page 1 to help you)
1	A millimeter is equal to $\frac{1}{1,000}$ of a meter. one-thousandth
2	A decimeter is equal to of a meter.
3	A centimeter is equal to of a meter.
4	A meter is equal to of a kilometer.
5	A meter is equal to of a hectometer.
6	A meter is equal to of a dekameter.

A millimeter is equal to ______ of a centimeter.

A centimeter is equal to _____ of a decimeter.



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Basic Metric Unit Conversions

G-MS 3

Instructions: Multiply or divide by powers of 10 to convert these measurements to the units shown. Use the chart on page 1 to remind yourself of the relationships between metric units. (Note: Because multiplying or dividing by powers of 10 can be thought of as shifting the decimal point, the decimal shift corresponding to the math operation is also shown.)

math decimal shift
$$35 \text{ meters} = 3,500 \text{ centimeters} \qquad 35 \times 100 = 3,500 \qquad 2, \text{ right}$$

2 120 milligrams =
$$0.12$$
 grams $120 \div 1,000 = 0.12$ 3, left

$$3$$
 15 centimeters = ____ meters

$$0.5$$
 kilograms = ____ grams

$$\overline{}$$
 6,800 grams = ____ kilograms

$$10.4$$
 centimeters = ____ meters

$$0.03 \text{ grams} =$$
 centigrams

$$1,375$$
 meters = _____ kilometers

$$8.5$$
 milligrams = ____ grams



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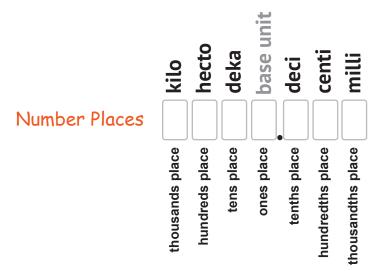
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kilo	× 1000
hecto	× 100
deka	× 10
base unit	
deci	÷ 10
centi	÷ 100
milli	÷ 1000

Because these six metric prefixes represent amounts that are bigger or smaller than their immediate neighbors by a factor of 10, they map to the base-10 number places shown below. This diagram can help you understand the relationship between these basic metric units.



*Note: There are metric units that are larger and smaller than these units, and they are separated by factors of 1,000. But in this lesson, we're only focusing on the six prefixes shown.



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Basic Metric Unit Relationships

G-MS 2

Instructions: Fill in the blanks. (You can use the chart on page 1 to help you)

- 1 A kilometer is equal to 1,000 meters.
- 2 A dekameter is equal to ____10 ___ meters.
- 3 A meter is equal to 100 centimeters.
- 4 A centimeter is equal to 10 millimeters.
- 5 A meter is equal to 1,000 millimeters.
- 6 A hectometer is equal to 100 meters.
- 7 A meter is equal to ____10 ___ decimeters.
- 8 A kilometer is equal to _____ hectometers.

Instructions: Fill in the blanks. (You can use the chart on page 1 to help you)

- 1 A millimeter is equal to 1,000 of a meter. one-thousandth
- 2 A decimeter is equal to $\frac{1}{10}$ of a meter. or one-tenth
- 3 A centimeter is equal to $\frac{1}{100}$ of a meter. or one-hundredth
- 4 A meter is equal to $\frac{1}{1,000}$ of a kilometer. or one-thousandth
- 5 A meter is equal to $\frac{1}{100}$ of a hectometer. or one-hundredth
- 6 A meter is equal to $\frac{1}{10}$ of a dekameter. or one-tenth
- 7 A millimeter is equal to $\frac{1}{10}$ of a centimeter. or one-tenth
- A centimeter is equal to $\frac{1}{10}$ of a decimeter. or one-tenth



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Basic Metric Unit Conversions

G-MS 3

Instructions: Multiply or divide by powers of 10 to convert these measurements to the units shown. Use the chart on page 1 to remind yourself of the relationships between metric units. (Note: Because multiplying or dividing by powers of 10 can be thought of as shifting the decimal point, the decimal shift corresponding to the math operation is also shown.)

	math	decimal shift
1 35 meters = $3,500$ centimeters	35 × 100 = 3,500	2, right
$2 ext{120 milligrams} = 0.12 ext{grams}$	120 ÷ 1,000 = 0.12	3, left
15 centimeters = 0.15 meters	15 ÷ 100 = 0.15	2, left
3.4 grams = 3,400 milligrams	3.4 × 1,000 = 3,400	3, right
0.5 kilograms = 500 grams	0.5 × 1,000 = 500	3, right
6 21 centimeter = 2.1 decimeters	2.1 ÷ 10 = 21	1, left
7 6,800 grams = 6.8 kilograms	6,800 ÷ 1,000 = 6.8	3, left
8 10.4 centimeters = 0.104 meters	10.4 ÷ 100 = 0.104	2, left
9 0.03 grams = 3 centigrams	0.03 × 100 = 3	2, right
1,375 meters = 1.375 kilometers	1,375 ÷ 1,000 = 1.375	3, left
7 meters = 0.007 kilometers	7 ÷ 1,000 = 0.007	3, left
8.5 milligrams = 0.0085 grams	8.5 ÷ 1,000 = 0.0085	3, left