

PRACTICE WITH FAMILIAR UNITS

The following worksheet will give you practice with unit conversion, or how to express one piece of information in different ways. A unit is a form of measurement, like inches, seconds, or gallons. HINT: The larger the unit, the smaller the number and vice versa. For example; 1 pound = 16 ounces (pounds are "large" units and ounces are "small" units).

A: Basic Units:

- 1) What is your height in inches? _____
- 2) The distance from Washington DC to the Idaho National Engineering Laboratory (INEL) is approximately 126,720,000 inches. How many feet is this? _____ How many miles? _____
- 3) A typical core in a pressurized water reactor weighs 80 metric tons. How many pounds is this? _____
- 4) The first test of an atomic weapon was on July 16, 1945. The first atomic bomb was dropped on August 6, 1945. Approximately how many minutes elapsed between the two events? _____

B: These unit conversions are similar to the ones that you just did, with real life examples and an emphasis on plutonium!

- 5) Suppose the width of a plutonium pit is about 8 centimeters in diameter. What is its width in inches? _____
- 6) As of 1990, the N-Reactor at the Hanford Nuclear Reservation in Washington state had produced about 60.5 metric tons of plutonium. How many kilograms is that? _____
- 7) The mass of a plutonium pit is about 3.5 kilograms. Convert that to grams.

- 8) INEL has a tank that can hold 300,000 gallons of high-level liquid waste. How much can this tank hold in liters? _____

C: More unit conversions.....Same concept as above, but now with units of radiation. (Visit our [Unit Conversion Classroom Resource](#))

- 9) 1 curie, in becquerels _____

10) 3 grays, in rads _____

12) 111 billion becquerels, in curies _____

D: Even MORE unit conversions, but this time, you'll be converting prefixes.

You can click below to get a table of prefixes. For example, by looking at the table, you can determine that a kilogram is another way of saying a thousand grams.

13) 1,000 meters = ? in kilometers? _____

14) Express 5,000,000 curies with a prefix instead of the zeros.

15) Write 5 picocuries in numbers (without the prefix).

16) 1 megabecquerel in numbers (without the prefix). _____

E: Now that you know how to convert all different types of units, try some simple arithmetic.

Remember, convert the units before you add (or subtract, multiply, or divide)!!!

17) 1 nanocurie + 2 picocuries = _____

18) 170 millirem/yr + 0.03 rem/yr = _____

19) 2 microcuries x 40 picocuries = _____

Answers on next page...

Answers:

1) Wow! You're tall!

2a) 10,560,000

2b) 2000

3) 4,096,000

4) 30,240

5) 3.15

6) 60,500

7) 3,500

8) 1,137,000

9) 37,000,000,000

10) 300

11) 1

12) 3

13) 1

14) 5

15) 0.000000000005

16) 1,000,000

17) 1,002 picocuries or 1.002 nanocuries

18) 200 millirem/yr or 0.2 rem/yr

19) 2,040 picocuries or 2.04 microcuries