Conversions

In Algebra, you learned the Multiplicative Identity Property that states the existence of a number we call "one" or "1" that has the following property:

If you are given any real number $\boldsymbol{a}$, then $1 \bullet \boldsymbol{a} = \boldsymbol{a}$.

This simple property is very powerful. One of the things it allows us to do is convert from one representation of a value to another. Here are some examples:

Ex 1: $\frac{2}{3} = \frac{2 \bullet 5}{3 \bullet 5} = \frac{10}{15}$. Here we have multiplied $\frac{2}{3}$ by "one" in the form $\frac{5}{5}$. The value of the expression remains unchanged. Only the form is changed.

Ex 2: You know that one foot = 12 inches. So $\frac{one.foot}{12.inches} = 1$. So to convert 30 inches into feet, simply multiply by 1:

$30.inches \bullet \frac{1.foot}{12.inches} = \frac{30.ft}{12} = 2.5\,feet$. Note that "*inches*" seems to cancel as though "*inches* divided by *inches*" were itself equal to 1.

Ex 3: Again using the identity one foot = 12 inches, convert 6 feet to inches:

$$6.feet \bullet \frac{12.inches}{1.foot} = \frac{6 \bullet 12.inches}{1} = 72.inches\,.$$

The following conversions require the use of the identity π radians = 180°. Use it and the Multiplicative Identity Property to compute the following. Show your work IN THE STYLE OF THE EXAMPLES ABOVE.

1. Convert 27° to radians.

2. Convert 6 π radians to degrees.

3. Convert one radian to degrees. Give your answer to 6 decimal places.

4. Convert 470 degrees to radians. Leave your answer in terms of π.