1. **Solution**
Let x represent a datum of interest. Let i represent that datum's index. Let ℓ represent that datum's percentile. Let n represent the sample size (number of measurements). In general,

$$\ell = \frac{i}{n}$$

(a) We are given $x = 76.29$. This means $i = 5$. We know $n = 6$. Determine the percentile ℓ.

$$\ell = \frac{5}{6}$$

$$\ell = 0.833$$

So, the percentile rank is $\boxed{0.833}$, or 83.3th percentile.

(b) We are given $\ell = 1$. We can use algebra to solve for i.

$$\ell = \frac{i}{n}$$

Multiply both sides by n.

$$n \cdot (\ell) = n \cdot \left(\frac{i}{n}\right)$$

Simplify both sides.

$$n\ell = i$$

To make me happy, switch the sides.

$$i = n\ell$$

Now, we can evaluate i.

$$i = (6)(1)$$

$$i = 6$$

Determine the x associated with $i = 6$.

$$x = \boxed{79.444}$$

(c) The mean: $\bar{x} = \frac{390.534}{6} = \boxed{65.089}$

(d) If n is odd, then median is $x_{i=\frac{n+1}{2}}$, the value of x when $i = \frac{n+1}{2}$. Otherwise, if n is even, the median is mean of $x_{i=\frac{n}{2}}$ and $x_{i=\frac{n}{2}+1}$. In this case, $n = 6$ and so n is even.

$$\text{median} = \frac{x_3 + x_4}{2} = \frac{67.358 + 74.857}{2}$$

So, median = $\boxed{71.1075}$.

2. **Solution**
Let x represent a datum of interest. Let i represent that datum's index. Let ℓ represent that datum's percentile. Let n represent the sample size (number of measurements). In general,

$$\ell = \frac{i}{n}$$

(a) We are given $x = 44.077$. This means $i = 32$. We know $n = 56$. Determine the percentile ℓ.

$$\ell = \frac{32}{56}$$

$$\ell = 0.571$$

So, the percentile rank is $\boxed{0.571}$, or 57.1th percentile.

(b) We are given $\ell = 0.804$. We can use algebra to solve for i.

$$\ell = \frac{i}{n}$$

Multiply both sides by n.

$$n \cdot (\ell) = n \cdot \left(\frac{i}{n}\right)$$

Simplify both sides.

$$n\ell = i$$

To make me happy, switch the sides.

$$i = n\ell$$

Now, we can evaluate i.

$$i = (56)(0.804)$$

$$i = 45$$

Determine the x associated with $i = 45$.

$$x = \boxed{44.594}$$

(c) The mean: $\bar{x} = \frac{2440.719}{56} = \boxed{43.584}$

(d) If n is odd, then median is $x_{i=\frac{n+1}{2}}$, the value of x when $i = \frac{n+1}{2}$. Otherwise, if n is even, the median is mean of $x_{i=\frac{n}{2}}$ and $x_{i=\frac{n}{2}+1}$. In this case, $n = 56$ and so n is even.

$$\text{median} = \frac{x_{28} + x_{29}}{2} = \frac{43.916 + 43.927}{2}$$

So, median = $\boxed{43.9215}$.