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 $x = 70.104$. This means $i = 5$. We know $n = 9$. Determine the percentile ℓ.

$$\ell = \frac{5}{9}$$

$$\ell = 0.556$$

So, the percentile rank is $\boxed{0.556}$, or 55.6th percentile.

(b) We are given $\ell = 0.444$. 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.

$$i = (9)(0.444)$$

$$i = 4$$

Determine the x associated with $i = 4$.

$$x = \boxed{70.082}$$

(c) The mean: $\bar{x} = \frac{633.342}{9} = \boxed{70.371}$

(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, $n = 9$ and so n is odd.

$$\text{median} = x_{(9+1)/2,} = x_5$$

So, median = $\boxed{70.104}$.

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 $x = 90.811$. This means $i = 20$. We know $n = 32$. Determine the percentile ℓ.

$$\ell = \frac{20}{32}$$

$$\ell = 0.625$$

So, the percentile rank is $\boxed{0.625}$, or 62.5th percentile.

(b) We are given $\ell = 0.875$. 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.

$$i = (32)(0.875)$$

$$i = 28$$

Determine the x associated with $i = 28$.

$$x = \boxed{92.408}$$

(c) The mean: $\bar{x} = \frac{2885.934}{32} = \boxed{90.185}$

(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, $n = 32$ and so n is even.

$$\text{median} = \frac{x_{16} + x_{17}}{2} = \frac{89.889 + 90.105}{2}$$

So, median = $\boxed{89.997}$.