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 $x = 21.271$. This means $i = 1$. We know $n = 9$. Determine the percentile ℓ.

$$\ell = \frac{1}{9}$$

$$\ell = 0.111$$

So, the percentile rank is $\boxed{0.111}$, or 11.1th percentile.

(b) We are given $\ell = 0.222$. 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.

$$i = (9)(0.222)$$

$$i = 2$$

Determine the x associated with $i = 2$.

$$x = \boxed{22.346}$$

(c) The mean: $\bar{x} = \frac{258.978}{9} = \boxed{28.775}$

(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 = $\boxed{28.367}$.

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 $x = 76.914$. This means $i = 15$. We know $n = 30$. Determine the percentile ℓ.

$$\ell = \frac{15}{30}$$

$$\ell = 0.5$$

So, the percentile rank is $\boxed{0.5}$, or 50th percentile.

(b) We are given $\ell = 0.8$. 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.

$$i = (30)(0.8)$$

$$i = 24$$

Determine the x associated with $i = 24$.

$$x = \boxed{92.222}$$

(c) The mean: $\bar{x} = \frac{2477.646}{30} = \boxed{82.588}$

(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, $n = 30$ and so n is even.

$$\text{median} = \frac{x_{15} + x_{16}}{2} = \frac{76.914 + 86.112}{2}$$

So, median = $\boxed{81.513}$.