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 $x = 72.886$. This means $i = 3$. We know $n = 6$. Determine the percentile ℓ.

$$\ell = \frac{3}{6}$$

$$\ell = 0.5$$

So, the answer is 0.5, or 50%.

(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 $i = 6$.

$$x = 74.402$$

(c) The mean is $\frac{436.955}{6} = 72.8258333$

(d) If n is odd, then median is $x_{\frac{n+1}{2}}$, the value of x when $i = \frac{n+1}{2}$. Otherwise median is mean of $x_{\lfloor \frac{n+1}{2} \rfloor}$ and $x_{\lceil \frac{n+1}{2} \rceil}$. So, median = 73.0895.

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 $x = 57.09$. This means $i = 20$. We know $n = 20$. Determine the percentile ℓ.

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

$$\ell = 1$$

So, the answer is 1, or 100%.

(b) We are given $\ell = 0.9$. 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.

$$i = (20)(0.9)$$

$$i = 18$$

Determine the x associated with $i = 18$.

$$x = 42.455$$

(c) The mean is $\frac{645.588}{20} = 32.279$

(d) If n is odd, then median is $x_{\frac{n+1}{2}}$, the value of x when $i = \frac{n+1}{2}$. Otherwise median is mean of $x_{\lfloor \frac{n+1}{2} \rfloor}$ and $x_{\lceil \frac{n+1}{2} \rceil}$. So, median = 28.204.