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 $x = 46.399$. This means $i = 6$. We know $n = 11$. Determine the percentile ℓ.

$$\ell = \frac{6}{11}$$

$$\ell = 0.545$$

So, the answer is 0.545, or 54.5%.

(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.

$$i = (11)(1)$$

$$i = 11$$

Determine the x associated with $i = 11$.

$$x = 47.903$$

(c) The mean is $\frac{501.766}{11} = 45.6150909$

(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 = 46.399.

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 $x = 51.351$. This means $i = 13$. We know $n = 28$. Determine the percentile ℓ.

$$\ell = \frac{13}{28}$$

$$\ell = 0.464$$

So, the answer is 0.464, or 46.4%.

(b) We are given $\ell = 0.643$. 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.

$$i = (28)(0.643)$$

$$i = 18$$

Determine the x associated with $i = 18$.

$$x = 52.73$$

(c) The mean is $\frac{1445.092}{28} = 51.61$

(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 = 51.897.