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 $x = 70.557$. This means $i = 3$. We know $n = 9$. Determine the percentile ℓ.

$$\ell = \frac{3}{9}$$

$$\ell = 0.333$$

So, the percentile rank is $\boxed{0.333}$, or 33.3th percentile.

(b) We are given $\ell = 0.778$. 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.

$$i = (9)(0.778)$$

$$i = 7$$

Determine the x associated with $i = 7$.

$$x = \boxed{72.011}$$

(c) The mean: $\bar{x} = \frac{637.912}{9} = \boxed{70.879}$

(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 = $\boxed{71.175}$.

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 $x = 55.032$. This means $i = 7$. We know $n = 63$. Determine the percentile ℓ.

$$\ell = \frac{7}{63}$$

$$\ell = 0.111$$

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

(b) We are given $\ell = 0.556$. 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.

$$i = (63)(0.556)$$

$$i = 35$$

Determine the x associated with $i = 35$.

$$x = \boxed{58.408}$$

(c) The mean: $\bar{x} = \frac{3622.195}{63} = \boxed{57.495}$

(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, $n = 63$ and so n is odd.

$$\text{median} = x_{(63+1)/2,} = x_{32}$$

So, median = $\boxed{58.24}$.

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 $x = 50.917$. This means $i = 7$. We know $n = 9$. Determine the percentile ℓ.

$$\ell = \frac{7}{9}$$

$$\ell = 0.778$$

So, the percentile rank is $\boxed{0.778}$, or 77.8th 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.

$$i = (9)(1)$$

$$i = 9$$

Determine the x associated with $i = 9$.

$$x = \boxed{52.05}$$

(c) The mean: $\bar{x} = \frac{457.08}{9} = \boxed{50.787}$

(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 = $\boxed{50.686}$.

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 $x = 165.293$. This means $i = 27$. We know $n = 30$. Determine the percentile ℓ.

$$\ell = \frac{27}{30}$$

$$\ell = 0.9$$

So, the percentile rank is $\boxed{0.9}$, or 90th percentile.

(b) We are given $\ell = 0.633$. 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.

$$i = (30)(0.633)$$

$$i = 19$$

Determine the x associated with $i = 19$.

$$x = \boxed{153.478}$$

(c) The mean: $\bar{x} = \frac{4249.576}{30} = \boxed{141.65}$

(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.

$$\text{median} = \frac{x_{15} + x_{16}}{2} = \frac{149.057 + 149.401}{2}$$

So, median = $\boxed{149.229}$.

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 $x = 21.563$. This means $i = 1$. We know $n = 6$. Determine the percentile ℓ.

$$\ell = \frac{1}{6}$$

$$\ell = 0.167$$

So, the percentile rank is $\boxed{0.167}$, or 16.7th percentile.

(b) We are given $\ell = 0.333$. 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.

$$i = (6)(0.333)$$

$$i = 2$$

Determine the x associated with $i = 2$.

$$x = \boxed{27.973}$$

(c) The mean: $\bar{x} = \frac{171.605}{6} = \boxed{28.601}$

(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.

$$\text{median} = \frac{x_3 + x_4}{2} = \frac{29.211 + 30.211}{2}$$

So, median = $\boxed{29.711}$.

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 $x = 51.558$. This means $i = 11$. We know $n = 28$. Determine the percentile ℓ.

$$\ell = \frac{11}{28}$$

$$\ell = 0.393$$

So, the percentile rank is $\boxed{0.393}$, or 39.3th percentile.

(b) We are given $\ell = 0.786$. 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.

$$i = (28)(0.786)$$

$$i = 22$$

Determine the x associated with $i = 22$.

$$x = \boxed{54.293}$$

(c) The mean: $\bar{x} = \frac{1469.418}{28} = \boxed{52.479}$

(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, $n = 28$ and so n is even.

$$\text{median} = \frac{x_{14} + x_{15}}{2} = \frac{52.13 + 52.179}{2}$$

So, median = $\boxed{52.1545}$.

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 $x = 71.781$. This means $i = 8$. We know $n = 11$. Determine the percentile ℓ.

$$\ell = \frac{8}{11}$$

$$\ell = 0.727$$

So, the percentile rank is $\boxed{0.727}$, or 72.7th percentile.

(b) We are given $\ell = 0.636$. 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.

$$i = (11)(0.636)$$

$$i = 7$$

Determine the x associated with $i = 7$.

$$x = \boxed{71.697}$$

(c) The mean: $\bar{x} = \frac{784.398}{11} = \boxed{71.309}$

(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, $n = 11$ and so n is odd.

$$\text{median} = x_{(11+1)/2,} = x_6$$

So, median = $\boxed{70.956}$.

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 $x = 22.3$. This means $i = 22$. We know $n = 32$. Determine the percentile ℓ.

$$\ell = \frac{22}{32}$$

$$\ell = 0.688$$

So, the percentile rank is $\boxed{0.688}$, or 68.8th percentile.

(b) We are given $\ell = 0.0625$. 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.

$$i = (32)(0.0625)$$

$$i = 2$$

Determine the x associated with $i = 2$.

$$x = \boxed{20.347}$$

(c) The mean: $\bar{x} = \frac{721.784}{32} = \boxed{22.556}$

(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.

$$\text{median} = \frac{x_{16} + x_{17}}{2} = \frac{21.95 + 21.956}{2}$$

So, median = $\boxed{21.953}$.

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 = $\boxed{81.513}$.

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 $x = 43.569$. This means $i = 5$. We know $n = 11$. Determine the percentile ℓ.

$$\ell = \frac{5}{11}$$

$$\ell = 0.455$$

   So, the percentile rank is $\boxed{0.455}$, or 45.5th percentile.

   (b) We are given $\ell = 0.727$. 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.

$$i = (11)(0.727)$$

$$i = 8$$

   Determine the x associated with $i = 8$.

$$x = \boxed{44.227}$$

   (c) The mean: $\bar{x} = \frac{479.54}{11} = \boxed{43.595}$

   (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, $n = 11$ and so n is odd.

$$\text{median} = x_{(11+1)/2,} = x_6$$

   So, median = $\boxed{43.736}$.

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 $x = 83.739$. This means $i = 9$. We know $n = 35$. Determine the percentile ℓ.

$$\ell = \frac{9}{35}$$

$$\ell = 0.257$$

So, the percentile rank is $\boxed{0.257}$, or 25.7th percentile.

(b) We are given $\ell = 0.343$. 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.

$$i = (35)(0.343)$$

$$i = 12$$

Determine the x associated with $i = 12$.

$$x = \boxed{87.356}$$

(c) The mean: $\bar{x} = \frac{3204.053}{35} = \boxed{91.544}$

(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, $n = 35$ and so n is odd.

$$\text{median} = x_{(35+1)/2,} = x_{18}$$

So, median = $\boxed{93.2}$.

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 $x = 63.373$. This means $i = 1$. We know $n = 8$. Determine the percentile ℓ.

$$\ell = \frac{1}{8}$$

$$\ell = 0.125$$

So, the percentile rank is $\boxed{0.125}$, or 12.5th percentile.

(b) We are given $\ell = 0.625$. 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.

$$i = (8)(0.625)$$

$$i = 5$$

Determine the x associated with $i = 5$.

$$x = \boxed{67.819}$$

(c) The mean: $\bar{x} = \frac{535.578}{8} = \boxed{66.947}$

(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, $n = 8$ and so n is even.

$$\text{median} = \frac{x_4 + x_5}{2} = \frac{67.427 + 67.819}{2}$$

So, median = $\boxed{67.623}$.

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 $x = 35.271$. This means $i = 14$. We know $n = 32$. Determine the percentile ℓ.

$$\ell = \frac{14}{32}$$

$$\ell = 0.438$$

So, the percentile rank is $\boxed{0.438}$, or 43.8th percentile.

(b) We are given $\ell = 0.188$. 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.

$$i = (32)(0.188)$$

$$i = 6$$

Determine the x associated with $i = 6$.

$$x = \boxed{32.52}$$

(c) The mean: $\bar{x} = \frac{1214.78}{32} = \boxed{37.962}$

(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.

$$\text{median} = \frac{x_{16} + x_{17}}{2} = \frac{36.869 + 37.554}{2}$$

So, median = $\boxed{37.2115}$.

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 $x = 77.424$. This means $i = 7$. We know $n = 12$. Determine the percentile ℓ.

$$\ell = \frac{7}{12}$$

$$\ell = 0.583$$

So, the percentile rank is $\boxed{0.583}$, or 58.3th percentile.

(b) We are given $\ell = 0.917$. 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.

$$i = (12)(0.917)$$

$$i = 11$$

Determine the x associated with $i = 11$.

$$x = \boxed{86.61}$$

(c) The mean: $\bar{x} = \frac{935.651}{12} = \boxed{77.971}$

(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, $n = 12$ and so n is even.

$$\text{median} = \frac{x_6 + x_7}{2} = \frac{77.294 + 77.424}{2}$$

So, median = $\boxed{77.359}$.

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 $x = 95.098$. This means $i = 14$. We know $n = 24$. Determine the percentile ℓ.

$$\ell = \frac{14}{24}$$

$$\ell = 0.583$$

So, the percentile rank is $\boxed{0.583}$, or 58.3th percentile.

(b) We are given $\ell = 0.75$. 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.

$$i = (24)(0.75)$$

$$i = 18$$

Determine the x associated with $i = 18$.

$$x = \boxed{96.239}$$

(c) The mean: $\bar{x} = \frac{2265.388}{24} = \boxed{94.391}$

(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, $n = 24$ and so n is even.

$$\text{median} = \frac{x_{12} + x_{13}}{2} = \frac{94.291 + 94.824}{2}$$

So, median = $\boxed{94.5575}$.

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 $x = 81.494$. This means $i = 3$. We know $n = 10$. Determine the percentile ℓ.

$$\ell = \frac{3}{10}$$

$$\ell = 0.3$$

So, the percentile rank is $\boxed{0.3}$, or 30th 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.

$$i = (10)(0.8)$$

$$i = 8$$

Determine the x associated with $i = 8$.

$$x = \boxed{88.949}$$

(c) The mean: $\bar{x} = \frac{855.258}{10} = \boxed{85.526}$

(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, $n = 10$ and so n is even.

$$\text{median} = \frac{x_5 + x_6}{2} = \frac{83.011 + 87.131}{2}$$

So, median = $\boxed{85.071}$.

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 $x = 12.976$. This means $i = 10$. We know $n = 42$. Determine the percentile ℓ.

$$\ell = \frac{10}{42}$$

$$\ell = 0.238$$

So, the percentile rank is $\boxed{0.238}$, or 23.8th 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.

$$i = (42)(1)$$

$$i = 42$$

Determine the x associated with $i = 42$.

$$x = \boxed{29.796}$$

(c) The mean: $\bar{x} = \frac{851.084}{42} = \boxed{20.264}$

(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, $n = 42$ and so n is even.

$$\text{median} = \frac{x_{21} + x_{22}}{2} = \frac{18.18 + 19.605}{2}$$

So, median = $\boxed{18.8925}$.

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 $x = 62.5$. This means $i = 6$. We know $n = 12$. Determine the percentile ℓ.

$$\ell = \frac{6}{12}$$

$$\ell = 0.5$$

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

(b) We are given $\ell = 0.167$. 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.

$$i = (12)(0.167)$$

$$i = 2$$

Determine the x associated with $i = 2$.

$$x = \boxed{60.107}$$

(c) The mean: $\bar{x} = \frac{748.972}{12} = \boxed{62.414}$

(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, $n = 12$ and so n is even.

$$\text{median} = \frac{x_6 + x_7}{2} = \frac{62.5 + 63.034}{2}$$

So, median = $\boxed{62.767}$.

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 $x = 45.092$. This means $i = 13$. We know $n = 24$. Determine the percentile ℓ.

$$\ell = \frac{13}{24}$$

$$\ell = 0.542$$

So, the percentile rank is $\boxed{0.542}$, or 54.2th percentile.

(b) We are given $\ell = 0.333$. 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.

$$i = (24)(0.333)$$

$$i = 8$$

Determine the x associated with $i = 8$.

$$x = \boxed{42.811}$$

(c) The mean: $\bar{x} = \frac{1076.152}{24} = \boxed{44.84}$

(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, $n = 24$ and so n is even.

$$\text{median} = \frac{x_{12} + x_{13}}{2} = \frac{43.922 + 45.092}{2}$$

So, median = $\boxed{44.507}$.

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 $x = 41.054$. This means $i = 8$. We know $n = 12$. Determine the percentile ℓ.

$$\ell = \frac{8}{12}$$

$$\ell = 0.667$$

So, the percentile rank is $\boxed{0.667}$, or 66.7th percentile.

(b) We are given $\ell = 0.417$. 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.

$$i = (12)(0.417)$$

$$i = 5$$

Determine the x associated with $i = 5$.

$$x = \boxed{37.884}$$

(c) The mean: $\bar{x} = \frac{485.022}{12} = \boxed{40.418}$

(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, $n = 12$ and so n is even.

$$\text{median} = \frac{x_6 + x_7}{2} = \frac{38.888 + 39.625}{2}$$

So, median = $\boxed{39.2565}$.

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 $x = 23.658$. This means $i = 58$. We know $n = 81$. Determine the percentile ℓ.

$$\ell = \frac{58}{81}$$

$$\ell = 0.716$$

So, the percentile rank is $\boxed{0.716}$, or 71.6th percentile.

(b) We are given $\ell = 0.938$. 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.

$$i = (81)(0.938)$$

$$i = 76$$

Determine the x associated with $i = 76$.

$$x = \boxed{25.878}$$

(c) The mean: $\bar{x} = \frac{1839.839}{81} = \boxed{22.714}$

(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, $n = 81$ and so n is odd.

$$\text{median} = x_{(81+1)/2,} = x_{41}$$

So, median = $\boxed{22.594}$.

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 $x = 90.209$. This means $i = 2$. We know $n = 9$. Determine the percentile ℓ.

$$\ell = \frac{2}{9}$$

$$\ell = 0.222$$

So, the percentile rank is $\boxed{0.222}$, or 22.2th percentile.

(b) We are given $\ell = 0.667$. 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.

$$i = (9)(0.667)$$

$$i = 6$$

Determine the x associated with $i = 6$.

$$x = \boxed{92.475}$$

(c) The mean: $\bar{x} = \frac{826.457}{9} = \boxed{91.829}$

(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 = $\boxed{92.348}$.

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 $x = 91.27$. This means $i = 11$. We know $n = 72$. Determine the percentile ℓ.

$$\ell = \frac{11}{72}$$

$$\ell = 0.153$$

So, the percentile rank is $\boxed{0.153}$, or 15.3th percentile.

(b) We are given $\ell = 0.583$. 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.

$$i = (72)(0.583)$$

$$i = 42$$

Determine the x associated with $i = 42$.

$$x = \boxed{94.272}$$

(c) The mean: $\bar{x} = \frac{6844.788}{72} = \boxed{95.066}$

(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, $n = 72$ and so n is even.

$$\text{median} = \frac{x_{36} + x_{37}}{2} = \frac{93.887 + 94.05}{2}$$

So, median = $\boxed{93.9685}$.

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 $x = 74.1$. This means $i = 3$. We know $n = 7$. Determine the percentile ℓ.

$$\ell = \frac{3}{7}$$

$$\ell = 0.429$$

   So, the percentile rank is $\boxed{0.429}$, or 42.9th percentile.

   (b) We are given $\ell = 0.286$. 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.

$$i = (7)(0.286)$$

$$i = 2$$

   Determine the x associated with $i = 2$.

$$x = \boxed{68.636}$$

   (c) The mean: $\bar{x} = \frac{516.858}{7} = \boxed{73.837}$

   (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, $n = 7$ and so n is odd.

$$\text{median} = x_{(7+1)/2,} = x_4$$

   So, median = $\boxed{76.338}$.

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 $x = 68.704$. This means $i = 24$. We know $n = 63$. Determine the percentile ℓ.

$$\ell = \frac{24}{63}$$

$$\ell = 0.381$$

So, the percentile rank is $\boxed{0.381}$, or 38.1th percentile.

(b) We are given $\ell = 0.254$. 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.

$$i = (63)(0.254)$$

$$i = 16$$

Determine the x associated with $i = 16$.

$$x = \boxed{65.925}$$

(c) The mean: $\bar{x} = \frac{4382.071}{63} = \boxed{69.557}$

(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, $n = 63$ and so n is odd.

$$\text{median} = x_{(63+1)/2,} = x_{32}$$

So, median = $\boxed{70.334}$.

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 $x = 60.065$. This means $i = 7$. We know $n = 10$. Determine the percentile ℓ.

$$\ell = \frac{7}{10}$$

$$\ell = 0.7$$

So, the percentile rank is $\boxed{0.7}$, or 70th percentile.

(b) We are given $\ell = 0.4$. 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.

$$i = (10)(0.4)$$

$$i = 4$$

Determine the x associated with $i = 4$.

$$x = \boxed{58.557}$$

(c) The mean: $\bar{x} = \frac{592.946}{10} = \boxed{59.295}$

(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, $n = 10$ and so n is even.

$$\text{median} = \frac{x_5 + x_6}{2} = \frac{59.222 + 59.858}{2}$$

So, median = $\boxed{59.54}$.

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 $x = 11.265$. This means $i = 9$. We know $n = 48$. Determine the percentile ℓ.

$$\ell = \frac{9}{48}$$

$$\ell = 0.188$$

So, the percentile rank is $\boxed{0.188}$, or 18.8th percentile.

(b) We are given $\ell = 0.646$. 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.

$$i = (48)(0.646)$$

$$i = 31$$

Determine the x associated with $i = 31$.

$$x = \boxed{11.536}$$

(c) The mean: $\bar{x} = \frac{551.096}{48} = \boxed{11.481}$

(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, $n = 48$ and so n is even.

$$\text{median} = \frac{x_{24} + x_{25}}{2} = \frac{11.386 + 11.392}{2}$$

So, median = $\boxed{11.389}$.

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 $x = 144.129$. This means $i = 9$. We know $n = 10$. Determine the percentile ℓ.

$$\ell = \frac{9}{10}$$

$$\ell = 0.9$$

So, the percentile rank is $\boxed{0.9}$, or 90th percentile.

(b) We are given $\ell = 0.4$. 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.

$$i = (10)(0.4)$$

$$i = 4$$

Determine the x associated with $i = 4$.

$$x = \boxed{123.235}$$

(c) The mean: $\bar{x} = \frac{1273.39}{10} = \boxed{127.34}$

(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, $n = 10$ and so n is even.

$$\text{median} = \frac{x_5 + x_6}{2} = \frac{124.523 + 125.213}{2}$$

So, median = $\boxed{124.868}$.

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 $x = 119.489$. This means $i = 17$. We know $n = 25$. Determine the percentile ℓ.

$$\ell = \frac{17}{25}$$

$$\ell = 0.68$$

So, the percentile rank is $\boxed{0.68}$, or 68th percentile.

(b) We are given $\ell = 0.56$. 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.

$$i = (25)(0.56)$$

$$i = 14$$

Determine the x associated with $i = 14$.

$$x = \boxed{118.344}$$

(c) The mean: $\bar{x} = \frac{2954.784}{25} = \boxed{118.19}$

(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, $n = 25$ and so n is odd.

$$\text{median} = x_{(25+1)/2,} = x_{13}$$

So, median = $\boxed{117.707}$.

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 $x = 92.74$. This means $i = 6$. We know $n = 6$. Determine the percentile ℓ.

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

$$\ell = 1$$

So, the percentile rank is $\boxed{1}$, or 100th percentile.

(b) We are given $\ell = 0.833$. 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.

$$i = (6)(0.833)$$

$$i = 5$$

Determine the x associated with $i = 5$.

$$x = \boxed{92.622}$$

(c) The mean: $\bar{x} = \frac{553.561}{6} = \boxed{92.26}$

(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.

$$\text{median} = \frac{x_3 + x_4}{2} = \frac{92.159 + 92.44}{2}$$

So, median = $\boxed{92.2995}$.

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 $x = 74.282$. This means $i = 21$. We know $n = 24$. Determine the percentile ℓ.

$$\ell = \frac{21}{24}$$

$$\ell = 0.875$$

So, the percentile rank is $\boxed{0.875}$, or 87.5th percentile.

(b) We are given $\ell = 0.75$. 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.

$$i = (24)(0.75)$$

$$i = 18$$

Determine the x associated with $i = 18$.

$$x = \boxed{68.889}$$

(c) The mean: $\bar{x} = \frac{1638.225}{24} = \boxed{68.259}$

(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, $n = 24$ and so n is even.

$$\text{median} = \frac{x_{12} + x_{13}}{2} = \frac{66.773 + 66.853}{2}$$

So, median = $\boxed{66.813}$.

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 $x = 21.349$. This means $i = 4$. We know $n = 11$. Determine the percentile ℓ.

$$\ell = \frac{4}{11}$$

$$\ell = 0.364$$

So, the percentile rank is $\boxed{0.364}$, or 36.4th percentile.

(b) We are given $\ell = 0.818$. 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.

$$i = (11)(0.818)$$

$$i = 9$$

Determine the x associated with $i = 9$.

$$x = \boxed{29.714}$$

(c) The mean: $\bar{x} = \frac{272.081}{11} = \boxed{24.735}$

(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, $n = 11$ and so n is odd.

$$\text{median} = x_{(11+1)/2,} = x_6$$

So, median = $\boxed{21.941}$.

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 $x = 85.313$. This means $i = 25$. We know $n = 56$. Determine the percentile ℓ.

$$\ell = \frac{25}{56}$$

$$\ell = 0.446$$

So, the percentile rank is $\boxed{0.446}$, or 44.6th percentile.

(b) We are given $\ell = 0.839$. 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.

$$i = (56)(0.839)$$

$$i = 47$$

Determine the x associated with $i = 47$.

$$x = \boxed{88.578}$$

(c) The mean: $\bar{x} = \frac{4781.671}{56} = \boxed{85.387}$

(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.

$$\text{median} = \frac{x_{28} + x_{29}}{2} = \frac{85.612 + 85.665}{2}$$

So, median = $\boxed{85.6385}$.

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 $x = 92.56$. This means $i = 2$. We know $n = 6$. Determine the percentile ℓ.

$$\ell = \frac{2}{6}$$

$$\ell = 0.333$$

   So, the percentile rank is $\boxed{0.333}$, or 33.3th 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 $i = 6$.

$$x = \boxed{99.254}$$

   (c) The mean: $\bar{x} = \frac{567.277}{6} = \boxed{94.546}$

   (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.

$$\text{median} = \frac{x_3 + x_4}{2} = \frac{94.195 + 94.23}{2}$$

   So, median = $\boxed{94.2125}$.

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 $x = 48.787$. This means $i = 11$. We know $n = 36$. Determine the percentile ℓ.

$$\ell = \frac{11}{36}$$

$$\ell = 0.306$$

So, the percentile rank is $\boxed{0.306}$, or 30.6th percentile.

(b) We are given $\ell = 0.694$. 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.

$$i = (36)(0.694)$$

$$i = 25$$

Determine the x associated with $i = 25$.

$$x = \boxed{70.369}$$

(c) The mean: $\bar{x} = \frac{2141.341}{36} = \boxed{59.482}$

(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, $n = 36$ and so n is even.

$$\text{median} = \frac{x_{18} + x_{19}}{2} = \frac{62.632 + 62.762}{2}$$

So, median = $\boxed{62.697}$.

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 $x = 42.46$. This means $i = 8$. We know $n = 8$. Determine the percentile ℓ.

$$\ell = \frac{8}{8}$$

$$\ell = 1$$

So, the percentile rank is $\boxed{1}$, or 100th percentile.

(b) We are given $\ell = 0.25$. 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.

$$i = (8)(0.25)$$

$$i = 2$$

Determine the x associated with $i = 2$.

$$x = \boxed{40.13}$$

(c) The mean: $\bar{x} = \frac{329.235}{8} = \boxed{41.154}$

(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, $n = 8$ and so n is even.

$$\text{median} = \frac{x_4 + x_5}{2} = \frac{40.813 + 40.96}{2}$$

So, median = $\boxed{40.8865}$.

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 $x = 53.043$. This means $i = 39$. We know $n = 45$. Determine the percentile ℓ.

$$\ell = \frac{39}{45}$$

$$\ell = 0.867$$

So, the percentile rank is $\boxed{0.867}$, or 86.7th percentile.

(b) We are given $\ell = 0.578$. 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.

$$i = (45)(0.578)$$

$$i = 26$$

Determine the x associated with $i = 26$.

$$x = \boxed{50.204}$$

(c) The mean: $\bar{x} = \frac{2214.032}{45} = \boxed{49.201}$

(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, $n = 45$ and so n is odd.

$$\text{median} = x_{(45+1)/2,} = x_{23}$$

So, median = $\boxed{49.398}$.

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 $x = 20.159$. This means $i = 1$. We know $n = 6$. Determine the percentile ℓ.

$$\ell = \frac{1}{6}$$

$$\ell = 0.167$$

So, the percentile rank is $\boxed{0.167}$, or 16.7th percentile.

(b) We are given $\ell = 0.5$. 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.

$$i = (6)(0.5)$$

$$i = 3$$

Determine the x associated with $i = 3$.

$$x = \boxed{23.376}$$

(c) The mean: $\bar{x} = \frac{146.171}{6} = \boxed{24.362}$

(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.

$$\text{median} = \frac{x_3 + x_4}{2} = \frac{23.376 + 25.837}{2}$$

So, median = $\boxed{24.6065}$.

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 $x = 90.283$. This means $i = 9$. We know $n = 16$. Determine the percentile ℓ.

$$\ell = \frac{9}{16}$$

$$\ell = 0.562$$

   So, the percentile rank is $\boxed{0.562}$, or 56.2th percentile.

   (b) We are given $\ell = 0.375$. 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.

$$i = (16)(0.375)$$

$$i = 6$$

   Determine the x associated with $i = 6$.

$$x = \boxed{70.678}$$

   (c) The mean: $\bar{x} = \frac{1468.949}{16} = \boxed{91.809}$

   (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, $n = 16$ and so n is even.

$$\text{median} = \frac{x_8 + x_9}{2} = \frac{79.842 + 90.283}{2}$$

   So, median = $\boxed{85.0625}$.

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 $x = 103.975$. This means $i = 6$. We know $n = 7$. Determine the percentile ℓ.

$$\ell = \frac{6}{7}$$

$$\ell = 0.857$$

   So, the percentile rank is $\boxed{0.857}$, or 85.7th percentile.

   (b) We are given $\ell = 0.714$. 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.

$$i = (7)(0.714)$$

$$i = 5$$

   Determine the x associated with $i = 5$.

$$x = \boxed{99.918}$$

   (c) The mean: $\bar{x} = \frac{667.737}{7} = \boxed{95.391}$

   (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, $n = 7$ and so n is odd.

$$\text{median} = x_{(7+1)/2,} = x_4$$

   So, median = $\boxed{95.276}$.

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 $x = 120.259$. This means $i = 54$. We know $n = 63$. Determine the percentile ℓ.

$$\ell = \frac{54}{63}$$

$$\ell = 0.857$$

So, the percentile rank is $\boxed{0.857}$, or 85.7th percentile.

(b) We are given $\ell = 0.698$. 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.

$$i = (63)(0.698)$$

$$i = 44$$

Determine the x associated with $i = 44$.

$$x = \boxed{117.431}$$

(c) The mean: $\bar{x} = \frac{6503.93}{63} = \boxed{103.24}$

(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, $n = 63$ and so n is odd.

$$\text{median} = x_{(63+1)/2,} = x_{32}$$

So, median = $\boxed{106.869}$.

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 $x = 27.726$. This means $i = 3$. We know $n = 7$. Determine the percentile ℓ.

$$\ell = \frac{3}{7}$$

$$\ell = 0.429$$

   So, the percentile rank is $\boxed{0.429}$, or 42.9th percentile.

   (b) We are given $\ell = 0.571$. 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.

$$i = (7)(0.571)$$

$$i = 4$$

   Determine the x associated with $i = 4$.

$$x = \boxed{29.714}$$

   (c) The mean: $\bar{x} = \frac{205.447}{7} = \boxed{29.35}$

   (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, $n = 7$ and so n is odd.

$$\text{median} = x_{(7+1)/2,} = x_4$$

   So, median = $\boxed{29.714}$.

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 $x = 44.156$. This means $i = 37$. We know $n = 48$. Determine the percentile ℓ.

$$\ell = \frac{37}{48}$$

$$\ell = 0.771$$

So, the percentile rank is $\boxed{0.771}$, or 77.1th percentile.

(b) We are given $\ell = 0.375$. 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.

$$i = (48)(0.375)$$

$$i = 18$$

Determine the x associated with $i = 18$.

$$x = \boxed{41.09}$$

(c) The mean: $\bar{x} = \frac{2037.066}{48} = \boxed{42.439}$

(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, $n = 48$ and so n is even.

$$\text{median} = \frac{x_{24} + x_{25}}{2} = \frac{41.968 + 41.979}{2}$$

So, median = $\boxed{41.9735}$.

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 $x = 150.697$. This means $i = 7$. We know $n = 9$. Determine the percentile ℓ.

$$\ell = \frac{7}{9}$$

$$\ell = 0.778$$

So, the percentile rank is $\boxed{0.778}$, or 77.8th percentile.

(b) We are given $\ell = 0.889$. 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.

$$i = (9)(0.889)$$

$$i = 8$$

Determine the x associated with $i = 8$.

$$x = \boxed{162.738}$$

(c) The mean: $\bar{x} = \frac{1211.146}{9} = \boxed{134.57}$

(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 = $\boxed{135.197}$.

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 $x = 80.239$. This means $i = 1$. We know $n = 72$. Determine the percentile ℓ.

$$\ell = \frac{1}{72}$$

$$\ell = 0.0139$$

So, the percentile rank is $\boxed{0.0139}$, or 1.39th 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.

$$i = (72)(0.444)$$

$$i = 32$$

Determine the x associated with $i = 32$.

$$x = \boxed{124.597}$$

(c) The mean: $\bar{x} = \frac{8978.226}{72} = \boxed{124.7}$

(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, $n = 72$ and so n is even.

$$\text{median} = \frac{x_{36} + x_{37}}{2} = \frac{128.164 + 128.33}{2}$$

So, median = $\boxed{128.247}$.

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 $x = 86.975$. This means $i = 3$. We know $n = 10$. Determine the percentile ℓ.

$$\ell = \frac{3}{10}$$

$$\ell = 0.3$$

So, the percentile rank is $\boxed{0.3}$, or 30th percentile.

(b) We are given $\ell = 0.4$. 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.

$$i = (10)(0.4)$$

$$i = 4$$

Determine the x associated with $i = 4$.

$$x = \boxed{88.376}$$

(c) The mean: $\bar{x} = \frac{982.643}{10} = \boxed{98.264}$

(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, $n = 10$ and so n is even.

$$\text{median} = \frac{x_5 + x_6}{2} = \frac{88.744 + 90.028}{2}$$

So, median = $\boxed{89.386}$.

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 $x = 13.209$. This means $i = 1$. We know $n = 28$. Determine the percentile ℓ.

$$\ell = \frac{1}{28}$$

$$\ell = 0.0357$$

So, the percentile rank is $\boxed{0.0357}$, or 3.57th percentile.

(b) We are given $\ell = 0.321$. 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.

$$i = (28)(0.321)$$

$$i = 9$$

Determine the x associated with $i = 9$.

$$x = \boxed{14.687}$$

(c) The mean: $\bar{x} = \frac{423.481}{28} = \boxed{15.124}$

(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, $n = 28$ and so n is even.

$$\text{median} = \frac{x_{14} + x_{15}}{2} = \frac{14.999 + 15.176}{2}$$

So, median = $\boxed{15.0875}$.

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 $x = 42.136$. This means $i = 7$. We know $n = 8$. Determine the percentile ℓ.

$$\ell = \frac{7}{8}$$

$$\ell = 0.875$$

So, the percentile rank is $\boxed{0.875}$, or 87.5th percentile.

(b) We are given $\ell = 0.125$. 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.

$$i = (8)(0.125)$$

$$i = 1$$

Determine the x associated with $i = 1$.

$$x = \boxed{40.011}$$

(c) The mean: $\bar{x} = \frac{332.219}{8} = \boxed{41.527}$

(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, $n = 8$ and so n is even.

$$\text{median} = \frac{x_4 + x_5}{2} = \frac{41.802 + 41.832}{2}$$

So, median = $\boxed{41.817}$.

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 $x = 44.723$. This means $i = 42$. We know $n = 81$. Determine the percentile ℓ.

$$\ell = \frac{42}{81}$$

$$\ell = 0.519$$

So, the percentile rank is $\boxed{0.519}$, or 51.9th percentile.

(b) We are given $\ell = 0.111$. 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.

$$i = (81)(0.111)$$

$$i = 9$$

Determine the x associated with $i = 9$.

$$x = \boxed{44.028}$$

(c) The mean: $\bar{x} = \frac{3627.606}{81} = \boxed{44.785}$

(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, $n = 81$ and so n is odd.

$$\text{median} = x_{(81+1)/2,} = x_{41}$$

So, median = $\boxed{44.723}$.

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 $x = 11.621$. This means $i = 9$. We know $n = 10$. Determine the percentile ℓ.

$$\ell = \frac{9}{10}$$

$$\ell = 0.9$$

So, the percentile rank is $\boxed{0.9}$, or 90th 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.

$$i = (10)(1)$$

$$i = 10$$

Determine the x associated with $i = 10$.

$$x = \boxed{12.786}$$

(c) The mean: $\bar{x} = \frac{108.625}{10} = \boxed{10.862}$

(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, $n = 10$ and so n is even.

$$\text{median} = \frac{x_5 + x_6}{2} = \frac{10.57 + 10.644}{2}$$

So, median = $\boxed{10.607}$.

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 $x = 127.57$. This means $i = 48$. We know $n = 56$. Determine the percentile ℓ.

$$\ell = \frac{48}{56}$$

$$\ell = 0.857$$

So, the percentile rank is $\boxed{0.857}$, or 85.7th percentile.

(b) We are given $\ell = 0.357$. 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.

$$i = (56)(0.357)$$

$$i = 20$$

Determine the x associated with $i = 20$.

$$x = \boxed{116.073}$$

(c) The mean: $\bar{x} = \frac{6651.772}{56} = \boxed{118.78}$

(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.

$$\text{median} = \frac{x_{28} + x_{29}}{2} = \frac{118.691 + 119.32}{2}$$

So, median = $\boxed{119.0055}$.

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 $x = 94.467$. This means $i = 7$. We know $n = 9$. Determine the percentile ℓ.

$$\ell = \frac{7}{9}$$

$$\ell = 0.778$$

So, the percentile rank is $\boxed{0.778}$, or 77.8th percentile.

(b) We are given $\ell = 0.667$. 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.

$$i = (9)(0.667)$$

$$i = 6$$

Determine the x associated with $i = 6$.

$$x = \boxed{94.347}$$

(c) The mean: $\bar{x} = \frac{844.654}{9} = \boxed{93.85}$

(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 = $\boxed{94.243}$.

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 $x = 37.644$. This means $i = 18$. We know $n = 48$. Determine the percentile ℓ.

$$\ell = \frac{18}{48}$$

$$\ell = 0.375$$

So, the percentile rank is $\boxed{0.375}$, or 37.5th percentile.

(b) We are given $\ell = 0.583$. 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.

$$i = (48)(0.583)$$

$$i = 28$$

Determine the x associated with $i = 28$.

$$x = \boxed{46.732}$$

(c) The mean: $\bar{x} = \frac{1989.832}{48} = \boxed{41.455}$

(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, $n = 48$ and so n is even.

$$\text{median} = \frac{x_{24} + x_{25}}{2} = \frac{42.852 + 42.903}{2}$$

So, median = $\boxed{42.8775}$.

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 $x = 126.631$. This means $i = 1$. We know $n = 7$. Determine the percentile ℓ.

$$\ell = \frac{1}{7}$$

$$\ell = 0.143$$

So, the percentile rank is $\boxed{0.143}$, or 14.3th percentile.

(b) We are given $\ell = 0.857$. 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.

$$i = (7)(0.857)$$

$$i = 6$$

Determine the x associated with $i = 6$.

$$x = \boxed{156.145}$$

(c) The mean: $\bar{x} = \frac{1029.771}{7} = \boxed{147.11}$

(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, $n = 7$ and so n is odd.

$$\text{median} = x_{(7+1)/2,} = x_4$$

So, median = $\boxed{154.937}$.

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 $x = 94.553$. This means $i = 12$. We know $n = 36$. Determine the percentile ℓ.

$$\ell = \frac{12}{36}$$

$$\ell = 0.333$$

So, the percentile rank is $\boxed{0.333}$, or 33.3th percentile.

(b) We are given $\ell = 0.194$. 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.

$$i = (36)(0.194)$$

$$i = 7$$

Determine the x associated with $i = 7$.

$$x = \boxed{94.101}$$

(c) The mean: $\bar{x} = \frac{3415.95}{36} = \boxed{94.888}$

(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, $n = 36$ and so n is even.

$$\text{median} = \frac{x_{18} + x_{19}}{2} = \frac{94.747 + 94.831}{2}$$

So, median = $\boxed{94.789}$.