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 $x = 40.535$. This means $i = 3$. We know $n = 11$. Determine the percentile ℓ.

$$\ell = \frac{3}{11}$$

$$\ell = 0.273$$

So, the percentile rank is $\boxed{0.273}$, or 27.3th percentile.

(b) We are given $\ell = 0.182$. 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.

$$i = (11)(0.182)$$

$$i = 2$$

Determine the x associated with $i = 2$.

$$x = \boxed{40.437}$$

(c) The mean: $\bar{x} = \frac{469.674}{11} = \boxed{42.698}$

(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 = $\boxed{42.309}$.

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 $x = 96.198$. This means $i = 12$. We know $n = 30$. Determine the percentile ℓ.

$$\ell = \frac{12}{30}$$

$$\ell = 0.4$$

So, the percentile rank is $\boxed{0.4}$, or 40th percentile.

(b) We are given $\ell = 0.0667$. 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.

$$i = (30)(0.0667)$$

$$i = 2$$

Determine the x associated with $i = 2$.

$$x = \boxed{82.159}$$

(c) The mean: $\bar{x} = \frac{3060.745}{30} = \boxed{102.02}$

(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.

$$\text{median} = \frac{x_{15} + x_{16}}{2} = \frac{103.694 + 105.265}{2}$$

So, median = $\boxed{104.4795}$.

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 $x = 24.707$. This means $i = 4$. We know $n = 8$. Determine the percentile ℓ.

$$\ell = \frac{4}{8}$$

$$\ell = 0.5$$

So, the percentile rank is $\boxed{0.5}$, or 50th 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 $i = 2$.

$$x = \boxed{20.239}$$

(c) The mean: $\bar{x} = \frac{205.743}{8} = \boxed{25.718}$

(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.

$$\text{median} = \frac{x_4 + x_5}{2} = \frac{24.707 + 26.576}{2}$$

So, median = $\boxed{25.6415}$.

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 $x = 41.084$. This means $i = 7$. We know $n = 40$. Determine the percentile ℓ.

$$\ell = \frac{7}{40}$$

$$\ell = 0.175$$

So, the percentile rank is $\boxed{0.175}$, or 17.5th 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.

$$i = (40)(0.75)$$

$$i = 30$$

Determine the x associated with $i = 30$.

$$x = \boxed{57.997}$$

(c) The mean: $\bar{x} = \frac{2011.571}{40} = \boxed{50.289}$

(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, $n = 40$ and so n is even.

$$\text{median} = \frac{x_{20} + x_{21}}{2} = \frac{49.535 + 49.918}{2}$$

So, median = $\boxed{49.7265}$.

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 $x = 49.368$. This means $i = 6$. We know $n = 8$. Determine the percentile ℓ.

$$\ell = \frac{6}{8}$$

$$\ell = 0.75$$

So, the percentile rank is $\boxed{0.75}$, or 75th 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 $i = 2$.

$$x = \boxed{42.342}$$

(c) The mean: $\bar{x} = \frac{370.729}{8} = \boxed{46.341}$

(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.

$$\text{median} = \frac{x_4 + x_5}{2} = \frac{45.662 + 47.342}{2}$$

So, median = $\boxed{46.502}$.

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 $x = 73.921$. This means $i = 48$. We know $n = 72$. Determine the percentile ℓ.

$$\ell = \frac{48}{72}$$

$$\ell = 0.667$$

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

(b) We are given $\ell = 0.0417$. 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.

$$i = (72)(0.0417)$$

$$i = 3$$

Determine the x associated with $i = 3$.

$$x = \boxed{60.006}$$

(c) The mean: $\bar{x} = \frac{5048.393}{72} = \boxed{70.117}$

(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.

$$\text{median} = \frac{x_{36} + x_{37}}{2} = \frac{70.836 + 70.881}{2}$$

So, median = $\boxed{70.8585}$.

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 = $\boxed{89.997}$.

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 $x = 90.922$. 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 $i = 8$.

$$x = \boxed{92.074}$$

(c) The mean: $\bar{x} = \frac{1007.578}{11} = \boxed{91.598}$

(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 = $\boxed{91.151}$.

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 $x = 117.021$. This means $i = 11$. We know $n = 24$. Determine the percentile ℓ.

$$\ell = \frac{11}{24}$$

$$\ell = 0.458$$

So, the percentile rank is $\boxed{0.458}$, or 45.8th 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.

$$i = (24)(0.125)$$

$$i = 3$$

Determine the x associated with $i = 3$.

$$x = \boxed{111.079}$$

(c) The mean: $\bar{x} = \frac{2851.072}{24} = \boxed{118.79}$

(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.

$$\text{median} = \frac{x_{12} + x_{13}}{2} = \frac{117.73 + 118.073}{2}$$

So, median = $\boxed{117.9015}$.

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 $x = 41.15$. 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 $\ell = 0.667$. 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.

$$i = (12)(0.667)$$

$$i = 8$$

   Determine the x associated with $i = 8$.

$$x = \boxed{42.53}$$

   (c) The mean: $\bar{x} = \frac{504.245}{12} = \boxed{42.02}$

   (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.

$$\text{median} = \frac{x_6 + x_7}{2} = \frac{41.15 + 42.485}{2}$$

   So, median = $\boxed{41.8175}$.

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 $x = 76.036$. This means $i = 11$. We know $n = 24$. Determine the percentile ℓ.

$$\ell = \frac{11}{24}$$

$$\ell = 0.458$$

So, the percentile rank is $\boxed{0.458}$, or 45.8th 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.

$$i = (24)(0.875)$$

$$i = 21$$

Determine the x associated with $i = 21$.

$$x = \boxed{90.661}$$

(c) The mean: $\bar{x} = \frac{1934.441}{24} = \boxed{80.602}$

(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.

$$\text{median} = \frac{x_{12} + x_{13}}{2} = \frac{76.938 + 77.888}{2}$$

So, median = $\boxed{77.413}$.

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 $x = 90.622$. 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 $i = 2$.

$$x = \boxed{90.391}$$

(c) The mean: $\bar{x} = \frac{1099.844}{12} = \boxed{91.654}$

(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.

$$\text{median} = \frac{x_6 + x_7}{2} = \frac{90.622 + 91.362}{2}$$

So, median = $\boxed{90.992}$.

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 $x = 20.601$. This means $i = 3$. We know $n = 12$. Determine the percentile ℓ.

$$\ell = \frac{3}{12}$$

$$\ell = 0.25$$

So, the percentile rank is $\boxed{0.25}$, or 25th 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.

$$i = (12)(0.75)$$

$$i = 9$$

Determine the x associated with $i = 9$.

$$x = \boxed{24.773}$$

(c) The mean: $\bar{x} = \frac{279.338}{12} = \boxed{23.278}$

(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.

$$\text{median} = \frac{x_6 + x_7}{2} = \frac{22.179 + 23.152}{2}$$

So, median = $\boxed{22.6655}$.

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 $x = 22.755$. 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 $\ell = 0.3$. 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.

$$i = (10)(0.3)$$

$$i = 3$$

Determine the x associated with $i = 3$.

$$x = \boxed{21.99}$$

(c) The mean: $\bar{x} = \frac{221.603}{10} = \boxed{22.16}$

(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.

$$\text{median} = \frac{x_5 + x_6}{2} = \frac{22.351 + 22.352}{2}$$

So, median = $\boxed{22.3515}$.

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 $x = 82.722$. This means $i = 6$. We know $n = 16$. Determine the percentile ℓ.

$$\ell = \frac{6}{16}$$

$$\ell = 0.375$$

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

$$i = (16)(0.125)$$

$$i = 2$$

Determine the x associated with $i = 2$.

$$x = \boxed{58.404}$$

(c) The mean: $\bar{x} = \frac{1585.502}{16} = \boxed{99.094}$

(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.

$$\text{median} = \frac{x_8 + x_9}{2} = \frac{95.188 + 106.464}{2}$$

So, median = $\boxed{100.826}$.

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 $x = 177.575$. 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 $\ell = 0.667$. 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.

$$i = (6)(0.667)$$

$$i = 4$$

Determine the x associated with $i = 4$.

$$x = \boxed{164.26}$$

(c) The mean: $\bar{x} = \frac{918.678}{6} = \boxed{153.11}$

(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, $n = 6$ and so n is even.

$$\text{median} = \frac{x_3 + x_4}{2} = \frac{163.935 + 164.26}{2}$$

So, median = $\boxed{164.0975}$.

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 $x = 72.729$. This means $i = 5$. We know $n = 28$. Determine the percentile ℓ.

$$\ell = \frac{5}{28}$$

$$\ell = 0.179$$

So, the percentile rank is $\boxed{0.179}$, or 17.9th percentile.

(b) We are given $\ell = 0.536$. 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.

$$i = (28)(0.536)$$

$$i = 15$$

Determine the x associated with $i = 15$.

$$x = \boxed{73.817}$$

(c) The mean: $\bar{x} = \frac{2062.044}{28} = \boxed{73.644}$

(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.

$$\text{median} = \frac{x_{14} + x_{15}}{2} = \frac{73.719 + 73.817}{2}$$

So, median = $\boxed{73.768}$.

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 $x = 60.769$. This means $i = 6$. We know $n = 8$. Determine the percentile ℓ.

$$\ell = \frac{6}{8}$$

$$\ell = 0.75$$

So, the percentile rank is $\boxed{0.75}$, or 75th 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.

$$i = (8)(0.875)$$

$$i = 7$$

Determine the x associated with $i = 7$.

$$x = \boxed{61.008}$$

(c) The mean: $\bar{x} = \frac{513.023}{8} = \boxed{64.128}$

(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.

$$\text{median} = \frac{x_4 + x_5}{2} = \frac{57.544 + 58.937}{2}$$

So, median = $\boxed{58.2405}$.

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 $x = 91.455$. This means $i = 38$. We know $n = 48$. Determine the percentile ℓ.

$$\ell = \frac{38}{48}$$

$$\ell = 0.792$$

So, the percentile rank is $\boxed{0.792}$, or 79.2th 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.

$$i = (48)(0.333)$$

$$i = 16$$

Determine the x associated with $i = 16$.

$$x = \boxed{90.558}$$

(c) The mean: $\bar{x} = \frac{4368.11}{48} = \boxed{91.002}$

(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.

$$\text{median} = \frac{x_{24} + x_{25}}{2} = \frac{90.858 + 90.867}{2}$$

So, median = $\boxed{90.8625}$.

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 $x = 23.133$. This means $i = 8$. We know $n = 9$. Determine the percentile ℓ.

$$\ell = \frac{8}{9}$$

$$\ell = 0.889$$

So, the percentile rank is $\boxed{0.889}$, or 88.9th 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 $i = 6$.

$$x = \boxed{14.225}$$

(c) The mean: $\bar{x} = \frac{143.472}{9} = \boxed{15.941}$

(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 = $\boxed{14.162}$.

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 $x = 33.969$. This means $i = 24$. We know $n = 32$. Determine the percentile ℓ.

$$\ell = \frac{24}{32}$$

$$\ell = 0.75$$

So, the percentile rank is $\boxed{0.75}$, or 75th percentile.

(b) We are given $\ell = 0.438$. 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.

$$i = (32)(0.438)$$

$$i = 14$$

Determine the x associated with $i = 14$.

$$x = \boxed{27.868}$$

(c) The mean: $\bar{x} = \frac{956.132}{32} = \boxed{29.879}$

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

$$\text{median} = \frac{x_{16} + x_{17}}{2} = \frac{28.402 + 30.474}{2}$$

So, median = $\boxed{29.438}$.

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 $x = 51.692$. This means $i = 9$. We know $n = 9$. Determine the percentile ℓ.

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

$$\ell = 1$$

So, the percentile rank is $\boxed{1}$, or 100th 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 $i = 2$.

$$x = \boxed{34.267}$$

(c) The mean: $\bar{x} = \frac{351.791}{9} = \boxed{39.088}$

(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 = $\boxed{37.428}$.

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 $x = 11.431$. This means $i = 11$. We know $n = 70$. Determine the percentile ℓ.

$$\ell = \frac{11}{70}$$

$$\ell = 0.157$$

So, the percentile rank is $\boxed{0.157}$, or 15.7th percentile.

(b) We are given $\ell = 0.214$. 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.

$$i = (70)(0.214)$$

$$i = 15$$

Determine the x associated with $i = 15$.

$$x = \boxed{11.706}$$

(c) The mean: $\bar{x} = \frac{1086.883}{70} = \boxed{15.527}$

(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, $n = 70$ and so n is even.

$$\text{median} = \frac{x_{35} + x_{36}}{2} = \frac{14.717 + 14.75}{2}$$

So, median = $\boxed{14.7335}$.

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 $x = 69.795$. 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 $i = 2$.

$$x = \boxed{54.699}$$

(c) The mean: $\bar{x} = \frac{502.48}{8} = \boxed{62.81}$

(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.

$$\text{median} = \frac{x_4 + x_5}{2} = \frac{63.148 + 67.5}{2}$$

So, median = $\boxed{65.324}$.

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 $x = 38.895$. This means $i = 54$. We know $n = 64$. Determine the percentile ℓ.

$$\ell = \frac{54}{64}$$

$$\ell = 0.844$$

   So, the percentile rank is $\boxed{0.844}$, or 84.4th percentile.

   (b) We are given $\ell = 0.766$. 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.

$$i = (64)(0.766)$$

$$i = 49$$

   Determine the x associated with $i = 49$.

$$x = \boxed{38.031}$$

   (c) The mean: $\bar{x} = \frac{2213.214}{64} = \boxed{34.581}$

   (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, $n = 64$ and so n is even.

$$\text{median} = \frac{x_{32} + x_{33}}{2} = \frac{35.453 + 35.59}{2}$$

   So, median = $\boxed{35.5215}$.

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 $x = 73.005$. This means $i = 4$. We know $n = 10$. Determine the percentile ℓ.

$$\ell = \frac{4}{10}$$

$$\ell = 0.4$$

So, the percentile rank is $\boxed{0.4}$, or 40th 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 $i = 10$.

$$x = \boxed{89.548}$$

(c) The mean: $\bar{x} = \frac{800.657}{10} = \boxed{80.066}$

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

$$\text{median} = \frac{x_5 + x_6}{2} = \frac{77.524 + 83.296}{2}$$

So, median = $\boxed{80.41}$.

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 $x = 81.691$. This means $i = 21$. We know $n = 35$. Determine the percentile ℓ.

$$\ell = \frac{21}{35}$$

$$\ell = 0.6$$

So, the percentile rank is $\boxed{0.6}$, or 60th percentile.

(b) We are given $\ell = 0.2$. 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.

$$i = (35)(0.2)$$

$$i = 7$$

Determine the x associated with $i = 7$.

$$x = \boxed{80.406}$$

(c) The mean: $\bar{x} = \frac{2853.248}{35} = \boxed{81.521}$

(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 = $\boxed{81.622}$.

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 $x = 86.061$. This means $i = 2$. We know $n = 7$. Determine the percentile ℓ.

$$\ell = \frac{2}{7}$$

$$\ell = 0.286$$

So, the percentile rank is $\boxed{0.286}$, or 28.6th 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.

$$i = (7)(1)$$

$$i = 7$$

Determine the x associated with $i = 7$.

$$x = \boxed{89.741}$$

(c) The mean: $\bar{x} = \frac{610.495}{7} = \boxed{87.214}$

(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 = $\boxed{86.982}$.

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 $x = 92.35$. This means $i = 25$. We know $n = 30$. Determine the percentile ℓ.

$$\ell = \frac{25}{30}$$

$$\ell = 0.833$$

So, the percentile rank is $\boxed{0.833}$, or 83.3th percentile.

(b) We are given $\ell = 0.7$. 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.

$$i = (30)(0.7)$$

$$i = 21$$

Determine the x associated with $i = 21$.

$$x = \boxed{84.757}$$

(c) The mean: $\bar{x} = \frac{2440.263}{30} = \boxed{81.342}$

(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.

$$\text{median} = \frac{x_{15} + x_{16}}{2} = \frac{75.745 + 80.63}{2}$$

So, median = $\boxed{78.1875}$.

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 $x = 73.549$. This means $i = 2$. We know $n = 7$. Determine the percentile ℓ.

$$\ell = \frac{2}{7}$$

$$\ell = 0.286$$

   So, the percentile rank is $\boxed{0.286}$, or 28.6th 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 $i = 4$.

$$x = \boxed{76.6}$$

   (c) The mean: $\bar{x} = \frac{533.257}{7} = \boxed{76.18}$

   (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 = $\boxed{76.6}$.

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 $x = 81.481$. This means $i = 19$. We know $n = 42$. Determine the percentile ℓ.

$$\ell = \frac{19}{42}$$

$$\ell = 0.452$$

So, the percentile rank is $\boxed{0.452}$, or 45.2th percentile.

(b) We are given $\ell = 0.929$. 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.

$$i = (42)(0.929)$$

$$i = 39$$

Determine the x associated with $i = 39$.

$$x = \boxed{81.785}$$

(c) The mean: $\bar{x} = \frac{3423.248}{42} = \boxed{81.506}$

(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.

$$\text{median} = \frac{x_{21} + x_{22}}{2} = \frac{81.518 + 81.527}{2}$$

So, median = $\boxed{81.5225}$.