Angeles City Science High School

Math 10

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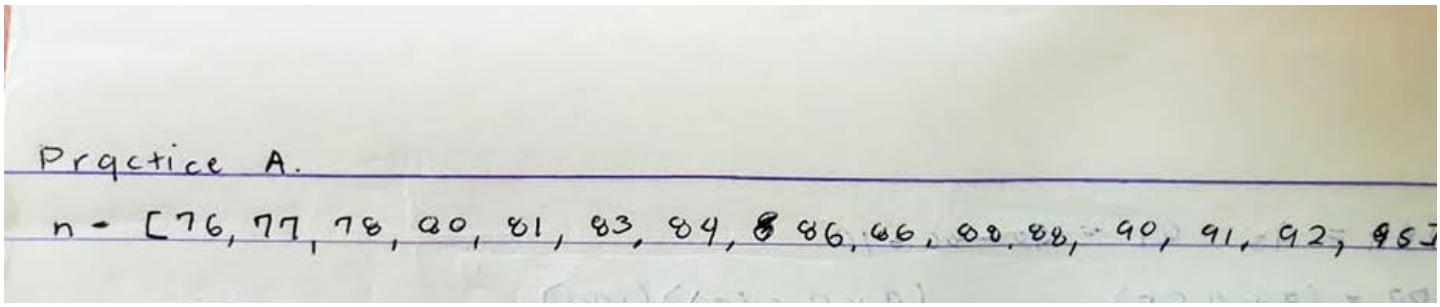

Formula:

$$Q_k = \frac{k(n+1)}{4}$$

$k = 1$, $n = 15$

$$\rightarrow Q_1 = \frac{1(15+1)}{4} \rightarrow Q_1 = \frac{1(16)}{4} = \frac{16}{4} = Q_1 = 4$$

→ 4th element is 80.

2. D_5

$k = 5$, $n = 15$

$$\rightarrow D_5 = \frac{5(15+1)}{10} = \frac{5(16)}{10} = \frac{16}{2} = 8 = D_5 = 86$$

3. P_{75}

$k = 75$, $n = 15$

$$\rightarrow P_{75} = \frac{75(15+1)}{100} = \frac{375(16)}{400} = \frac{48}{4} = 12 = P_{75} = 90$$

4. IQR = $Q_3 - Q_1 = 90 - 80 = 10$

5. PR = $\frac{(B + 0.5E)}{n} \rightarrow \frac{(9 + 0.5(2))(100)}{15}$ =

$n = 15$ $= \frac{(9+1)(100)}{15} = \frac{10(100)}{15} = \frac{1000}{15}$

→ **66.67**

B.

a. Make an array

[500, 550, 600, 1000, 1500, 2000, 3100, 3200, 4500, 5000]

1. $P_{25} = \frac{25(10+1)}{100} = \frac{25(11)}{400} = \frac{11}{4} = 2.75$

∴ Interpolation:

→ $L + d(H - L) = 550 + 0.75(600 - 550) = 550 + 37.5 =$ **587.5**

2. $D_6 = \frac{6(10+1)}{10} = \frac{3(11)}{5} = \frac{33}{5} = 6.6$

→ $L + d(H - L) = 2000 + 0.6(1100) = 2000 + 660 =$ **2660**

3. $Q_3 = \frac{3(10+1)}{4} = \frac{3(11)}{4} = \frac{33}{4} = 8.25$

→ $L + d(H - L) = 3200 + 0.25(1300) = 3200 + 325 =$ **3525**

4. IQR = $Q_3 - Q_1 = 3525 - 587.5 =$ **2937.5**

5. PR = $\frac{(B + 0.5E)(100)}{n} = \frac{(4 + 0.5(1))(100)}{10} = \frac{(4.5)(100)}{10} = 45$

→ **1500**

Practice B

A. $n = 50$

B.

1. $Q_1 = LB_{Q_1} + \left(\frac{\frac{kN}{4} - cf_b}{f_{qk}}\right) i = 59.5 + \left(\frac{12.5 - 4}{22}\right) 5$

$\rightarrow 59.5 \left(\frac{8.5}{22}\right) 5 = 59.5 + 1.932 = 61.432$

2. $D_c = 64.5 + \left(\frac{30 - 26}{19}\right) 5 = 64.5 + \left(\frac{4}{19}\right) 5$

$\rightarrow 64.5 + 1.053 = 65.533$

3. $P_{qs} = 69.5 + \left(\frac{47.5 - 45}{5}\right) 5 = 69.5 + \left(\frac{2.5}{5}\right) 5$

$\rightarrow 69.5 + 2.5 = 72$

NCAE scores	f	LB	cf
39-41	6	38.5	99
36-38	7	35.5	93
33-35	9	32.5	86
30-32	13	29.5	77
27-29	22	26.5	64
24-26	10	23.5	42
21-23	9	20.5	32
18-20	7	17.5	23
15-17	8	14.5	16
12-14	4	11.5	8
9-11	2	8.5	4
6-8	1	5.5	2
3-5	1	2.5	1

1. $Q_1 = LB_{Q_K} + \left(\frac{\frac{kN}{4} - cf_b}{f_{Q_K}} \right) i = 20.5 + \left(\frac{24.75 - 23}{9} \right) 3$

$\rightarrow 20.5 + \left(\frac{1.75}{9} \right) 3 = \boxed{21.08}$

2. $D_5 = 26.5 + \left(\frac{49.5 - 42}{22} \right) 3 = 26.5 + \left(\frac{7.5}{22} \right) 3$

$\rightarrow 26.5 + (1.02) = \boxed{27.52}$

3. $P_{75} = 29.5 + \left(\frac{74.25 - 64}{13} \right) 3 = 29.5 + \left(\frac{10.25}{13} \right) 3$

$\rightarrow 29.5 + (2.37) = \boxed{31.87}$