

# Ans to q 5

## Your IQ test result:

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**Shihab Muhtasim**

Date: October 05, 2024

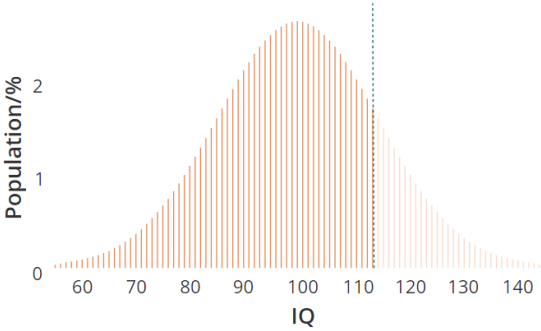
**IQ: 114**

Logical Reasoning: 91%

Numerical Reasoning: 72%

Spatial Reasoning: 80%

**Shihab Muhtasim performed better than 81,6% of all people**



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**Shihab Muhtasim**

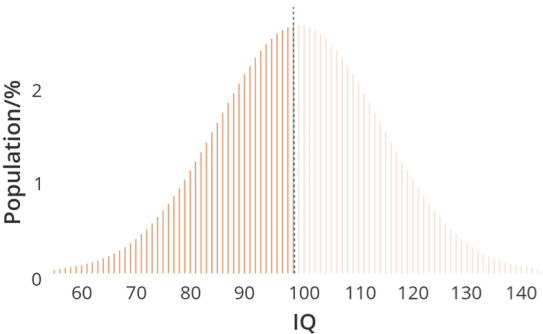
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**IQ: 99**

Logical Reasoning: 46%

Numerical Reasoning: 41%

Spatial Reasoning: 57%



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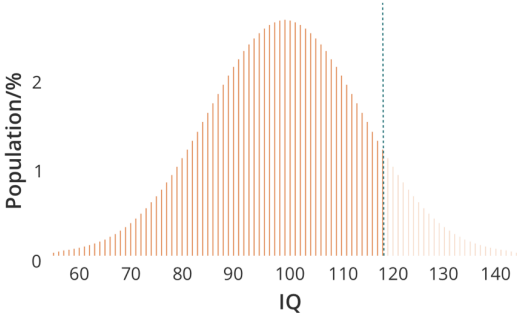
**IQ: 119**

Logical Reasoning: 82%

Numerical Reasoning: 91%

Spatial Reasoning: 93%

**Shihab Muhtasim performed better than 89,1% of all people**



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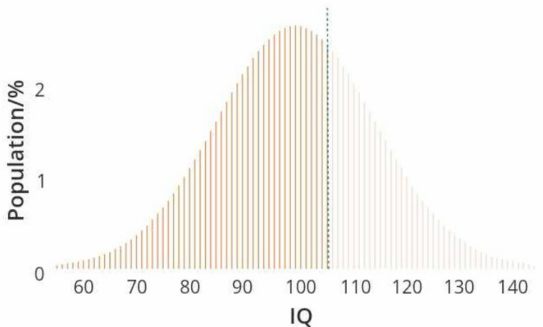
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**IQ: 106**

Logical Reasoning: 80%

Numerical Reasoning: 89%

Spatial Reasoning: 3%



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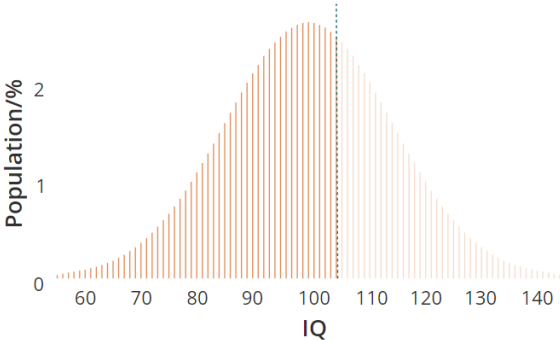
**IQ: 105**

Logical Reasoning: 64%

Numerical Reasoning: 69%

Spatial Reasoning: 57%

**Shihab Muhtasim performed better than 64,3% of all people**



**Shihab Muhtasim performed better than 64,3% of all people**

$$\textcircled{1} \text{ sample mean } \bar{x} = \frac{114 + 119 + 105 + 99 + 106}{5}$$

$$= 108.6$$

$$\textcircled{2} \text{ sample standard deviation, } s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

$$s = \sqrt{\frac{(114 - 108.6)^2 + (119 - 108.6)^2 + (105 - 108.6)^2 + (99 - 108.6)^2 + (106 - 108.6)^2}{5-1}}$$

$$= 7.89$$

Since we have 5 samples and sample standard deviation, we will use t test

Null hypothesis:  $H_0: \mu \leq 100$  [130 is exceptionally high - genius]  
 $H_1: \mu > 100$  [one tailed test]

Population mean,  $\mu_0 = 100$

Sample mean,  $\bar{x}_0 = 108.6$

Standard dev,  $s = 7.89$

Sample size,  $n = 5$

$$df = n - 1 = 5 - 1 = 4$$

$$\alpha = 5\% = 0.05$$

Using degree of freedom ( $\alpha$ ) and significance level ( $\alpha$ ) from  $t$  table we find:

$$t_{\alpha} = 2.132$$

$$\begin{aligned}
 t_{\text{stat}} &= \frac{\bar{x} - \mu_0}{\frac{s}{\sqrt{n}}} \\
 &= \frac{108.6 - 100}{\left( \frac{7.89}{\sqrt{10}} \right)} \\
 &= 3.447
 \end{aligned}$$

$$\therefore t_{\text{stat}} > t_{\text{table}}$$

$\therefore$  reject the null hypothesis

$\therefore$  Accept the alternative hypothesis.