

Lesson 5 Percentile Rank

Thursday, October 27, 2022 2:33 PM



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Essential 12 Statistics

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Percentile Rank: indicates how well a student performed in comparison to other students in the group
ie. percentage of scores less than or equal to a given score

doesn't use a % sign.

If you had a percentile rank of 65 on your last test, it means you scored higher than 65% of the students who wrote the test. Therefore, 65% of students had a lower mark than you.

$$\text{Percentile Rank} = \frac{b}{n} \times 100$$

where b is the number of raw scores below the given score and n is the total number of raw scores

Example 1

Alyssa received a mark of 89% on her exam which 150ⁿ people wrote. If 137^b people received a lower mark, determine Alyssa's percentile rank.

$$\begin{aligned} \text{Percentile Rank} &= \frac{b}{n} \times 100 \\ &= \frac{137}{150} \times 100 \\ &= 91 \end{aligned}$$

91st percentile or P_{91}

Alyssa scored better than 91% of the people
or 91% scored lower than Alyssa

Example 2

Marc received a mark of 72% on his test which 28 other people also wrote. If 18 people received a lower mark, determine Marc's percentile rank.

$$28 + \text{Marc} = 29$$

$$\text{Percentile Rank} = \frac{18}{29} \times 100$$

$$= 62^{\text{nd}}$$

or P_{62}

Example 3

The given scores are from a diving competition.

~~7.8, 9.2, 4.7, 9.1, 8.9, 7.5, 6.7, 8.1, 9.6, 5.6,~~
~~7.1, 8.1, 6.4, 9.0, 7.7, 8.2, 5.8, 6.1, 8.0, 7.3~~ } 20 scores

a.) Determine the percentile rank for the diver who scored 8.0.

$$\text{Percentile Rank} = \frac{11}{20} \times 100$$

$$= 55^{\text{th}}$$

b.) Determine the 50th percentile.

↳ median

7.7 7.8

median (7.75)

~~4.7, 5.6, 5.8, 6.1, 6.4, 6.7, 7.1, 7.3, 7.5, 7.7,~~
~~7.8, 8.0, 8.1, 8.1, 8.2, 8.9, 9.0, 9.1, 9.2, 9.6~~

Ans

1) P_{71}

2) P_{72}

3) P_{35}

b) 7.9