

WA 30.10 Percentile Rank Review

Math 30W

Name: Answers

$$PR = \frac{b}{n} \times 100$$

1. A value in the 80th percentile means that:

- a. 80% of the values are lower than the given value.
- b. 80% of the values are higher than the given value.
- c. the value is 80% of the maximum value.
- d. None of the above.

2. Out of a class of 27 students, Steven had the 3rd highest mark on his essay. What is his percentile ranking?

$$PR = \frac{b}{n} \times 100$$

$$= \frac{24}{27} \times 100$$

$$= \boxed{89\text{th}}$$

3. Bao knows he scored in the 65th percentile on a test, and that there were 375 people in total taking the test. How many people had a lower score than him?

$$PR = \frac{b}{n} \times 100$$

$$65 = \frac{b}{375} \times 100$$

$$0.65 = \frac{b}{375}$$

$$\boxed{244 \text{ people}} = b$$

4. A human resources department scores applicants for an internship based on a number of attributes. They will only interview applicants who score in the 98th percentile or higher. If they had 600 applicants, how many people will they interview?

Means we care about 2%

$$2 = \frac{b}{600} \times 100$$

$$0.02 = \frac{b}{600} \times 600$$

$$\boxed{12 = b}$$

OR

$$98 = \frac{b}{600} \times 100$$

$$0.98 = \frac{b}{600} \times 600$$

$$588 = b$$

$$600 - 588 = \boxed{12 \text{ people}}$$

5. There are 255 scores below the 70th percentile in a sample. How many total scores are in the sample?

$$70 = \frac{255}{n} \times 100$$

$$70 = \frac{25500}{n}$$

$$70n = 25500$$

$$\frac{70n}{70} = \frac{25500}{70}$$

$$\boxed{n = 364}$$

6. The lengths of a number of babies at birth were, in inches:

~~7~~
17.5, 17.5, 18, 18, 18.5, 18.5, 18.5, 19, 19.5, 19.5, 20, 20.5, 21, 21, 21.5, 22, 22, 22.5, 24

if Patricia's baby is 19 inches at birth, and the baby's length isn't included in the list above, what is its percentile ranking?

$$PR = \frac{20}{191} \times 100$$

$$PR = 35$$

19 in list plus
 Patricia's baby

8. Bettina is finishing a college certificate in early childhood education at the Saskatchewan Institute of Applied Sciences and Technology. She is investigating how much money she can expect to earn once she begins working. She has found the following statistics on early childhood educators' hourly wages.

Early childhood educators' wages, Saskatchewan							
Hourly wage	\$9.25– \$9.99	\$10.00– \$10.99	\$11.00– \$11.99	\$12.00– \$12.99	\$13.00– \$13.99	\$14.00– \$14.99	\$15.00+
No. of employees	27	29	51	38	23	15	8

a) Bettina has found a job posting for a position in a Regina preschool. The job posting says that the hourly wage will be between \$10.00 and \$10.99, based on experience. If Bettina were to get this job, what would be her percentile ranking in terms of wages?

$$PR = \frac{27}{191} \times 100$$

$$= 14\%$$

b) What is the median wage range? In what wage range is a wage in the 50th percentile? Using this information, explain the relationship between median and percentile rank.

\$11.00–11.99 is median range

$$50 = \frac{b}{191} \times 100$$

$$96\% = b \rightarrow \$11.00-11.99$$