

NCEA Level 1 Numeracy - Statistics

Exercises for comparing two sets of data using the median and range

Content

This resource supports the teaching and learning of using the median and range to compare two or more sets of data. The sequence is suitable for learners in any context which requires comparison of sets of data and also where tutors are gathering naturally occurring evidence for the achievement of the NCEA Level 1 Numeracy Unit Standard 26626.

Alignment

The content aligns with Step 4/5 of the *Reason Statistically* strand of the Learning Progressions, in particular the *Preparing Data for Analysis* and *Analysing Data for Interpretation* Progressions.

Intent

Learners will complete the exercises below in order to consolidate what they learnt in the teaching and learning sequence *Calculate the median and range for a set of data and compare the two sets of data using the median and range*.

Exercise 1

Steven Adams is the New Zealander playing in the NBA (National Basketball Association) in North America. Below are the points he scored per game in the months of March 2015 and March 2016 in his regular season games. Calculate the median and the range of each set of data. Did he improve between March 2015 and March 2016?

Points scored by Steven Adams in regular season games in March 2016

6, 3, 14, 9, 8, 10, 13, 5, 12, 11, 8, 14, 9, 10, 7, 13

Points scored by Steven Adams in regular season games in March 2015

13, 5, 4, 16, 10, 12, 14, 15, 14, 3, 2, 6

Exercise 2

Below are the hourly rates of pay for part-time work by males and females in a group of foundation-level learners. Calculate the median and the range of each set of data. Which group has the highest pay?

Hourly rate of pay for females in a group of foundation-level learners

\$15.25, \$16.50, \$15.25, \$20, \$16, \$17.50, \$16.25, \$15.25, \$16.50

Hourly rate of pay for males in a group of foundation-level learners

\$20, \$23, \$16, \$18.50, \$15.25, \$18, \$19, \$25, \$16.50, \$23.25, \$18.50, \$25

Answers to Exercise 1

Points scored by Steven Adams in regular season games in March 2016 in order from smallest to largest:

3, 5, 6, 7, 8, 8, 9, 9, 10, 10, 11, 12, 13, 13, 14, 14

Number of values is 16. Range is 11. Median is the $8\frac{1}{2}$ th value, which is $9\frac{1}{2}$ points scored.

Points scored by Steven Adams in regular season games in March 2015 in order from smallest to largest:

2, 3, 4, 5, 6, 10, 12, 13, 14, 14, 15, 16

Number of values is 12. Range is 14. Median is the $6\frac{1}{2}$ th value, which is 11 points scored.

Discussion

The lower median for March 2016 indicates Steven Adams got lower scores for a greater proportion of games in March 2016 compared to March 2015, so his score did not improve. However, he scored a greater range of points in March 2015 than in March 2016, so perhaps his play became less variable. Also he played fewer games in 2015.

Answers to Exercise 2

Hourly rate of pay for females in a group of foundation-level learners in order from smallest to largest:

\$15.25, \$15.25, \$15.25, \$16, \$16.25, \$16.50, \$16.50, \$17.50, \$20

Number of values is 9. Range is \$4.75. Median is the 5th value, which is \$16.25.

Hourly rate of pay for males in a group of foundation-level learners in order from smallest to largest:

\$15.25, \$16, \$16.50, \$18, \$18.50, \$18.50, \$19, \$20, \$23, \$23.25, \$25, \$25

Number of values is 12. Range is \$9.75. Median is the $6\frac{1}{2}$ th value, which is \$18.75.

Discussion

The median indicates that the hourly rate of pay in the group of foundation-level learners is higher for males than for females. The range of hourly rates is also higher, which supports the view that males can earn a higher hourly rate than women.