

Spearman's rank correlation coefficient



We are going to calculate which pair of students is statistically the most compatible ...

... or who shares a similar taste in music, at least!

The class will select and listen to six different pieces of music for you to individually rank in order of preference.

You will then compare your answers with a partner, using Spearman's rank correlation coefficient.

© www.teachitmaths.co.uk 2012

16855

1

Spearman's rank correlation coefficient



Step one

As a class, choose six pieces of music and have them ready to play.

You could use a CD or MP3 player, or look on the internet (e.g. YouTube) for some music videos.

© www.teachitmaths.co.uk 2012

16855

2

Spearman's rank correlation coefficient



Step two

Copy the table below.

Listen to all six pieces of music and then rank them in order of preference: 1 (favourite) to 6 (least favourite). Do this independently so you aren't influenced by others.

Music	Song 1	Song 2	Song 3	Song 4	Song 5	Song 6
My rankings						

© www.teachitmaths.co.uk 2012

16855

3

Spearman's rank correlation coefficient



Step three

Add three more rows to your table, as below. With a partner, complete the table to compare how you have ranked the music.

Music	Song 1	Song 2	Song 3	Song 4	Song 5	Song 6
My rankings						
My partner's rankings						
Difference in rank, d						
Square of difference, d ²						

© www.teachitmaths.co.uk 2012

16855

4

Spearman's rank correlation coefficient



Step four

Determine the extent to which your ranks correlate, using the following formula:

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

Where:

d² is taken from your table

n = 6 (as you have ranked 6 pieces of music).

© www.teachitmaths.co.uk 2012

16855

5

Spearman's rank correlation coefficient



What value shows full correlation? $r_s = 1$

Which pair in our class is the most compatible?

What value shows opposite correlation? $r_s = -1$

Which pair in our class is the least compatible?

What value shows no correlation? $r_s = 0$

Now change partners to see if you can find someone more compatible.

© www.teachitmaths.co.uk 2012

16855

6