EN00633_**Movie preferences and the correlation coefficient**

### Step 1: Rank the movies

Decide who is “Partner 1” and who is “Partner 2”.

On page 3 of this exercise is a list of movies. You and your partner should separately rank the movies according to how interested you would be in watching them. Use “1” for the movie you would most watch to see and “10” for the movie you would least like to watch. Only one movie should be ranked “1”, only one should be “2”, etc. (If you don’t like watching movies, just pretend they are books that you could read).

* If you are Partner 1, write your responses under “Partner 1’s rankings.”
* If you are Partner 2, write your responses under “Partner 2’s rankings.”

You should write your rankings on your sheet, and your partner should write on his/her own sheet.

### Step 2: Plot your data in a scatterplot

Show each other your rankings, and copy your partner’s rankings into the appropriate column on page 3. Then plot your rankings against your partner’s rankings.

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12

10

**Partner 2’s rankings**

8

6

4

2

1 2 3 4 5 6 7 8 9 10 11 12

#### Partner 1’s rankings

# **Step 3**

Take a wild guess: what do you think the correlation is between your movie preferences and those of your partner?

Write your guess here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

# **Step 4**

* To calculate the correlation coefficient, you first convert each of your rankings to z-scores. Since the math is tedious and you’ve already had experience calculating standard deviations and z-scores, I used a computer program to calculate the mean, the standard deviation, and the z-score for each ranking (below). I could do this because I knew that your responses would be 1 through 10.
* For each movie, write the z-score for your ranking and for your partner’s ranking in the appropriate column on page 3.
* For each movie, calculate the products ***(by multiplying them)*** of your z-scores and your partner’s z-scores.
* After you have multiplied, ***sum all 10 of the products together***.
* ***Divide the sum*** of the products by 9 (n-1).

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| **Ranking** | **z-score** |
| 1 | -1.49 |
| 2 | -1.16 |
| 3 | -.83 |
| 4 | -.50 |
| 5 | -.17 |
| 6 | .17 |
| 7 | .50 |
| 8 | .83 |
| 9 | 1.16 |
| 10 | 1.49 |

Mean: 5.5

SD: 3

|  |  |  |  |  |  |
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| Movie | **Partner 1’s ranking** | **Partner 2’s ranking** | **Partner 1’s ranking as a z-score** | **Partner 2’s ranking as a z-score** | **Product of z-scores (multiplication)** |
| The Matrix |  |  |  |  |  |
| Forrest Gump |  |  |  |  |  |
| The Sixth Sense |  |  |  |  |  |
| Saving Private Ryan |  |  |  |  |  |
| Lincoln |  |  |  |  |  |
| Good Will Hunting |  |  |  |  |  |
| The Fellowship of the Ring |  |  |  |  |  |
| Inception |  |  |  |  |  |
| Avatar |  |  |  |  |  |
| Titanic |  |  |  |  |  |

Sum of all z-score products: \_\_\_\_\_\_\_\_\_\_\_\_

Final step: Find the average of the products by dividing by 9 (which is n-1) r=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_