

Chapter 10 Counting methods: **Assignment**

Student name:

- 1** Ten students are to be seated in a row of ten seats. There are four boys and six girls.
 - a** Find the number of ways in which they can be seated:
 - i** if there are no restrictions
 - ii** if the boys must sit together and the girls must sit together
 - iii** if the boys must sit together.
 - b** If the students are able to sit anywhere, find the probability that:
 - i** the boys will sit together
 - ii** there will be a boy at each end of the row
 - iii** a boy named Matthew and a girl named Helene are **not** sitting together.

- 2**
 - a** Suppose that there are three people at a party. If each person shakes hands with each other person once, how many handshakes are there?
 - b** Suppose that there are four people at a party. If each person shakes hands with each other person once, how many handshakes are there?
 - c** Suppose that there are five people at a party. If each person shakes hands with each other person once, how many handshakes are there?
 - d** Suppose that there are n people at a party. If each person shakes hands with each other person once, how many handshakes are there?
 - e** Suppose that there are 45 handshakes. How many people are there at the party?

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Answers

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| 1 | a | i | 3 628 800 | ii | 34 560 | iii | 120 960 |
| | b | i | $\frac{1}{30}$ | ii | $\frac{2}{15}$ | iii | $\frac{4}{5}$ |
| 2 | a | | 3 | b | 6 | c | 10 |
| | d | | $\frac{n(n-1)}{2}$ | e | 10 | | |