Year 11 Mathematics Specialist

2018 Revision Assignment 1

**Take Home**

***Instructions:*** *to be completed at home, Calculators are permitted.*

Time Allocation: 1 week, due \_\_\_/\_\_\_/2018 Total Marks: marks

1. (5 marks: 3,2)

80 students were asked in a survey if they had previously broken their leg and/or broken their arm. Information from the survey indicated that 40% of students had broken arms, one quarter of those surveyed had suffered broken legs and 40% had not previously broken an arm of leg. How many students had:

1. Broken an arm and a leg?
2. Broken an arm, but not a leg
3. (12 marks: 1, 3, 2, 3, 3)

A committee of 9 people are to be selected from 10 Labor, 8 Liberal and 5 Green politicians. How many different ways can the committee be selected if:

1. There are no restriction
2. All three political parties are equally represented
3. There are two Green representatives
4. The liberal representatives are in the majority
5. A husband and wife pair, Alex and Alice, cannot be in the same committee
6. (7 marks: 1, 2, 1, 3)

Particle P starts moving from the point with the position vector 3**i**+5**j** meters with a velocity 2**i**-3**j** meters per second.

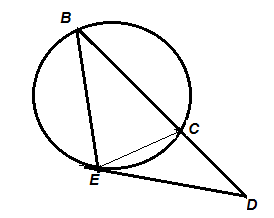
1. Determine the position vector of P after 3 seconds.
2. Find the distance from P to the point with the position vector -2**i**+**j** after 3 seconds
3. Determine the position vector of P after *t* seconds
4. Find when P is the closest to the origin and state this distance
5. (3 marks)

Expand and simplify

1. (**m**+**n**)**.**(**m**+**n**)
2. (**c**+**d**)**.**(**c**-**d**)
3. (**m**-3**n**)**.**(2**m**-**n**)
4. (5 marks)

The points B, C and E lie on the same circle. The chord BC extended meets the tangent to the circle at E at point D.

1. Prove the



1. BD is 20cm long and the point C divides BD in the ratio 3:2. Hence, find the length of DE.
2. (8 Marks: 2, 1, 1, 4)

Given that **,** find:

1. The unit vector parallel to
2. A vector that is parallel to **,** but with a magnitude of 5
3. in terms of where and