**SAMPLE MEANS**

**Extended investigation Part 1:** **Preparation activity**

**Solutions**

**Task One Questions**

**1**

|  |
| --- |
| Solution |
| The value varies between samples. |

**2(a)**

|  |
| --- |
| Solution |
|  |

**2(b)**

|  |
| --- |
| Solution |
| Answers will vary; however, the mean of the sample means should be similar to the population mean. |

**3**

|  |
| --- |
| Solution |
| The value varies between samples. |

**4(a)**

|  |
| --- |
| Solution |
|  |

**4(b)**

|  |
| --- |
| Solution |
| The standard deviation of the sample means is less than the population standard deviation because there is less variability amongst the sample means due to the sample means being more clustered around  than the population values are.  The larger the sample size, the more clustered the sample means are about the mean; consequently, the larger the sample size, the smaller the standard deviation of the sample means. |

**5**

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| --- |
| Solution |
| Answers will vary; however, approximately 95% of the confidence intervals should contain the population mean. |

**6**

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| --- |
| Solution |
| For large values of  the distribution of the sample means is approximately normal. |

**7**

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| Solution |
| Answers will vary; however, the mean of  should be close to zero and the standard deviation close to one. |

**8**

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| --- |
| Solution |
| For large values of  the distribution of  is approximately normal. |

**9**

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| --- |
| Solution |
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**10**

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| --- |
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**11**

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| --- |
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**Task Two Questions**

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|  |
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