Part 5.4 Answers

1. **Type of claim**: No Comparison
   Margin of error: $\frac{1}{\sqrt{n}} = \frac{1}{\sqrt{8000}} = 0.0112$ (3sf) = 1.12%
   Confidence interval: 53% ± 1.12% = (51.88%, 54.12%)
   CI Interpretation: I am fairy sure that the percentage of New Zealanders who think Te Reo Māori should be core primary school subject is somewhere between 51.88% and 54.12%
   Judgement: The percentage of New Zealanders who think Te Reo Māori should be core primary school subject could be as low as 51.88% and so this confidence interval does support a claim of over 50% as implied by the "more than half" statement.

2. **Type of claim**: Comparison within 1 group
   Margin of error: $2 \times \frac{1}{\sqrt{n}} = 2 \times \frac{1}{\sqrt{800}} = 0.0707$ (3sf) = 7.07%
   Confidence interval: 5% ± 7.07% = (-2.07%, 12.07%)
   CI Interpretation: It is a fairly safe bet the percentage of businesses that store backups in the cloud is somewhere between 2.07 percentage points lower and 12.07 percentage points higher than the percentage of businesses that store backups on physical media.
   Judgement: This confidence interval doesn't support the claim that More businesses store backups in the cloud than use physical media (disk to tape, removable, tape) combined than because zero is contained within the confidence interval.

3. **Type of claim**: Comparison between 2 groups
   Margin of error: $1.5 \times \frac{1}{2}\left(\frac{1}{\sqrt{n_1}} + \frac{1}{\sqrt{n_2}}\right) = 1.5 \times \frac{1}{2}\left(\frac{1}{\sqrt{503}} + \frac{1}{\sqrt{478}}\right) = 0.0677$ (3sf) = 6.77%
   Confidence interval: 8% ± 6.77% = (1.23%, 14.77%)
   CI Interpretation: It is a fairly safe bet the percentage of male millennials interested in investing in cryptocurrencies is somewhere between 1.23 percentage points higher and 14.77 percentage points higher than the percentage of male gen xers interested in investing in cryptocurrencies.
   Judgement: This confidence interval does support the claim that Male Millennials more interested in investing in crypto currency than male Gen Xers because the confidence interval is entirely positive.

4. **Type of claim**: Comparison within 1 group
   Margin of error: $2 \times \frac{1}{\sqrt{n}} = 2 \times \frac{1}{\sqrt{1007}} = 0.0630$ (3sf) = 6.30%
   Confidence interval: 1% ± 6.3% = (-5.3%, 7.3%)
   CI Interpretation: It is a fairly safe bet the percentage of voters that support National is somewhere between 5.3 percentage points lower and 6.3 percentage points higher than the percentage of voters that support Labour.
   Judgement: This confidence interval doesn't support the claim that National has more support than Labour because zero is contained within the confidence interval.

5. **Type of claim**: Comparison between 2 groups
   Margin of error: $1.5 \times \frac{1}{2}\left(\frac{1}{\sqrt{n_1}} + \frac{1}{\sqrt{n_2}}\right) = 1.5 \times \frac{1}{2}\left(\frac{1}{\sqrt{1003}} + \frac{1}{\sqrt{1407}}\right) = 0.0437$ (3sf) = 4.37%
   Confidence interval: 1% ± 4.37% = (-3.37%, 5.37%)
   CI Interpretation: It is a fairly safe bet the percentage of people who supported impeaching Nixon in 1974 is somewhere between 3.37 percentage points lower and 5.37 percentage points higher than the percentage of people who support impeaching Trump in 2018.
   Judgement: This confidence interval doesn't support the claim that there was more support for impeaching Nixon in 1974 than there is for impeaching Trump in 2018 because zero is contained within the confidence interval.

6. **Type of claim**: No Comparison
   Margin of error: $\frac{1}{\sqrt{n}} = \frac{1}{\sqrt{4594}} = 0.0148$ (3sf) = 1.48%
   Confidence interval: 54% ± 1.48% = (52.52%, 55.48%)
   CI Interpretation: I am fairy sure that the percentage of Facebook users aged 18 and older who say they have adjusted their privacy settings in the past 12 months is somewhere between 52.52% and 55.48%
   Judgement: The percentage of Facebook users aged 18 and older who say they have adjusted their privacy settings in the past 12 months could be as low as 52.52%, and so this confidence interval does support a claim of over 50% as implied by the "just over half" statement.