Part 5.2 Answers

1. **Margin of Error**: $2 \times \frac{1}{\sqrt{n}} = 2 \times \frac{1}{\sqrt{300}} = 0.115$ (3sf) = 11.5%
   Construct the confidence interval: 9% ± 11.5% = (-2.5%, 20.5%)
   Interpret what this Means: We can say, with 95% confidence, the percentage of businesses which expect their activity to increase is somewhere between **2.5** percentage points **lower** and **20.5** percentage points **higher** than the percentage of businesses which expect their activity to decrease.
   Make a Judgement: This confidence interval **does not** support the claim that a higher percentage of businesses expect their activity to increase than those that expect their activity to decrease because **zero is contained within the confidence interval**.

2. **Margin of Error**: $2 \times \frac{1}{\sqrt{n}} = 2 \times \frac{1}{\sqrt{1000}} = 0.0632$ (3sf) = 6.32%
   Construct the confidence interval: 7% ± 6.32% = (0.68%, 13.32%)
   Interpret what this Means: We can be fairly sure the percentage of **people who support national** is somewhere between **0.68** percentage points **higher** and **13.32** percentage points **higher** than the percentage of **people who support labour.**
   Make a Judgement: This confidence interval **does** support the claim that a higher percentage of **people support national** than **labour** because **the confidence interval is entirely positive**.

3. **Margin of Error**: $2 \times \frac{1}{\sqrt{n}} = 2 \times \frac{1}{\sqrt{2205}} = 0.0426$ (3sf) = 4.26%
   Construct the confidence interval: 8% ± 4.26% = (3.74%, 12.26%)
   Interpret what this Means: It is a fairly safe bet the percentage of **people who prefer Sean Connery as James Bond** is somewhere between **3.74** percentage points **higher** and **12.26** percentage points **higher** than the percentage of **people who prefer Daniel Craig as James Bond.**
   Make a Judgement: This confidence interval **does** support the claim that **more people prefer Sean Connery as James Bond** than **Daniel Craig** than because **the confidence interval is entirely positive**.

4. **Margin of Error**: $2 \times \frac{1}{\sqrt{n}} = 2 \times \frac{1}{\sqrt{2881}} = 0.0373$ (3sf) = 3.73%
   Construct the confidence interval: 4% ± 3.73% = (0.27%, 7.73%)
   Interpret what this Means: It is a fairly safe bet the percentage of people who prefer Prisoner of Azkaban is somewhere between 0.27 percentage points higher and 7.73 percentage points higher than the percentage of people who prefer the Deathly Hallows as their favourite Harry Potter Film.
   Make a Judgement: This confidence interval does support the claim that more people prefer The Prisoner of Azkaban than The Deathly Hallows when looking at Harry Potter films because the confidence interval is entirely positive.