AP Stats Chapter 10 Study Sheet

Lesson	10.1 – Difference of Proportions	10.2 – Difference of Means	10.3 – Mean Difference
Symbol for parameter (population)	$p_1 - p_2$ → True diff. in proportions	$\mu_1 - \mu_2$ → True difference in means	μ_{diff} → True mean difference
Symbol for statistic (sample)	$\hat{p}_1 - \hat{p}_2$	$\bar{x}_1 - \bar{x}_2$	$\bar{x}_{diff}$
Name the procedure	Two Sample Z _ for $p_1 - p_2$	Two Sample t _ for $\mu_1 - \mu_2$	One Sample t _ for μ_{diff}
Conditions	Random 10%. Normals $n_1 p_1$ $n_2 p_2$ $n_1(1-p_1)$ $n_2(1-p_2) \geq 10$	① Pop. is Normal ② $n \geq 30$ CLT ③ No strong skew or outliers *True for BOTH groups	① Pop is Normal ② $n \geq 30$ CLT ③ No strong skew or outliers. *Only needed for differences.
Formula for mean of the sampling distribution	$\mu_{\hat{p}_1 - \hat{p}_2} = p_1 - p_2$	$\mu_{\bar{x}_1 - \bar{x}_2} = \mu_1 - \mu_2$	$\mu_{\bar{x}_{diff}} = \mu_{diff}$
Formula for standard deviation of the sampling distribution	$\sigma_{\hat{p}_1 - \hat{p}_2} = \sqrt{\frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2}}$	$\sigma_{\bar{x}_1 - \bar{x}_2} = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$	$\sigma_{\bar{x}_{diff}} = \frac{s_{diff}}{\sqrt{n}}$
Formulas for Confidence Intervals	$(\hat{p}_1 - \hat{p}_2) \pm z^* \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$	$(\bar{x}_1 - \bar{x}_2) \pm t^* \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$	$\bar{x}_{diff} \pm t^* \frac{s_{diff}}{\sqrt{n}}$
Formulas for Significance Tests	$z = \frac{(\hat{p}_1 - \hat{p}_2) - (p_1 - p_2)}{\sqrt{\frac{\hat{p}_c(1-\hat{p}_c)}{n_1} + \frac{\hat{p}_c(1-\hat{p}_c)}{n_2}}}$	$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$	$t = \frac{\bar{x}_{diff} - \mu_{diff}}{\frac{s_{diff}}{\sqrt{n}}}$
How to find P-value	Table A or normcdf	Table B or tcdf	Table B or tcdf