$V_{cc} = 8V$
$I_c = 10mA$
$V_{RE} = 1V$

NPN	PNP
$V_c = 2-8V$	$V_c = 0-6V$

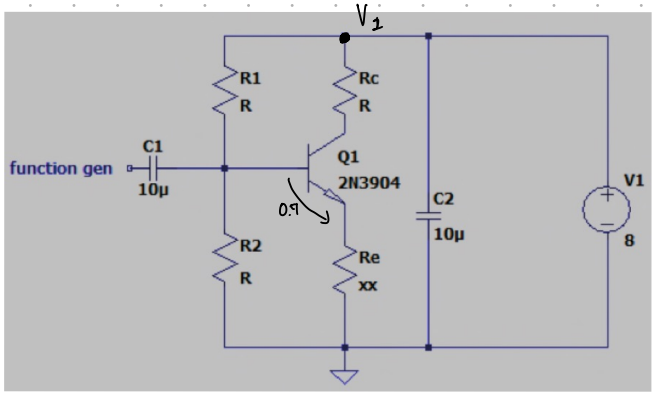
Emitter and Collectors currents are very close to equal.

Base current is small compared to collector and emitter current

$\alpha = \frac{\beta}{\beta+1}$, $\beta = \frac{\alpha}{1-\alpha}$

$\beta = 100$
$\alpha = 0.99$

$\alpha I_c = I_e$
$\beta I_b = I_c$



1) $I_c = I_e = 10mA$
$V_{RE} = 1V$

$V_{RE} = I_e \cdot R_E$

$R_E = \frac{V_{RE}}{I_E}$

$R_E = \frac{1}{10 \times 10^{-3}}$

$\boxed{R_E = 100\ \Omega}$

2) $V_{CNPN} = 5V$
$V_1 = 8V$
$I_c = 10mA$

$V_1 - V_{RC} = V_{CNPN}$
$8 - V_{RC} = 5V$
$V_{RC} = 3V$

$R_C = \frac{V_{RC}}{I_C}$

$R_C = \frac{3V}{10 \times 10^{-3}}$

$\boxed{R_C = 300\ \Omega}$

NPN

3) $I_c = \beta I_b$

$I_B = \frac{I_c}{\beta}$

$I_B = \frac{10 \cdot 10^{-3}}{100}$

$I_B = 0.1mA$

$I_{R1} = I_{R2} = 10 \cdot I_B$
$\simeq 10\,(0.1m)$
$I_{R1,R2} = 1mA$

$\frac{V_1 - 0}{R_1 + R_2} = 0.001$

$R_1 + R_2 = \frac{8}{0.001}$

$\boxed{R_1 + R_2 = 8000\ \Omega}$

4) $V_b = ?$
$V_{rc} = 1V$
$V_{eb} = 0.7$

$V_b = V_{eb} + V_{RE}$

$V_b = 0.7 + 1$

$\boxed{V_b = 1.7V}$

5) Using voltage divider equation

$\boxed{V_b = V_{cc}\left(\frac{R_2}{R_1+R_2}\right)}$

6) $V_b = V_{cc}\left(\frac{R_2}{R_1+R_2}\right)$

$1.7 = 8\left(\frac{R_2}{R_1+R_2}\right)$

$\frac{1.7}{8} = \frac{R_2}{R_1+R_2}$

$\left(\frac{1.7}{8}\right)(R_1+R_2) = R_2$

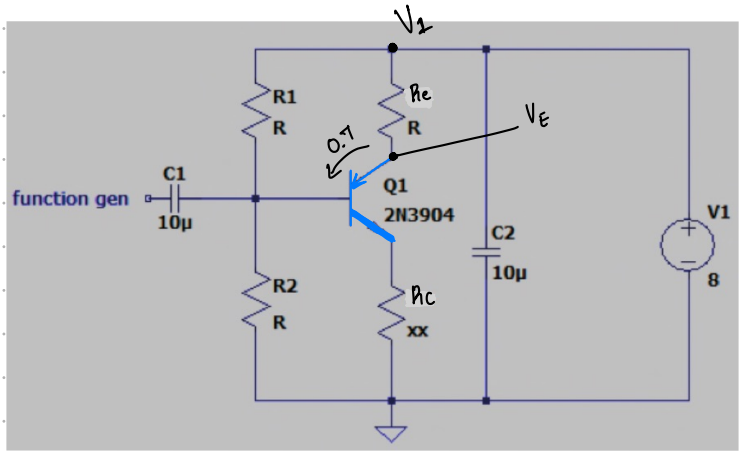
$\frac{1.7}{8}(8000) = R_2$

$\boxed{R_2 = 1700\ \Omega}$

$R_1 + R_2 = 8000$
$R_1 + 1700 = 8000$

$\boxed{R_1 = 6300\ \Omega}$

PNP



1) $R_E = \frac{V_{RE}}{I_E} = \frac{1}{10\times10^{-3}} = \boxed{100}$

2) $V_{CPNP} = 3V$

$I_C = 10mA$ $\quad R_C = \frac{3V}{10\cdot10^{-3}}$

$V_{RC} = V_{CPNP}$ $\quad \boxed{R_C = 300\ \Omega}$

3) $I_C = \beta I_b$

$I_B = \frac{I_c}{\beta}$

$I_B = \frac{10\cdot10^{-3}}{100}$

$I_B = 0.1mA$

$I_{R_1} = I_{R_2} = 10 \cdot I_B$

$\simeq 10\,(0.1m)$

$I_{R1,R2} = 1mA$

$\frac{V_1 - 0}{R_1+R_2} = 0.001$

$R_1+R_2 = \frac{8}{0.001}$

$\boxed{R_1+R_2 = 8000\ \Omega}$

4) $V_b = ?$

$V_{eb} = 0.7$

$V_E = ?$

$V_E = V_1 - V_{RE}$

$V_E = 8 - 1$

$V_E = 7V$

$V_b = V_E - V_{eb}$

$V_b = 7 - 0.7$

$\boxed{V_b = 6.3\ V}$

5) Using voltage divider equation

$$\boxed{V_b = V_{cc}\left(\frac{R_2}{R_1+R_2}\right)}$$

6) $V_b = V_{cc}\left(\frac{R_2}{R_1+R_2}\right)$

$6.3 = 8\left(\frac{R_2}{R_1+R_2}\right)$

$\frac{6.3}{8}(R_1+R_2) = R_2$

$R_2 = \frac{6.3}{8}(8000)$

$\boxed{R_2 = 6300\ \Omega}$

$R_1+R_2 = 8000$

$R_1 + 6300 = 800$

$\boxed{R_1 = 1700\ \Omega}$