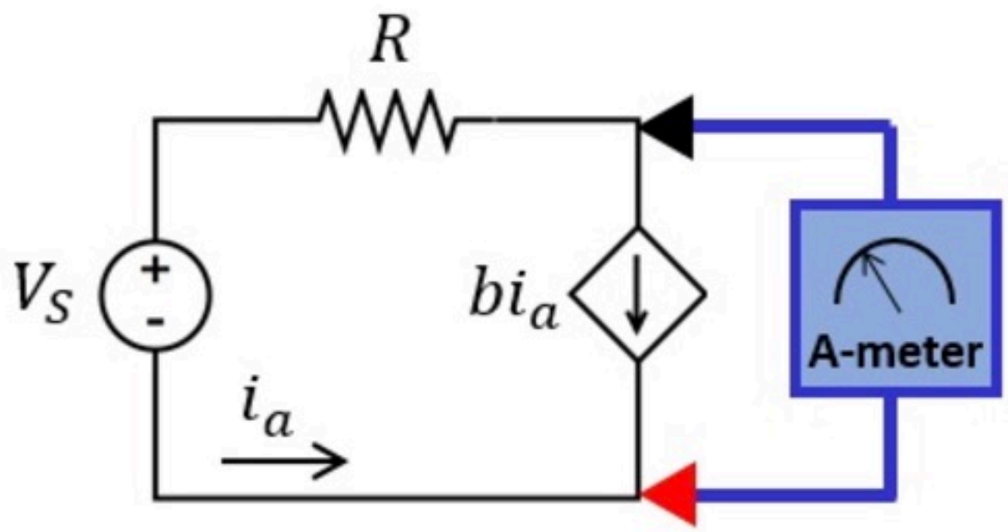
Basic analysis 014

No more attempts left.

What is the reading *X* from the ammeter?

What would be the reading *Y* if we replaced the ammeter by a volt-meter?



Given Variables:

Vs : 8 V

R : 4 ohm

b : 2 A/A

Calculate the following:

X (A) :

Y (V) :

> Hint: Ammeters and volt meters behave as short and open circuits respectively. Trust the math.

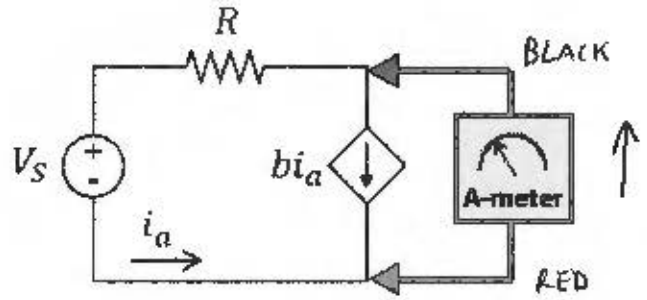
(a) What is the reading *X* from the ammeter?

(b) What would be the reading *Y* if we replaced the ammeter by a volt-meter?

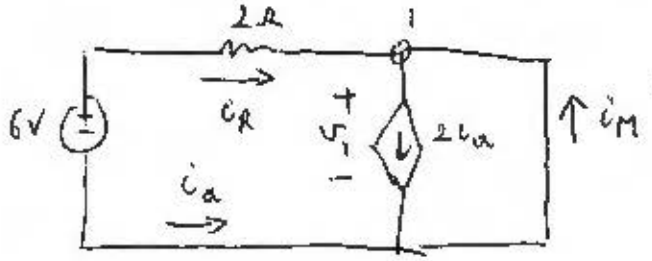
$V_S = 6\,V$

$R = 2\,\Omega$

$b = 2\,A/A$



(a)



AMMETER EQUIVALENT TO A SHORT

$\Rightarrow v_1 = 0V$

$\Rightarrow i_R = \frac{6 - v_1}{R} = \frac{6}{2} = 3A$

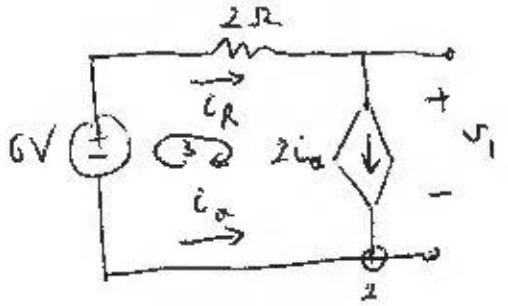
$\Rightarrow i_a = -i_R = -3A$

KCL @ 1 : $i_R + i_M = 2i_a$

$i_M = 2i_a - i_R = 3i_a = -9$

$\boxed{X = -9A}$

(b)



V-METER EQUIVALENT TO AN OPEN

KCL @ 2 : $i_a + 2i_a = 0 \Rightarrow 3i_a = 0 \Rightarrow i_a = 0$

$\Rightarrow i_R = 0$

KVL 3 : $6V = i_R \cdot 2 + v_1 \Rightarrow v_1 = 6V$

$\boxed{Y = 6V}$