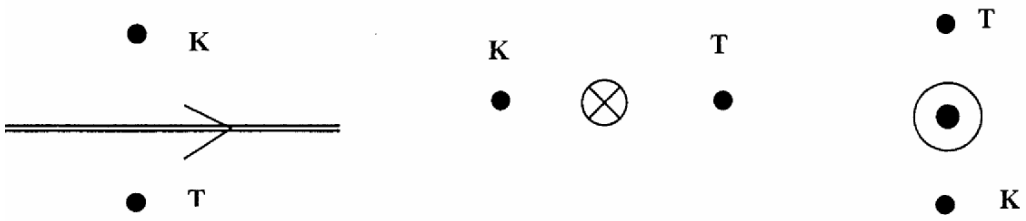
1. What is the magnetic field at point 50 mm from a wire carrying a current of 3 A?
(Answer: $1.2 \times 10^{-5} T$)

2. A circular coil of radius 40 mm consists of 250 turns of wire in which the current is 20mA . What is the magnetic field in the center of the coil?
(Answer : $0.785 \times 10^{-4} T$)

3. A solenoid 0.5m long has 2000 turns. The magnetic flux density at the center of the solenoid is 0.08T. What is the current in the solenoid?
(Answer: 16A)

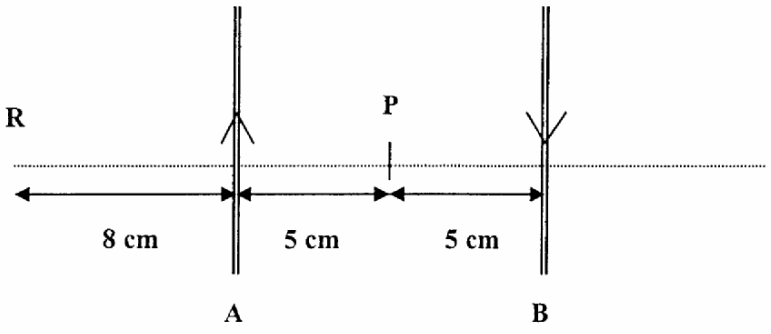
4. A long straight wire carries a current as shown. Sketch and identify the direction of magnetic field at point K and T, for each case.
(**hint**: $+k$ = outside of paper, $-k$ = inside of paper)



(Answer : K ($+k$) , T ($-k$) , (Answer : K (+j) , T (-j)) , (Answer : K(+i),T (-i))

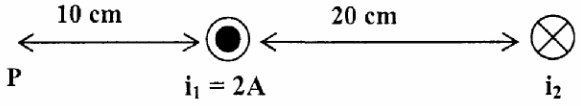
5. Two long and fixed parallel wires, A and B , are 10cm apart in air and carry currents of 40 and 20 A, respectively, in opposite directions as shown in figure below. Determine the resultant magnetic flux density

(a) At point P
(b) At point R

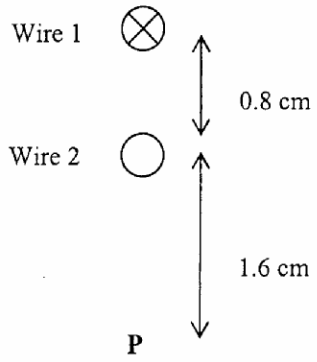


(Answer: 2.4 x 10^{-5} T , inside of paper , 7.8 x 10^{-5} T , outside of paper)

6. Figure below shows the cross section of two long straight wires carrying currents of i_1 and i_2 respectively. If the resultant magnetic fields at point P is zero, find the value of i_2.
(Answer: 6 A)



7. Two long straight parallel wires, separated by 0.8cm, are perpendicular to the plane of page as shown in figure below. Wire 1 carries a current of 6.5A into the page. What must be the current (magnitude and direction) in wire 2 if the resultant of magnetic field at point P is zero.
(Answer: 4.33A, inside of paper)



8. Two parallel horizontal wires carrying current of 10A and 6A respectively are 13 cm apart as shown in figure below.
   (a) Write the vector component for resultant magnetic field at point R
   (b) Calculate the resultant magnetic field at point R.
   (c) Write the vector component for resultant magnetic field at point P
   (d) Calculate the resultant magnetic field at point P.

(Answer :-2.34x 10^{-6} i – 8.3 x 10^{-6} j, 8.62 x 10^{-6} T, θ = 74.26 (3rd quarter); B_P= -4.9x10^{-5}j, 4.9x10^{-5} T)