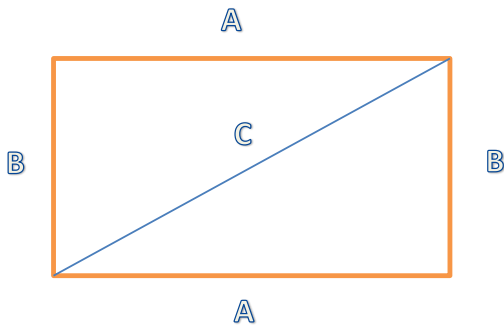rectangular carpet has an area 60 sq m. its diagonal n longer side together equals 5 times the shorter side. find the length of the carpet

1) Let's write the formula defining area of rectangle:

   S=ab (1)

2) Consider the triangle ABC:
   Use Pythagorean Theorem:

   $c^2 = a^2 + b^2$ (2)

3) According to the task:

   a+c=5b ---> c=5b-a

4) Use formula from step 2:

   $(5b - a)^2 = a^2 + b^2$

   $25b^2 + a^2 - 10ab - a^2 - b^2 = 0$

   $24b^2 - 10ab = 0$

5) Use formula from step1:

   S=ab--->60=ab--->a=60/b (4)

   $24b^2 - 600 = 0$

   $24b^2 = 600$

   $b^2 = 25$

   $b = 5$ (shorter side)

   Use(formula (4)):

   a=60/5=12 (longer side)

Answer: shorter side B equals to 5, longer side A equals to 12.