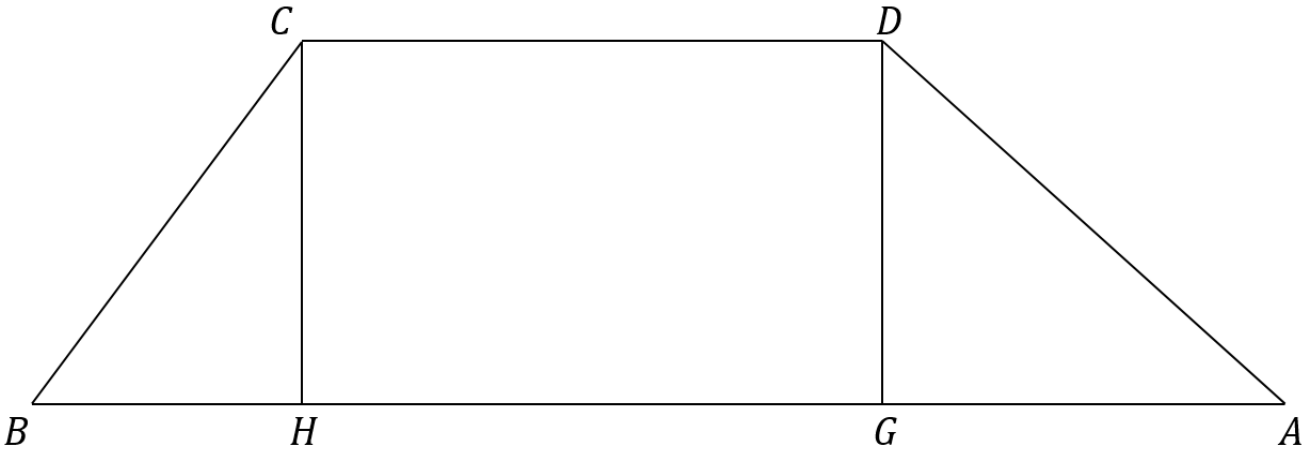
Of the Trapezium $ABCD$, $AB \parallel CD$. If $AB = 5.2\ cm$, $BC = 3\ cm$, $AD = 3.4\ cm$ & the dist. between the parallel sides is $2.5\ cm$. Then construct the Trapezium.

Solution.



We know sides $AB = 5.2\ cm$, $BC = 3\ cm$, AD and the distance between the parallel sides or the height *CH=DG* . We have

$AB > BC \ \ \& \ \ AB > AD$

Then

$AB > CD$

We must find CD for construction the Trapezium.

Consider the triangle CHB. By the Pythagorean theorem:

$$BH = \sqrt{BC^2 - CH^2} = \sqrt{3^2 - 2.5^2} = \sqrt{2.75}\ (cm)$$

Consider the triangle DGA. By the Pythagorean theorem:

$$GA = \sqrt{DA^2 - DG^2} = \sqrt{3.4^2 - 2.5^2} = \sqrt{5.31}\ (cm)$$

We have:

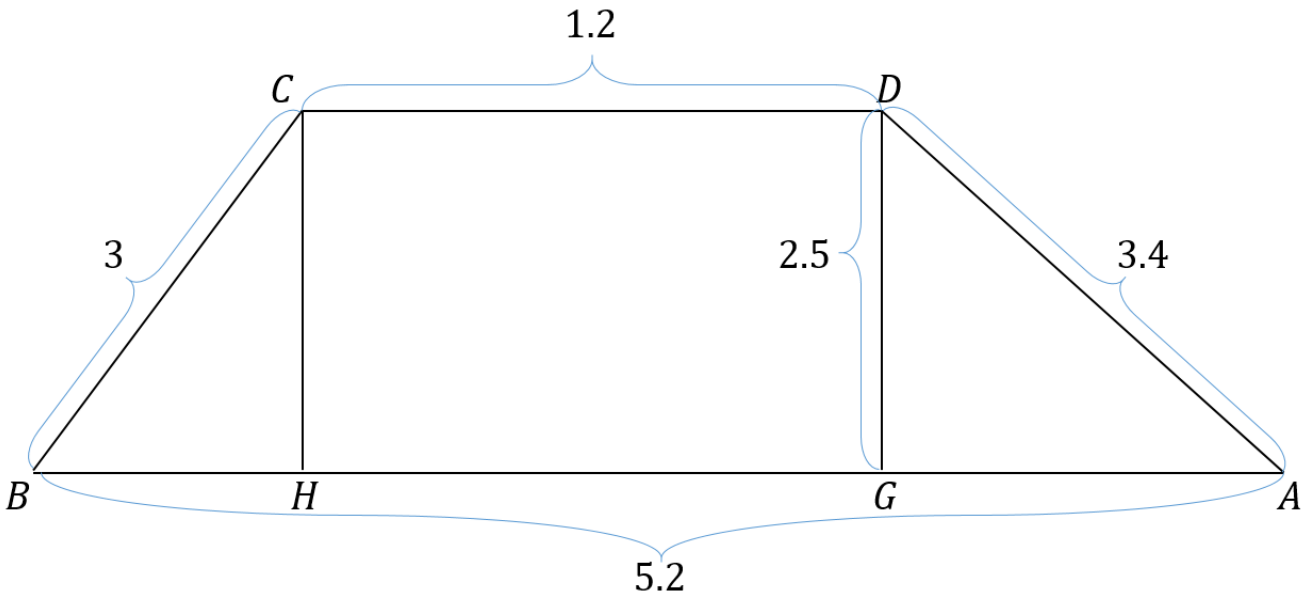
$AB = AG + GH + HB$

$CD = HG$:

$AG + CD + HB = AB$

$$CD = AB - AG - HB = 5.2 - \sqrt{2.75} - \sqrt{5.31} \approx 1.2\ (cm)$$

Now we can construct the trapezium:


1.2
C
D
3
2.5
3.4
B
H
G
A
5.2