

Constructing a unique quadrilateral (Rectangle)

Before doing the real construction, always draw an estimated sketch of the quadrilateral and mark the parts on it.

RECTANGLE

- (a) Using rulers and compasses only, construct the rectangle EFGH, with adjacent sides $EF=6.5\text{cm}$ and $EH=3.6\text{cm}$

Show all construction clearly

- (b) Measure and state the length of diagonals EG and FH

State your observation

- (c) Let the point of intersection of diagonals be represented by X.

Measure and state the length of:

- (i) EX (ii) FX (iii) GX (iv) HX

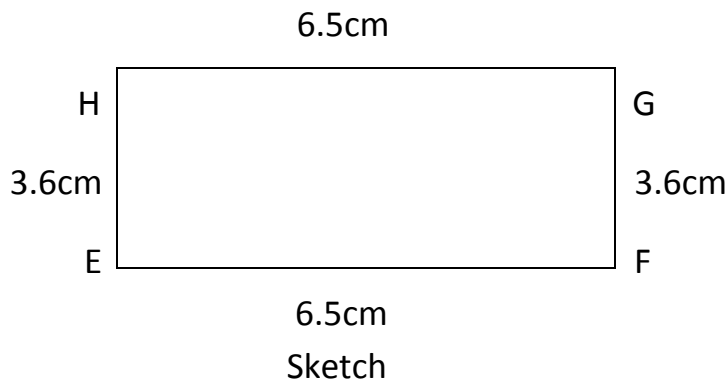
State your observation

- (d) Estimate

- i) Triangles EXF and GXH

- ii) Triangles EXH and GXF

State your observations

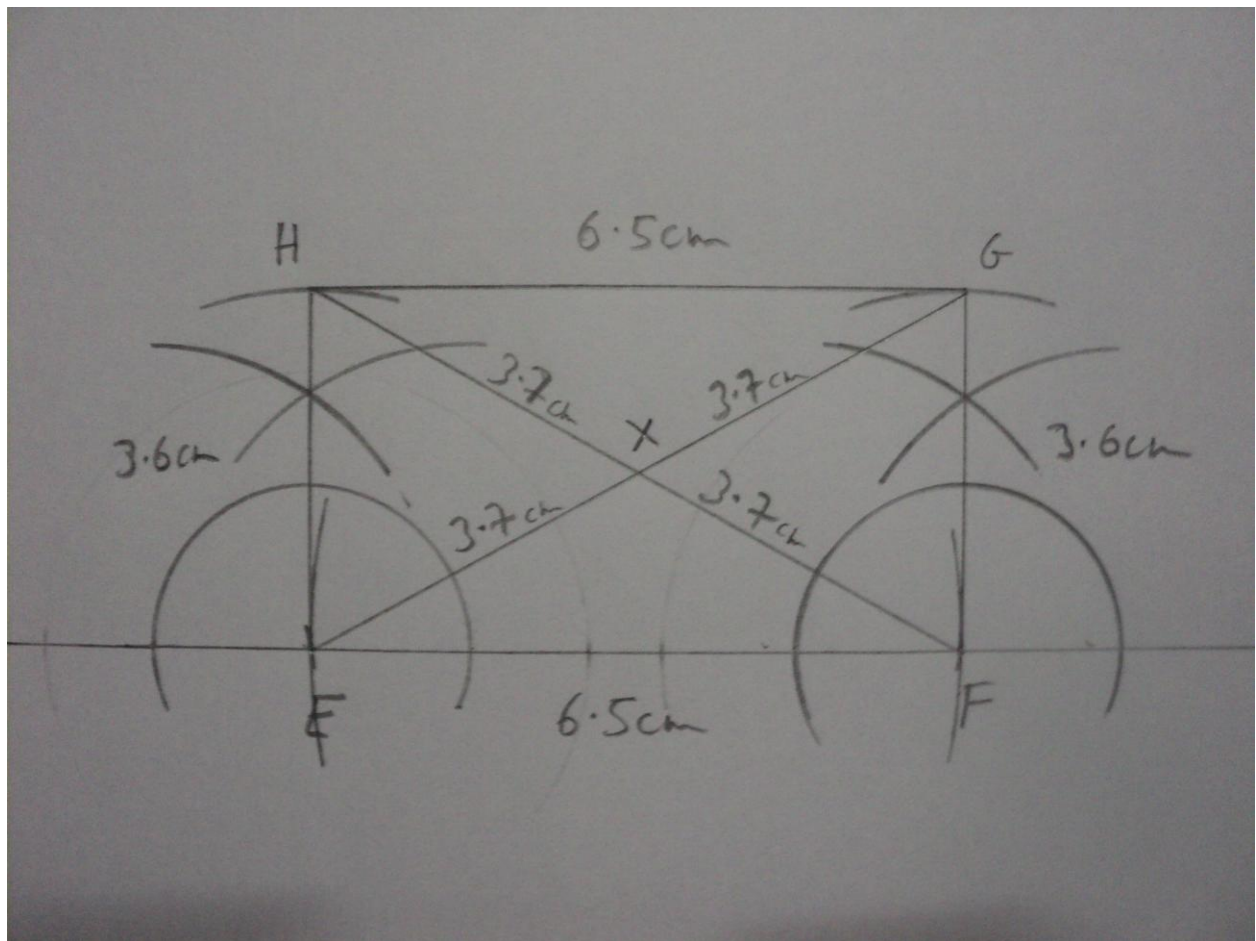


Above is a rough sketch to be constructed

CONSTRUCTION:

(a) First draw a line L, then construct or build the line segment $EF=6.5\text{cm}$.

Now construct perpendiculars from points E and F. Place your compasses to a radius of 3.6cm , then using E and F as Centres , construct or build arcs to intersect the perpendiculars at H and G respectively. Now draw straight lines joining the points H and G. we have at last constructed or built the angle EFGH, with $EF=HG=6.5\text{cm}$ and $EH=FG=3.6\text{cm}$.



Above can be seen the construction rectangle EFGH.

(b) Draw the diagonals EG and FH .

By measurement:

The length of the diagonal EG=7.4cm

The length of the diagonal HF=7.4cm

So EG=HF=7.4cm

Hence the diagonals are equal in length.

(c) By measurement:

The length of EX=3.7cm

The length of FX=3.7cm

The length of GX=3.7cm

The length of HX=3.7cm

So EX=FX=GX=HX=3.7cm

Hence the diagonals bisect each other

(d) Now $\triangle EXF \cong \triangle GXH$ (S.S.S)

And $\triangle EXH \cong \triangle GXF$ (S.S.S)

Hence two pairs of congruent triangles are formed by the diagonals