

## Kite

### Example

a) Using rulers and compasses only, construct a kite

STUV in which  $ST = SV = 5.5\text{cm}$ ,

$SU = 11\text{cm}$  and  $TV = 6\text{cm}$ .

Show all construction lines clearly.

b) Measure and state the magnitude of angle:

(i)  $\angle STU$                       (ii)  $\angle SVU$

State your observation.

c) Measure and state the length of :

(i)  $TU$                       (ii)  $VU$

d) Let the point of intersection of the diagonals be represented by O.

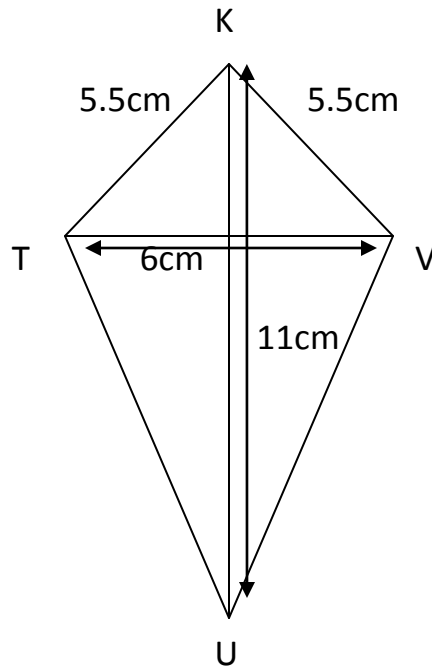
Examine:

(i)  $\Delta$ s  $SOT$  and  $SOV$

(ii)  $\Delta$ s  $TOU$  and  $VOU$

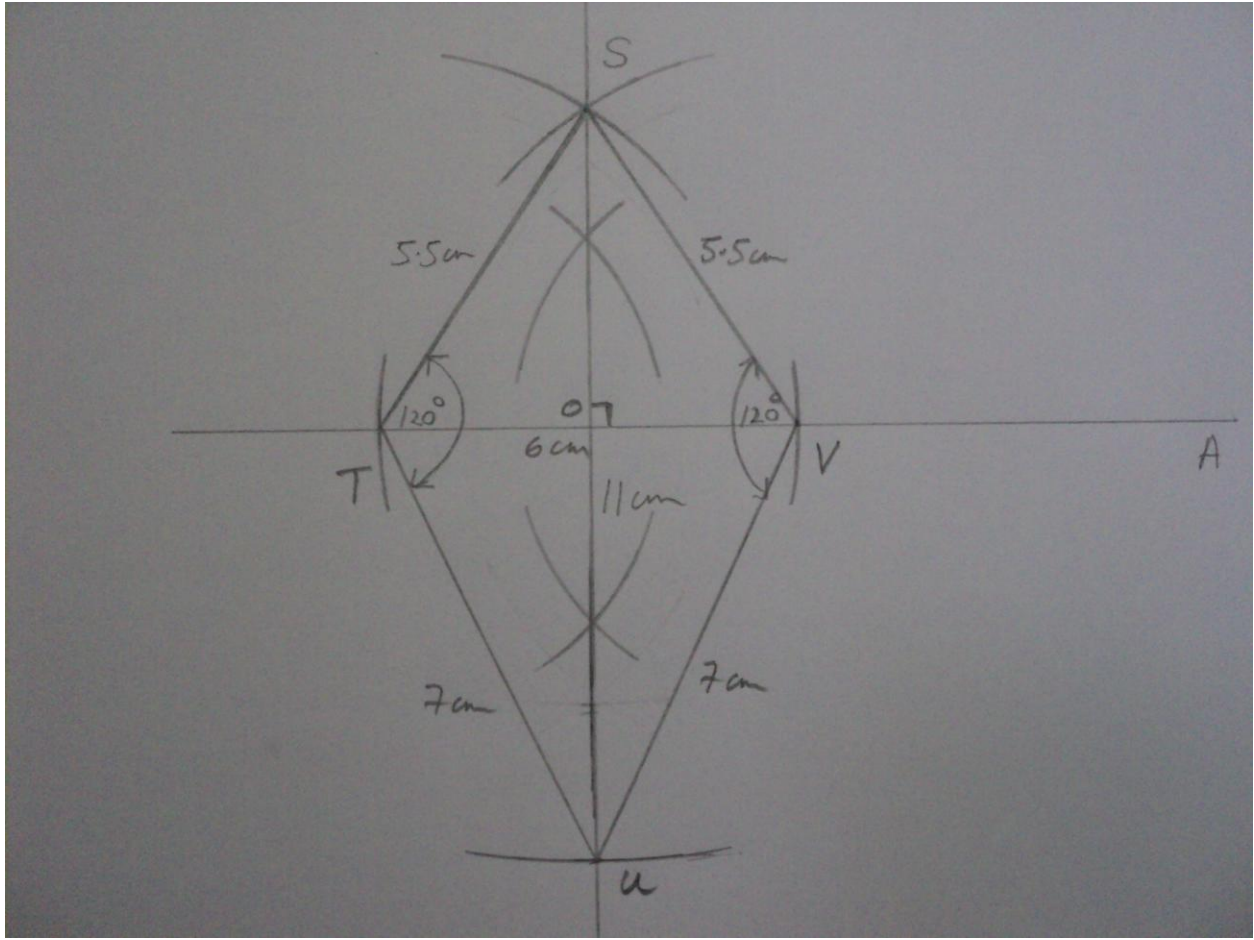
State your observations.

Below can be seen the sketch of the kite STUV to be constructed.



Construction:

First draw a line A, then construct or build the line segment  $TV = 6\text{cm}$ . At this point in time construct the perpendicular bisector of TV. Set your compasses to a radius of 5.5cm, afterwards using T and V as centres, construct or build two arcs to intersect the perpendicular bisector above TV at S. Draw straight lines from the point S to T, and the point S to V. Then set your compasses to a radius of 11cm and using S as centre, construct an arc to intersect the perpendicular bisector below TV at U. Draw straight lines joining the points T and U, and the points V and U. We have at last constructed the kite STUV in which  $ST = SV = 5.5\text{cm}$ ,  $SU = 11\text{cm}$  and  $TV = 6\text{cm}$ .



b) By measurement:

(i) The magnitude of angle  $STU = 120^\circ$ .

(ii) The magnitude of angle  $SVU = 120^\circ$

So  $\angle STU = \angle SVU = 120^\circ$ .

Hence there is one pair of equal opposite angles.

c) By measurement:

(i) The length of  $TU = 7\text{cm}$

(ii) The length of  $VU = 7\text{cm}$

d) (i) Now  $\triangle SOT \cong \triangle SOV$  (S.S.S)

(ii)  $\triangle TOU \cong \triangle VOU$  (S.S.S)

Hence two pairs of congruent triangles are created by the diagonals.