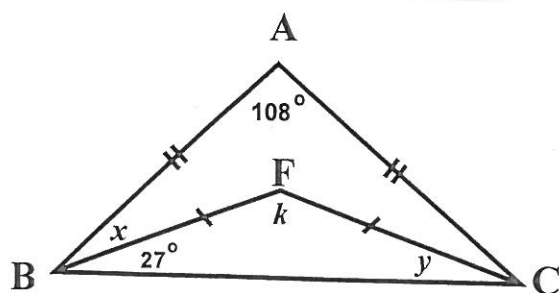


(1) Determine the values of x , y and/or k in the following sketches. Provide reasons:

(a)



$$\hat{B} = \hat{C} \quad [\angle^s \text{ opposite equal sides}]$$

$$\text{but } \hat{A} + \hat{B} + \hat{C} = 180^\circ \quad [\text{int. } \angle^s \triangle]$$

$$\therefore 108^\circ + 2\hat{B} = 180^\circ$$

$$\therefore 2\hat{B} = 72^\circ$$

$$\therefore \hat{B} = 36^\circ$$

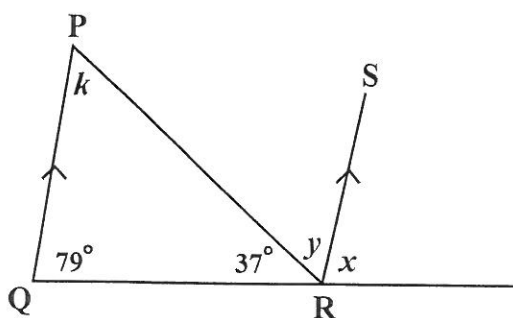
$$\therefore x = 36^\circ - 27^\circ = 9^\circ$$

$$\text{but } y = 27^\circ \quad [\angle^s \text{ opposite equal sides}]$$

$$\text{but } k + 27^\circ + 27^\circ = 180^\circ \quad [\text{int. } \angle^s \triangle]$$

$$\therefore k = 126^\circ$$

(b)



$$k + 79^\circ + 37^\circ = 180^\circ \quad [\text{int. } \angle^s \triangle]$$

$$\therefore k = 180^\circ - 79^\circ - 37^\circ$$

$$\therefore k = 64^\circ$$

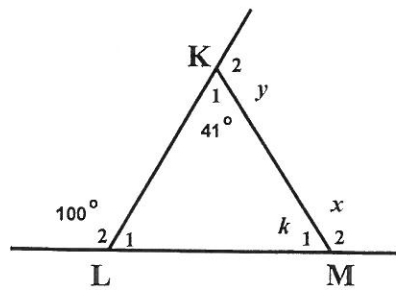
$$\text{but } y = k = 64^\circ \quad [\text{alt. } \angle^s; PQ \parallel RS]$$

$$\text{but } x + 37^\circ + 64^\circ = 180^\circ \quad [\angle^s \text{ str. line}]$$

$$\therefore x = 79^\circ$$

$$\text{or } x = 79^\circ (\angle Q) \quad [\text{corresp. } \angle^s; PQ \parallel RS]$$

(c)



$$\hat{L}_1 = 180^\circ - 100^\circ$$

[$\angle$ s on str. line]

$$\therefore \hat{L}_1 = 80^\circ$$

$$y = 180^\circ - 41^\circ$$

[" "]

$$\therefore y = 139^\circ$$

$$k + 41^\circ + 80^\circ = 180^\circ \quad [\text{int. } \angle \text{ s } \Delta]$$

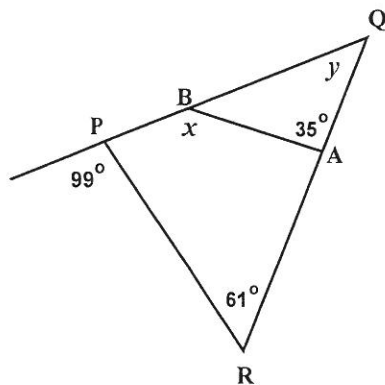
$$\therefore k = 59^\circ$$

$$\text{but } x + k = 180^\circ$$

[$\angle$ s on str. line]

$$\therefore x = 180^\circ - 59^\circ = 121^\circ$$

(d)



$$99^\circ = y + 61^\circ$$

[ext. $\angle$ of Δ]

$$\therefore y = 99^\circ - 61^\circ$$

$$\therefore y = 38^\circ$$

$$x = y + 35^\circ$$

[" "]

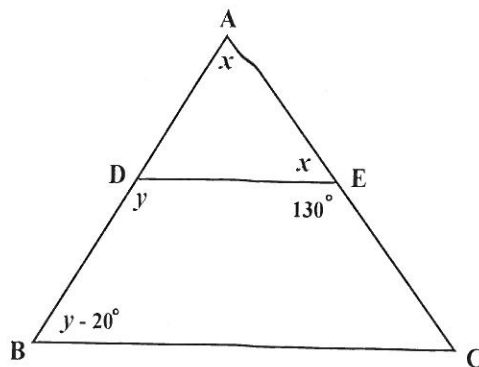
$$\therefore x = 38^\circ + 35^\circ$$

$$\therefore x = 73^\circ$$

(2) (a) Calculate x and y .

(b) What is the size of $\hat{B}$?

(c) What can you conclude regarding DE and BC ?



$$\angle C = 180^\circ - 130^\circ$$

[$\angle$ s on str. line]

$$\therefore \angle C = 50^\circ$$

$$\therefore y = \angle C + \angle C$$

[ext. $\angle$ of $\triangle$]

$$\therefore y = 50^\circ + 50^\circ$$

$$\therefore y = 100^\circ$$

$$(b) \hat{B} = y - 20^\circ$$

$$\therefore \hat{B} = 100^\circ - 20^\circ$$

$$\therefore \hat{B} = 80^\circ$$

$$(c) \angle EDB + \hat{B} = 100^\circ + 80^\circ = 180^\circ$$

but these are co-int. $\angle$ s

$$\therefore DE \parallel BC$$