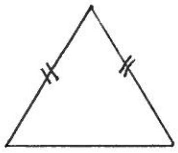
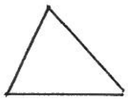
Worksheet 2015-8ℰN-00001(1)

(1) Define the following:



(a) Isosceles triangle

An isosceles triangle has two sides equal in length

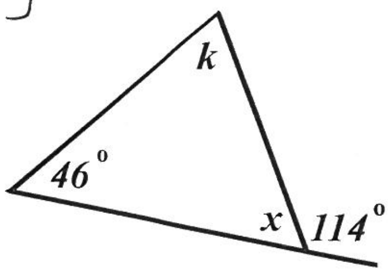


(b) Acute triangle

An acute triangle has all angles smaller than 90° – thus acute angles.

(2) Determine the value(s) of x and/or y in each of the following sketches. Also give complete reasons.

(a)



$x + 114^\circ = 180^\circ$ [$\angle^s$ on straight line]

$\therefore x = 180^\circ - 114^\circ$

$\therefore x = 66^\circ$

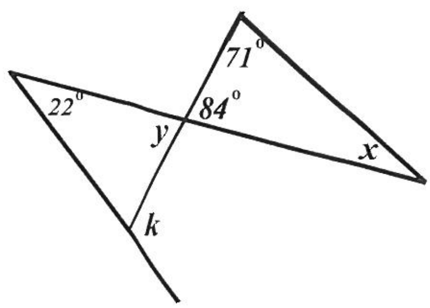
$x + k + 46^\circ = 180^\circ$ [int. $\angle^s$ of Δ]

$\therefore 66^\circ + k + 46^\circ = 180^\circ$

$\therefore k = 180^\circ - 66^\circ - 46^\circ$

$\therefore k = 68^\circ$

(b)



$y = 84^\circ$ [vert. opp. $\angle^s$]

$x + 71^\circ + 84^\circ = 180^\circ$ [int. $\angle^s$ of Δ]

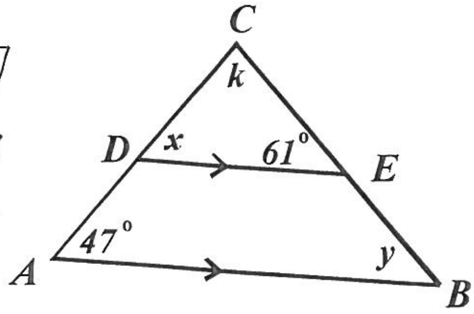
$\therefore x = 180^\circ - 71^\circ - 84^\circ$

$\therefore x = 25^\circ$

$k = y + 22^\circ$ [ext. $\angle$ of Δ]

$\therefore k = 84^\circ + 22^\circ = 106^\circ$

(c)



$x = 47°$ [corsp. $\angle^s$; $DE \parallel AB$]

$y = 61°$ [corsp $\angle^s$; $DE \parallel AB$]

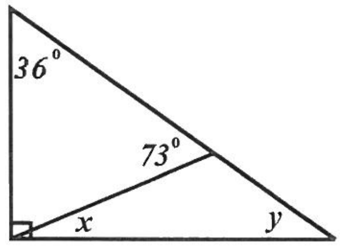
$k + x + 61° = 180°$ [int. $\angle^s$ of Δ]

$\therefore k + 47° + 61° = 180°$

$\therefore k = 180° - 47° - 61°$

$\therefore k = 72°$

(d)



$y + 36° + 90° = 180°$ [int. $\angle^s$ of Δ]

$\therefore y = 180° - 90° - 36°$

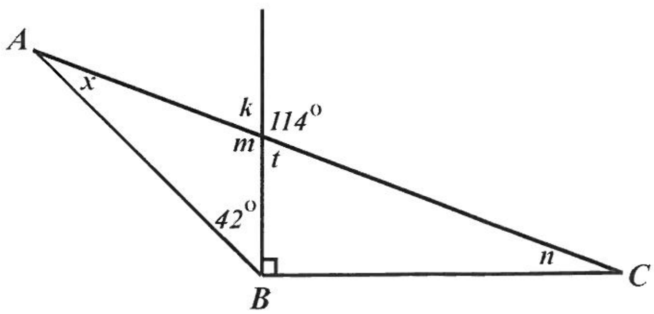
$\therefore y = 54°$

$x + y = 73°$ [ext. $\angle$ of Δ]

$\therefore x = 73° - y$

$\therefore x = 73° - 54° = 19°$

(3) Prove that Δ ABC is an isosceles triangle.
Show all calculations and provide complete reasons:



$m = 114°$ [vert. opp $\angle^s$]

$\therefore x = 180° - 42° - 114°$ [int $\angle^s$ of Δ]

$\therefore x = 24°$

$n + 90° = 114°$ [ext. $\angle$ of Δ]

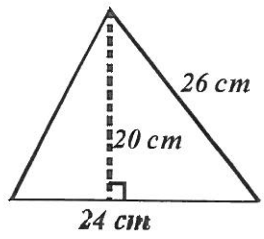
$\therefore n = 114° - 90° = 24°$

$\therefore x = n = 24°$

$\therefore \Delta ABC$ is an isosceles Δ with $AB = BC$

(4) Calculate the area of triangle PQR in each of the following:

(a)

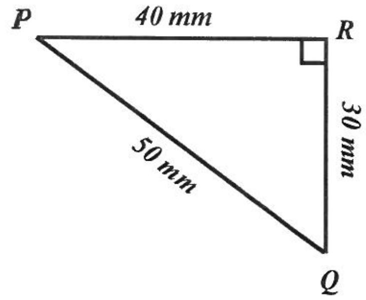


Area $\triangle = \frac{1}{2} b \times h$

$= \frac{1}{2} (24\ cm) \times (20\ cm)$

$= 240\ cm^2$

(b)

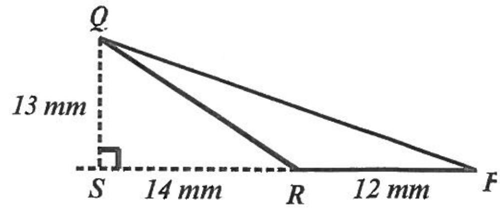


Area $\triangle$ PQR $= \frac{1}{2} b \times h$

$= \frac{1}{2} (40\ mm)(30\ mm)$

$= 600\ mm^2$

(c)



Area $\triangle$ QRP $= \frac{1}{2} b \times h$

$= \frac{1}{2} (12 mm) \times (13 mm)$

$= 78\ mm^2$

(5) (a) Construct Δ PKS with PK = 64 mm, $\hat{P} = 45°$ and $\hat{K} = 60°$.

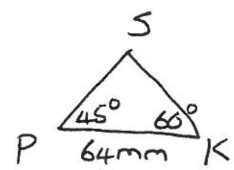
(b) Construct PR with PR $\perp$ KS.

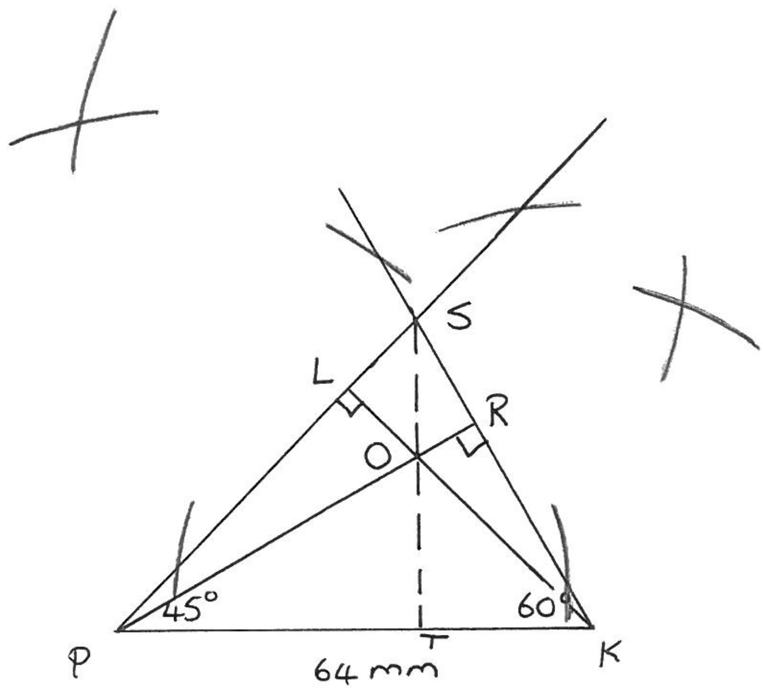
(c) Construct KL with KL $\perp$ PS.

(d) Label the intersection of PR and KL, as O.

(e) Join SO, and extend it so that SO intersects PK in T.

(f) Measure $S\hat{T}K$.





(f) $S\hat{T}K = 90°$