Tender Heart High School, Sec.-33B Chd.

Class: VII

Subject: Mathematics **Teacher:** Deepti

Topic: Chapter 18: Properties of triangle

In the last week assignment, we have done the basic Concepts and all the properties of triangle. Now we will start with the Exercise questions.

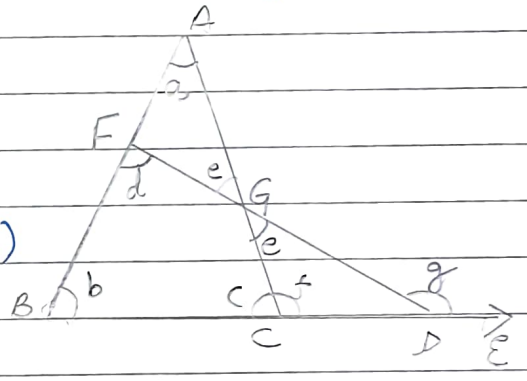
Exercise - 18A

Soln-15

(i) a in terms of b and f

$f = a + b$ (ext. angle prop.)

$\Rightarrow a = f - b$



(ii) e in terms of f and g

$g = e + f$ (ext. angle prop.)

$\Rightarrow e = g - f$

(iii) d in terms of a and e

$d = a + e$ (ext. angle prop.)

(iv) C in terms of e and g

$C = e + \angle GDC$

$C = e + 180^\circ - g$

Soln-18 Let $\angle A = x$

$\Rightarrow \angle B = x + 15^\circ$

$\Rightarrow \angle C = x + 15^\circ$

$\angle A + \angle B + \angle C = 180^\circ$

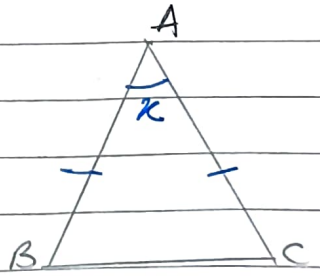
$x + x + 15^\circ + x + 15^\circ = 180^\circ$

$3x + 30^\circ = 180^\circ$

$3x = 180^\circ - 30^\circ$

$3x = 150^\circ$

$\Rightarrow x = \frac{150^\circ}{3} = 50^\circ$



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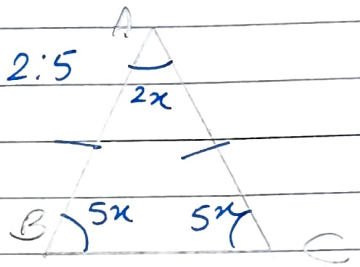
Soln-21 ratio of base angle to Vertical angle = 2:5

$\Rightarrow$ $\angle A : \angle B = 2 : 5$

$\Rightarrow$ $\angle A = 2x$, $\angle B = 5x$

also $\angle C = 5x$



$2x + 5x + 5x = 180^\circ$

$12x = 180^\circ$

$x = \frac{180^\circ}{12} = 15^\circ$

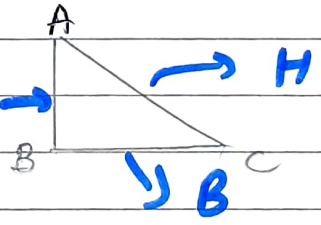
angles are: $2x = 2 \times 15^\circ = 30^\circ$

$5x = 5 \times 15^\circ = 75^\circ$

Pythagoras Theorem

In a right angled triangle, side opposite to 90° is called "hypotenuse" and other two sides are called base and perpendicular.

$AC^2 = AB^2 + BC^2$



★ The square of hypotenuse is equal to the sum of squares of other two sides.

Exercise - 18B

Soln-2

$AC^2 = AB^2 + BC^2$

$(40)^2 = AB^2 + (24)^2$

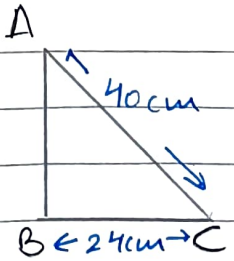
$1600 = AB^2 + 576$

$1600 - 576 = AB^2$

$1024 = AB^2$

$AB = \sqrt{1024}$

$AB = 32\ cm.$



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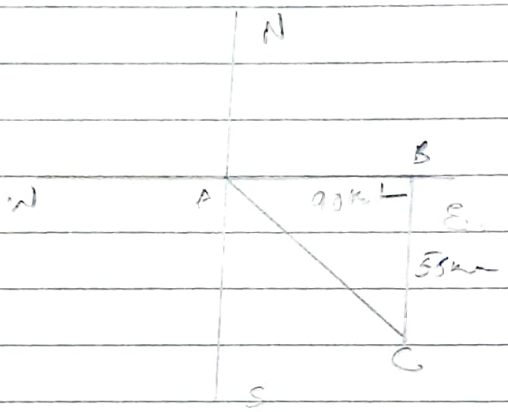
Soln-6 $AC^2 = BC^2 + AB^2$

$= (90)^2 + (56)^2$

$= 8100 + 3136$

$= 11236$ km

$AC = 106$ km.



Soln-8. $AC^2 = AB^2 + BC^2$

$= (20)^2 + (21)^2$

$= 400 + 441$

$= 841$

$AC = 29$

So, the length of diagonal is 29 cm.