

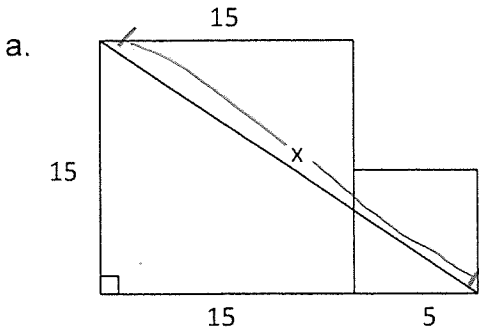
KEY

Geometry (H)

Chapter 8 - More Review Problems

Applying Special Right Triangles Concepts

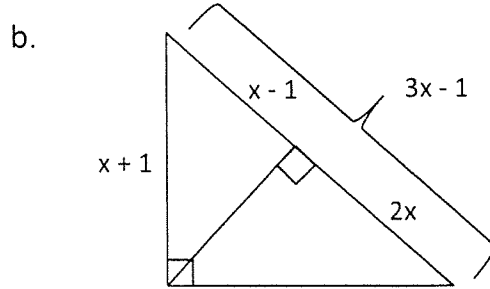
1. Find x.



$$15^2 + 20^2 = x^2$$

$$x^2 = 625$$

$$x = 25$$



$$\frac{3x-1}{x+1} = \frac{x+1}{x-1}$$

$$(3x-1)(x-1) = (x+1)^2$$

$$3x^2 - 4x + 1 = x^2 + 2x + 1$$

$$2x^2 - 6x = 0$$

$$2x(x-3) = 0$$

$$x = 0, x = 3$$

OMIT

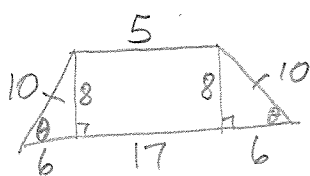
2. A rectangular prism has dimensions 2 x 6 x 8. Find the length of the diagonal of the box.

$$d = \sqrt{2^2 + 6^2 + 8^2}$$

$$= \sqrt{104}$$

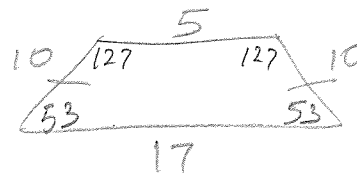
$$d = 2\sqrt{26}$$

3. Given isosceles trapezoid with sides 5, 10, 17, 10, find the measure of all the angles of the trapezoid.



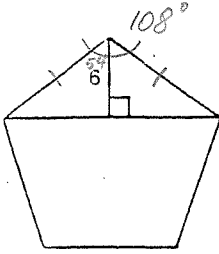
$$\tan \theta = \frac{8}{6} = \frac{4}{3}$$

$$\theta \approx 53^\circ$$



$$180 - 53 = 127^\circ$$

4. Find the perimeter of the regular pentagon. Round the answer to the nearest tenth.



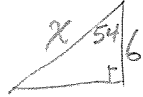
$$\frac{(5-2)180}{5}$$

$$\cos 54 = \frac{6}{x}$$

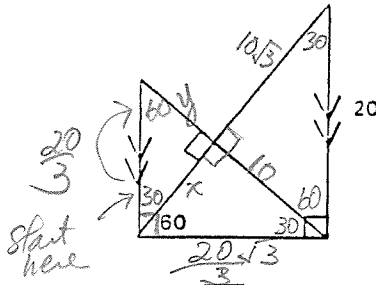
$$x = \frac{6}{\cos 54}$$

$$x \approx 10.2$$

$$P \approx 51.0$$



5. Find all missing lengths of the figure below.



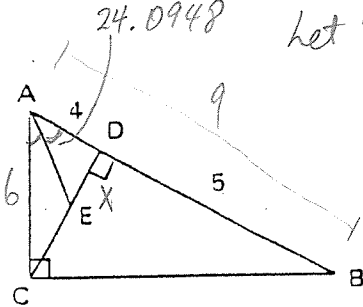
$$x\sqrt{3} = 10$$

$$x = \frac{10 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}} = \frac{10\sqrt{3}}{3}$$

$$y\sqrt{3} = \frac{10\sqrt{3}}{3} \cdot \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{10(3)}{3(3)}$$

$$y = \frac{10}{3}$$

6. Find DE. \overline{AE} bisects $\angle CAD$.



24.0948

let $x = DE$

$$\textcircled{1} \frac{4}{CD} = \frac{CD}{5}$$

$$(CD)^2 = 20$$

$$CD = 2\sqrt{5}$$

$$\textcircled{2} \tan A = \frac{2\sqrt{5}}{4}$$

$$m\angle A \approx 48.1897$$

$$\textcircled{3} \tan 24.0948 = \frac{x}{4}$$

$$x \approx 1.7889$$

OR

$\textcircled{2}$ Find AC using geo. mean \rightarrow

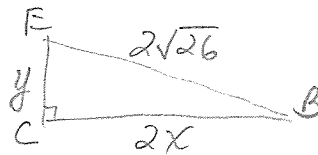
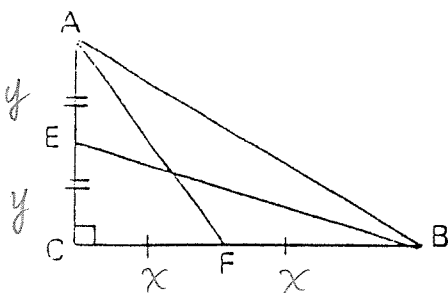
$$\frac{9}{AC} = \frac{AC}{4} \quad AC = 6$$

$\textcircled{3}$ Find DE using Δ angle bisector theorem.

$$\frac{6}{4} = \frac{(2\sqrt{5}-x)}{x}$$

$$x = \frac{4\sqrt{5}}{5}$$

7. $AF = \sqrt{41}$ $BE = 2\sqrt{26}$ Find AB.



$$(2x)^2 + y^2 = (2\sqrt{26})^2$$

$$4x^2 + y^2 = 4(26)$$

$$4(41 - 4y^2) + y^2 = 104$$

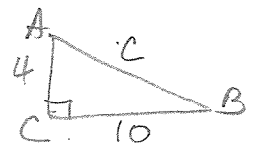
$$164 - 16y^2 + y^2 = 104$$

$$-15y^2 = -60$$

$$y^2 = 4 \rightarrow y = 2$$

$$x = \sqrt{41 - 4(2)^2}$$

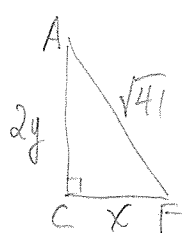
$$x = 5$$



$$4^2 + 10^2 = c^2$$

$$116 = c^2$$

$$c = 2\sqrt{29}$$



$$x^2 + (2y)^2 = \sqrt{41}^2$$

$$x^2 + 4y^2 = 41$$

$$x = \sqrt{41 - 4y^2}$$