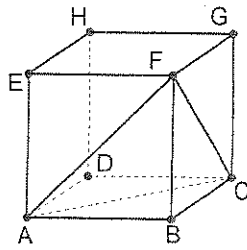


1. Each edge of the cube has length 5"

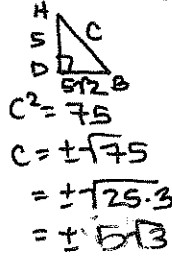
a. Find AF (diagonal of a face)

$5\sqrt{2}$ "



b. Find AG (diagonal of the cube)

$a^2 + b^2 = c^2$
 $5^2 + (5\sqrt{2})^2 = c^2$
 $25 + 50 = c^2$

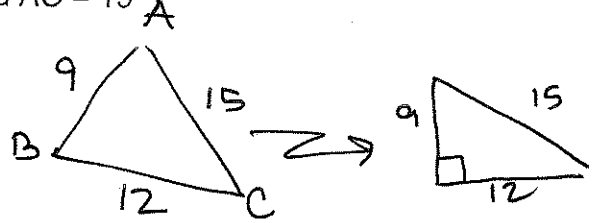


$AG = 5\sqrt{3}$ "

c. Find $m\angle FAC$

60°

2. Find area of triangle ABC if AB = 9', BC = 12' and AC = 15'

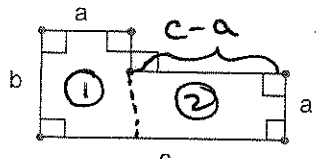


$A = \frac{1}{2} b \cdot h$
 no height??
 no angles??
 Is this a right Δ ?
 $a^2 + b^2 = c^2$
 $9^2 + 12^2 = 15^2$
 $225 = 225 \checkmark$ IT IS !!

$A = \frac{1}{2} b \cdot h$
 $= \frac{1}{2} (12)(9)$
 $= 54$

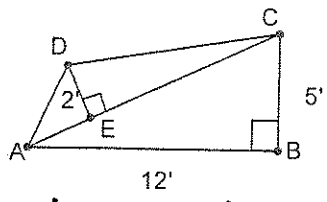
$54'$

3. Find the area of the region in terms of a, b, and c



$A_{SHAPE} = A_{RECT. 1} + A_{RECT. 2}$
 $= a \cdot b + (c-a)(a)$
 $= ab + ac - a^2$

4. What is the area of the region bounded by ABCD?

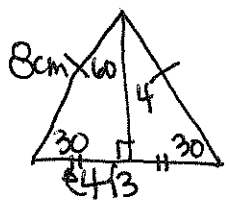


$a^2 + b^2 = c^2$
 $5^2 + 12^2 = (AC)^2$
 $13 = AC$

$A_{ABCD} = A_{\Delta ABC} + A_{\Delta ADC}$
 $= \frac{1}{2} (12)(5) + \frac{1}{2} (13)(2)$
 $= 43$

43 ft^2

5. Find the area of the region bounded by an isosceles triangle if the length of each of the congruent sides is 8 cm and a base angle has measure 30°

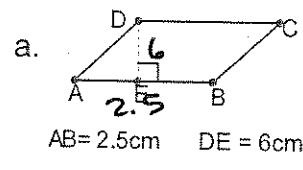


NOT DRAWN TO SCALE

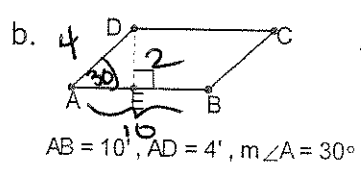
$A = \frac{1}{2} b \cdot h$
 $= \frac{1}{2} (8\sqrt{3})(4)$
 $= 16\sqrt{3}$

$16\sqrt{3} \text{ cm}^2$

6. Find the area of parallelogram ABCD parallelogram with altitude \overline{DE} , if



$A = bh$
 $= (6)(2.5)$
 $= 15$

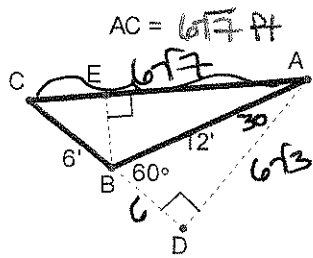


$A = bh$
 $= (10)(2)$
 $= 20$

20 cm^2

1. $5\sqrt{2}$ ", $5\sqrt{3}$ ", 60° 2. 54 sq' 3. $ab + ac - a^2$ 4. 43 sq' 5. $16\sqrt{3} \text{ cm}^2$ 6. a. 15 cm^2 , 20 cm^2

7. Find the area of $\triangle ABC$ and BE



$$A_{\triangle ABC} = \frac{1}{2}bh$$

$$= \frac{1}{2}(6)(6\sqrt{3})$$

$$= 18\sqrt{3}$$

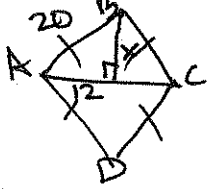
$$b_1 h_1 = b_2 h_2$$

$$6 \cdot 6\sqrt{3} = 6\sqrt{7} \cdot h_2$$

$$\frac{36\sqrt{3}}{6\sqrt{7}} = h_2 \quad h_2 = \frac{6\sqrt{3}}{\sqrt{7}} \left(\frac{\sqrt{7}}{\sqrt{7}}\right) = \frac{6\sqrt{21}}{7}$$

9. Rhombus ABCD with AC = 24' and AB = 20'

a. Find area of the rhombus



$$12^2 + x^2 = 20^2$$

$$x = 16$$

$$A_{\text{RHOMBUS}} = A_{4\triangle s} = \frac{1}{2}(12)(16) \times 4$$

$$= 384 \quad \boxed{384 \text{ ft}^2}$$

b. The length of an altitude to DC



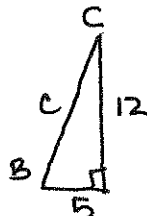
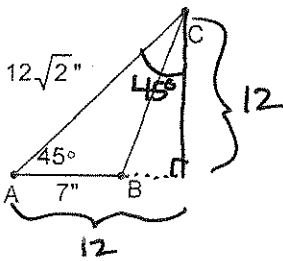
$$A = bh$$

$$384 = 20(h)$$

$$19.2 = h$$

$$\boxed{19.2 \text{ ft}}$$

11. Find BC (Hint: Draw altitude from C)



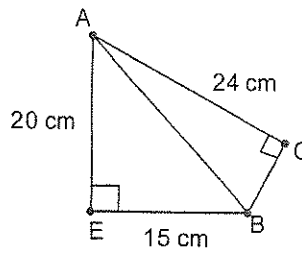
$$a^2 + b^2 = c^2$$

$$5^2 + 12^2 = c^2$$

$$13 = c$$

$$\boxed{13 \text{ ft}}$$

8. Find AB and BC



$$20^2 + 15^2 = AB^2$$

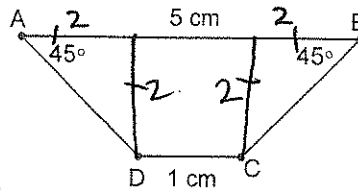
$$25 = AB \quad \boxed{25 \text{ cm}}$$

$$24^2 + BC^2 = 25^2$$

$$BC = 7$$

$$\boxed{7 \text{ cm}}$$

10. Find the area of the isosceles trapezoid ABCD



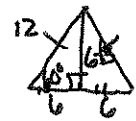
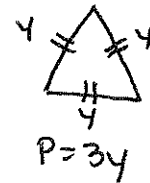
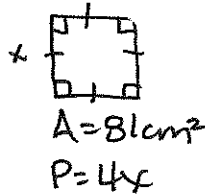
$$A = \frac{1}{2}(b_1 + b_2)h$$

$$= \frac{1}{2}(5 + 1)(2)$$

$$= 6$$

$$\boxed{6 \text{ cm}^2}$$

12. The area of the region bounded by a square is 81 cm^2 . The perimeter of the square is equal to the perimeter of an equilateral triangle. Find the area of the triangle.



$$x = 9 \quad 4x = 3y$$

$$4(9) = 3y$$

$$12 = y$$

$$A = \frac{1}{2}bh$$

$$= \frac{1}{2}(12)(6\sqrt{3})$$

$$= 36\sqrt{3}$$

$$\boxed{36\sqrt{3} \text{ cm}^2}$$

7. $18\sqrt{3} \text{ sq'}$, $\frac{6\sqrt{3}}{7}$ 8. 25 cm, 7 cm 9. 384 sq', 19.2 ft 10. 6 sq cm 11. 13" 12. $36\sqrt{3} \text{ sq cm}$