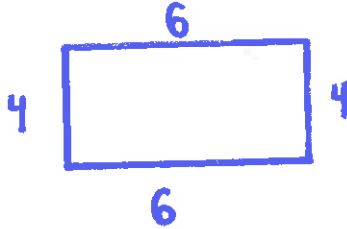


1. Find the area of a rectangle with length 4 and perimeter 20.



$$\frac{20}{4} = 5$$

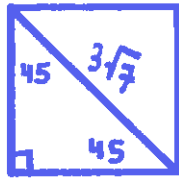
$$5 - 4 = 1$$

$$\frac{12}{2} = 6$$

$$A = 6 \cdot 4$$

1.  $24 u^2$

2. Find the area of a square with diagonal  $3\sqrt{7}$ .



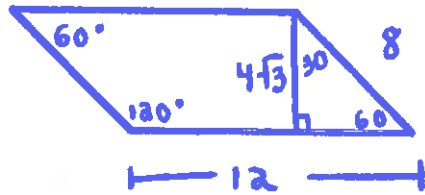
$$x\sqrt{2} = 3\sqrt{7}$$

$$x = \frac{3}{2}\sqrt{14}$$

$$A = \left(\frac{3}{2}\sqrt{14}\right)^2$$

2.  $31.5 u^2$

3. Find the area of a parallelogram with sides 8 and 12 and acute angle  $60^\circ$ .



$$A = (12)(4\sqrt{3})$$

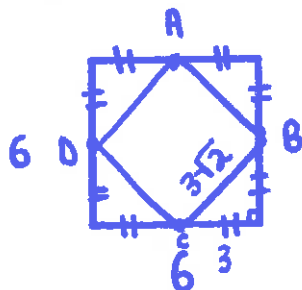
3.  $48\sqrt{3} u^2$

4. Find the area of an equilateral triangle with sides 8.

$$\frac{8^2\sqrt{3}}{4}$$

4.  $16\sqrt{3} u^2$

5. The area of square  $WXYZ$  is 36. Square  $ABCD$  is formed by joining the midpoints of the sides of  $WXYZ$ . Find the area and perimeter of  $ABCD$ .



$$(3\sqrt{2})^2$$

$$4(3\sqrt{2})$$

$$A = 18 u^2$$

5.  $P = 12\sqrt{2}$

6. The area of a 5 by 7 rectangular picture and its white border of uniform width is 99. How wide is the border?

$$(2x+5)(2x+7) = 99$$

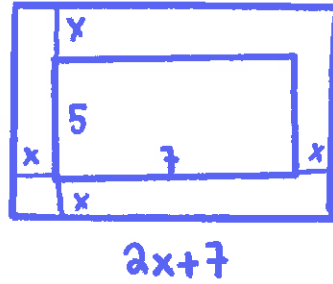
$$4x^2 + 14x + 10x + 35 = 99$$

$$4x^2 + 24x - 64 = 0$$

$$4(x^2 + 6x - 16) = 0$$

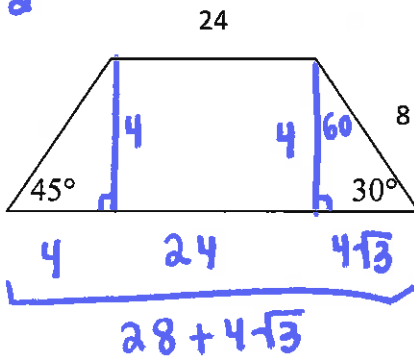
$$4(x+8)(x-2) = 0$$

$$x = -8, x = 2$$



6. 2

7. Determine the area of the trapezoid:



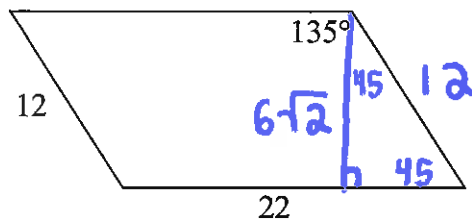
$$\frac{1}{2}(4)(24 + 28 + 4\sqrt{3})$$

$$2(52 + 4\sqrt{3})$$

$$104 + 8\sqrt{3}$$

7.  $8\sqrt{3} + 104$  u<sup>2</sup>

8. Determine the area of the parallelogram:



$$22 \cdot 6\sqrt{2}$$

8.  $132\sqrt{2}$  u<sup>2</sup>

$$x\sqrt{2} = 12$$

$$x = 6\sqrt{2}$$

9. The area of a trapezoid is 44 square units. The height is 4 and one base is 3. Determine the length of the other base.

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

$$44 = \frac{1}{2}(4)(3 + b_2)$$

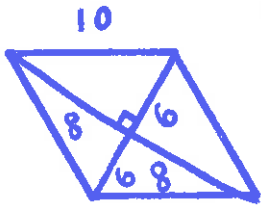
$$44 = 2(3 + b_2)$$

$$44 = 6 + 2b_2$$

$$38 = 2b_2$$

9. 19

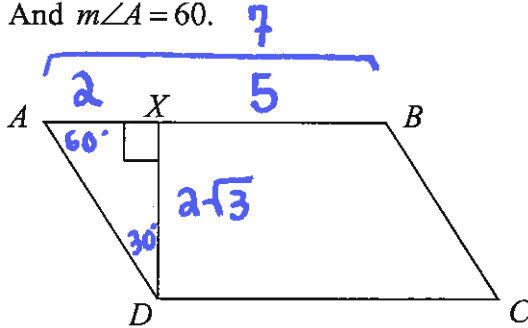
10. Determine the area of a rhombus with sides of length 10 and one diagonal of length 16.



$$\frac{1}{2} (16)(12)$$

10. 96 u<sup>2</sup>

11. Determine the area of the parallelogram  $ABCD$  if  $AX = 2$ ,  $XB = 5$  and  $m\angle A = 60^\circ$ .



$$7 \cdot 2\sqrt{3}$$

11. 14√3 u<sup>2</sup>

12. An equilateral triangle has an area of  $9\sqrt{3}$ . Determine the length of a side.

$$4 \cdot 9\sqrt{3} = \frac{s^2\sqrt{3}}{4} \cdot 4$$

$$\frac{36\sqrt{3}}{\sqrt{3}} = \frac{s^2\sqrt{3}}{\sqrt{3}}$$

$$36 = s^2$$

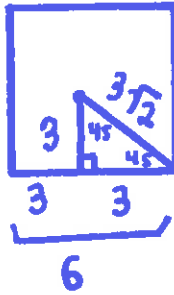
$$6 = s$$

12. 6

13. The length of an apothem of a square is 3.

Determine:

a. Radius



b. Side

c. Area

$$6^2$$

13a.  $3\sqrt{2}$

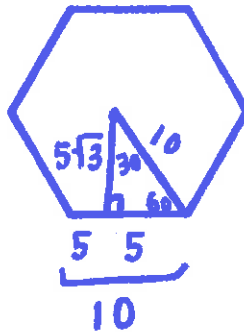
13b. 6

13c.  $36u^2$

14. The radius of a regular hexagon is 10.

Determine:

a. Apothem



b. Side

c. Area

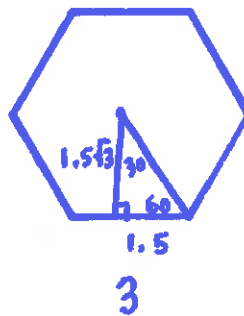
$$\frac{1}{2} (5\sqrt{3})(60)$$

14a.  $5\sqrt{3}$

14b. 10

14c.  $150\sqrt{3}u^2$

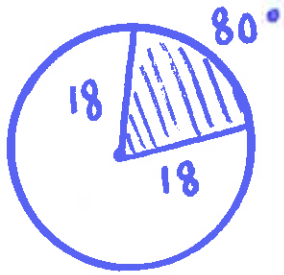
15. Determine the area of a regular hexagon whose perimeter is 18.



$$\frac{1}{2} (1.5\sqrt{3})(18)$$

15.  $\frac{27}{2}\sqrt{3}u^2$

16. In a circle with radius 18, determine the area of a sector whose arc measures  $80^\circ$ .

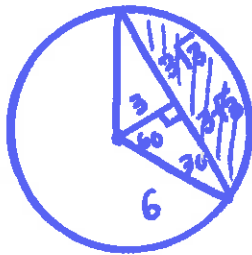


$$\frac{80}{360} \cdot \pi 18^2$$

$$\frac{2}{9} \cdot 324\pi$$

16.  $72\pi u^2$

17. Determine the area of a segment of a circle whose central angle is  $120^\circ$  and whose radius is 6.



$$120^\circ \cdot \frac{1}{3} \pi 6^2$$

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

$$12\pi - 3\sqrt{3}(3)$$

17.  $12\pi - 9\sqrt{3}u^2$

18. Determine the circumference of a circle if the area of that circle is  $8\pi$ .

$$8\pi = \pi r^2$$

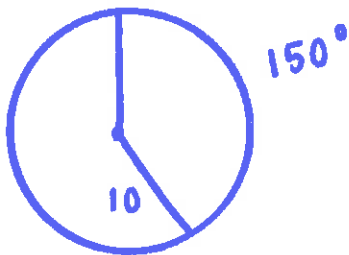
$$8 = r^2$$

$$2\sqrt{2} = r$$

$$C = 2\pi(2\sqrt{2})$$

18.  $4\pi\sqrt{2}$

19. Determine the length of an arc of a circle with radius 10 if the measure of the arc is  $150^\circ$ .



$$\frac{150}{360} \cdot 2\pi 10$$

$$\frac{5}{12} \cdot 20\pi$$

19.  $\frac{25}{3}\pi$

20. In a circle with a radius of 8, a sector has an area of  $\frac{160\pi}{9}$ . Determine the degree measure of the arc of that sector.

$$\frac{x}{360} \cdot \pi 8^2 = \frac{160\pi}{9}$$

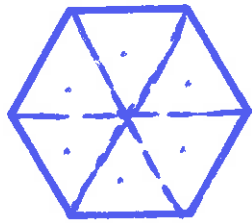
$$\frac{x \cdot \pi 64}{360} = \frac{160\pi}{9}$$

$$\frac{576\pi \cdot x}{576\pi} = \frac{57,600\pi}{576\pi}$$

20. 100°

21. Determine the length of a side of a regular hexagon whose area is  $54\sqrt{3}$ .

6 equilateral  
Δs



$$6 \left( \frac{s^2\sqrt{3}}{4} \right) = 54\sqrt{3}$$

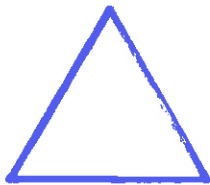
$$4 \cdot \frac{s^2\sqrt{3}}{4} = 9\sqrt{3} \cdot 4$$

$$s^2\sqrt{3} = 36\sqrt{3}$$

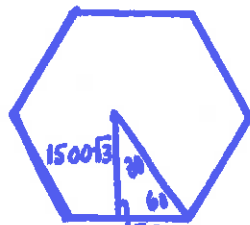
$$s^2 = 36$$

21. 6

22. An equilateral triangle and a regular hexagon each have a perimeter of 18K. Find the ratio of the area of the triangle to that of the hexagon. Simplify your ratio completely.



6,000



3,000

22.  $\frac{2}{3}$

$$\frac{6,000^2 \sqrt{3}}{4}$$

$$\frac{1}{2} (1,500\sqrt{3})(18,000)$$

$$9,000,000\sqrt{3}u^2 \quad : \quad 13,500,000\sqrt{3}u^2$$