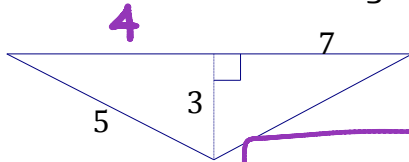# Chapter 10 Review

Name_____

Directions: Please show all work and leave answers as exact answers, unless otherwise noted.

10.1 Area of Triangles and Quadrilaterals
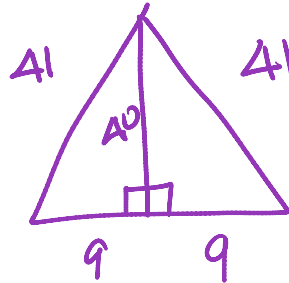
1. Find the area of the triangle.

4

7

3

5

$A = \dfrac{b \cdot h}{2}$

$A = \dfrac{11 \cdot 3}{2}$

$A = \dfrac{33}{2} u^2$

or $16.5u^2$

2. Find the area of a triangle with side lengths of 41, 41, and 18.
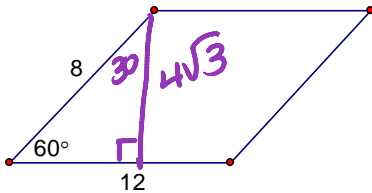
41   41

40

9   9

$9^2 + h^2 = 41^2$

$h^2 = 1600$

$h = 40$

$A = \dfrac{18 \cdot 40}{2}$

$A = 360 u^2$

3. Find the area of the parallelogram.

8   30 $4\sqrt{3}$

60°

12

$A = b \cdot h$

$A = 12 \cdot 4\sqrt{3}$

$A = 48\sqrt{3} \ u^2$

13

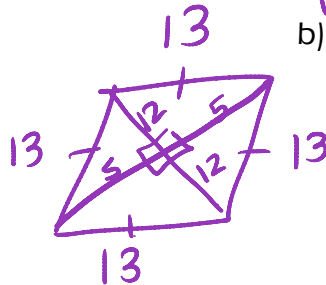13 $\begin{matrix}12 & 5 \\ 5 & 12\end{matrix}$ 13

13

4. Find the area of a rhombus with:

a) A base of 9 and a height of 7

$A = bh$

$A = 9 \cdot 7$

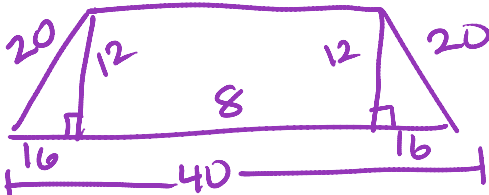$A = 63 u^2$

b) A perimeter of 52 and a diagonal of 24.

$A = \dfrac{d_1 \cdot d_2}{2}$

$A = \dfrac{24 \cdot 10}{2}$

$A = 120 \ u^2$

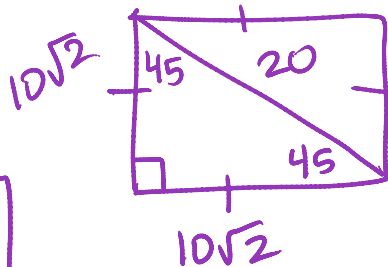5. Find the area of an isosceles trapezoid with side lengths of 8, 20, 40, and 20.

8

20   12   12   20

8

16   40   16

$A = \dfrac{b_1 + b_2}{2} \cdot h$

$A = 288u^2$

$A = \dfrac{8 + 40}{2} \cdot 12$

6. Find the area of a square with a diagonal of 20.

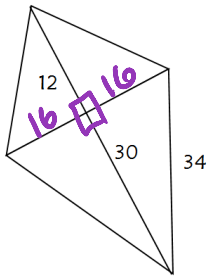$10\sqrt{2}$ 45   20

45

$10\sqrt{2}$ 45

$10\sqrt{2}$

$A = \dfrac{20 \cdot 20}{2} = 200 \ u^2$

or

$A = 10\sqrt{2} \cdot 10\sqrt{2}$

$A = 200 \ u^2$
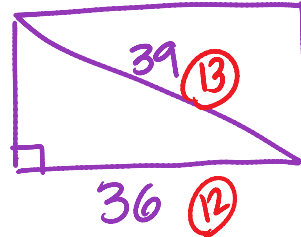
7. Find the area of the kite.

$$A = \frac{d_1 \cdot d_2}{2}$$

$$A = \frac{32 \cdot 42}{2}$$

$$\boxed{A = 672 \ u^2}$$

8. Find the area of a rectangle with a diagonal of 39 and a base of 36.
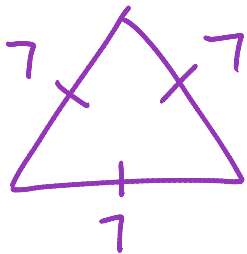
5 × 3

15

39 (13)

36 (12)

$$A = bh$$

$$A = 15 \cdot 36$$

$$\boxed{A = 540 \ u^2}$$

10.2 Area of Circles and Regular Polygons

9. Find the area of an equilateral triangle with a perimeter of 21.

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

$$A = \frac{7^2 \sqrt{3}}{4}$$

$$\boxed{A = \frac{49\sqrt{3}}{4} \ u^2}$$

10. a) Find the area of a circle if its circumference is 24π.

$$C = 2\pi r$$

$$\frac{24\pi}{2\pi} = \frac{2\pi r}{2\pi}$$

$$r = 12$$

$$A = 12^2 \pi$$

$$\boxed{A = 144\pi \ u^2}$$

b) Find the circumference of a circle if the area of a circle is 169π.

$$A = \pi r^2$$

$$\frac{169\pi}{\cancel{}} = \cancel{\pi} r^2$$
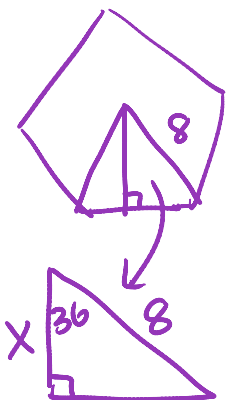
$$\sqrt{169} = \sqrt{r^2}$$

$$r = 13$$

$$C = 2\pi r$$

$$C = 2\pi 13$$

$$\boxed{C = 26\pi \ u}$$

11. Find the apothem of a regular pentagon in which the radius is 8 cm. Round your answer to the nearest hundredth.
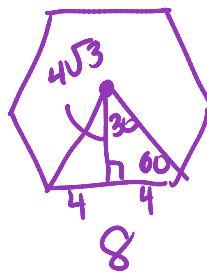

1) $\frac{360}{5} = 72$

2) $\frac{72}{2} = 36$

3) $\cos 36 = \frac{x}{8}$

$$\boxed{x = 6.47}$$

12. Find the area of a regular hexagon in which each side is 8 in.

1) $\frac{360}{6} = 60$

2) $\frac{60}{2} = 30$

3) $A = \frac{1}{2}aP$

$$A = \frac{1}{2}(4\sqrt{3})48$$

$$\boxed{A = (96\sqrt{3}) \ u^2}$$

13. What is the side length of a regular hexagon, given an area of $200\sqrt{3}$ and an apothem of $5\sqrt{3}$?

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

$$200\sqrt{3} = \frac{1}{2}(5\sqrt{3})P$$
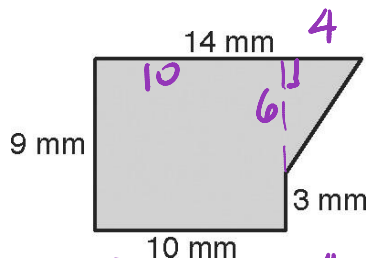
$$200\sqrt{3} = 2.5\sqrt{3} \cdot P$$

$$\frac{200\sqrt{3}}{2.5\sqrt{3}} = \frac{2.5\sqrt{3} \cdot P}{2.5\sqrt{3}}$$

$$80 = P$$

$$\frac{80}{6} = \boxed{13.33 \text{ units}}$$

10.3 Composite Figures
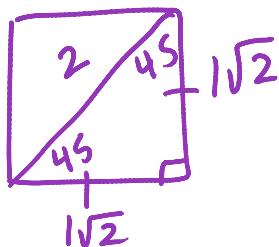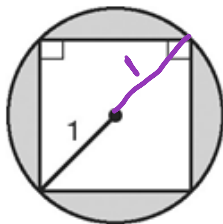
14. Find the area of the shaded region.

14 mm
4
10
6
9 mm
61
3 mm
10 mm

$A_\square = 9 \cdot 10$
$= 90$

$A_\triangle = \dfrac{4 \cdot 6}{2} = 12$

$\boxed{A = 102\,mm^2}$

15. Find the area of the shaded region.

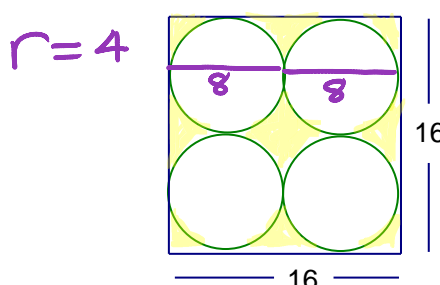$r = 4$
8   8
16
16

$A_\square = 16^2 = 256$

$A_o = \pi r^2$

$A_o = 16\pi$

$\dfrac{\times\ 4\ (circles)}{64\pi}$

$\boxed{A = (256 - 64\pi)\ u^2}$

16. Find the area of the shaded region.

1

2 45 $1\sqrt{2}$
45
$1\sqrt{2}$

$A_o = 1\pi$

$A_\square = (1\sqrt{2})^2 = 2$

$\boxed{A = (1\pi - 2)\ u^2}$

10.4 Perimeter and Area in the Coordinate Plane

17. Estimate the area of the irregular shape.
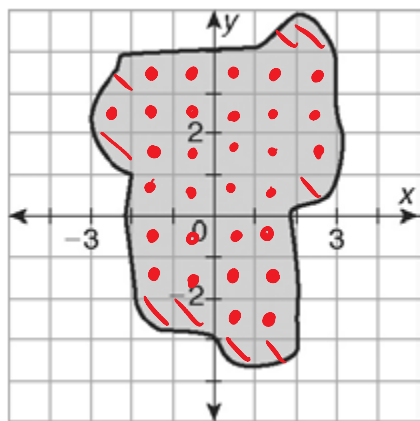
$\text{Whole} = 30$
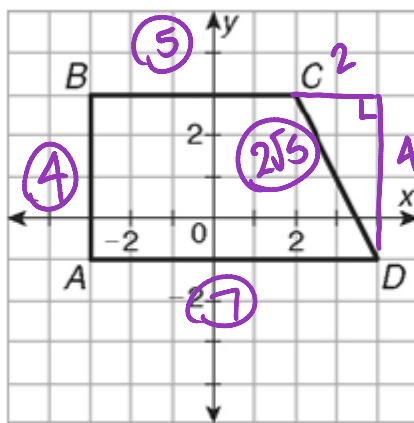$\text{Half} = \dfrac{9}{2} = 4.5$

$\boxed{\text{Total}: 34.5\ u^2}$

18. Classify the polygon with the given vertices. Then, calculate the area and the perimeter.

B   C 2
5
$2\sqrt{5}$ 4
-2   0   2
A   D
-2

$c^2 = 2^2 + 4^2$
$c^2 = \sqrt{20}\quad c = 2\sqrt{5}$

$\left.\begin{array}{c}\overline{BC}\\ \overline{AD}\end{array}\right\}\ m = 0,\ \parallel \text{lines}$

$\overline{AB}: m\text{ is undef.}$

$\overline{CD}: m = -2$

Trapezoid: 1 pair $\parallel$ lines

$A = \dfrac{5+7}{2} \cdot 4$

$\boxed{A = 24\ u^2}$

$P = 4 + 7 + 5 + 2\sqrt{5}$

$\boxed{P = (16 + 2\sqrt{5})\ u^2}$

19. Find the area and perimeter of the polygon below. Round perimeter to nearest hundredth.
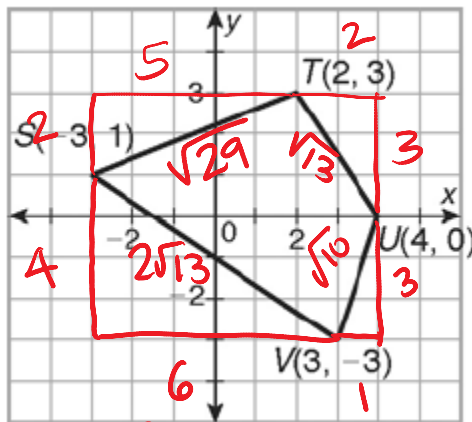
$Area = rectangle - 4 \triangle's$

$= (7 \times 6) - (5 + 3 + 12 + 1.5)$

$= 42 - 21$

$\boxed{Area = 20.5\ u^2}$

$\overline{ST}: 2^2 + 5^2 = c^2$
$4 + 25 = c^2$
$\sqrt{29} = c$

$\overline{TU}: 2^2 + 3^2 = c^2$
$4 + 9 = c^2$
$\sqrt{13} = c$

$\overline{UV}: 1^2 + 3^2 = c^2$
$\sqrt{10} = c$

$\overline{SV}: 4^2 + 6^2 = c^2$ $c = \sqrt{52} = 2\sqrt{13}$

Perimeter =
$\sqrt{29} + \sqrt{13} + 2\sqrt{13} + \sqrt{10}$
$\boxed{P \approx 19.36}$

10.5 Effects of Changing Dimensions and Proportionality

20. The base of a rectangle is multiplied by 1/3. Describe the effect on the area of the rectangle.

$b = 9 \cdot \frac{1}{3}$

$b = 3$

$\boxed{A = 27 u^2}$ (3, 9)

$\boxed{A = 9}$ (3, 3)

Area multiplied by $\frac{1}{3}$

21. The base and height of a triangle are doubled. Describe the effect on the area of the triangle.

$A = \frac{5 \cdot 8}{2}$
$A = 20 u^2$ (5, 8)

$A = \frac{10 \cdot 16}{2}$
$A = 80 u^2$ (10, 16)

Area multiplied by $2^2 = 4$

22. The radius of a circle is multiplied by 4. Describe the effect on the area of the circle.

$A = \pi r^2$
$A = 9\pi$ (3)

$A = \pi r^2$
$A = 144\pi$ (12)

Area multiplied by $4^2 = 16$

Study Notes, Homework Assignments, and 10.1-10.2 Study Guide!