Geo/Trig

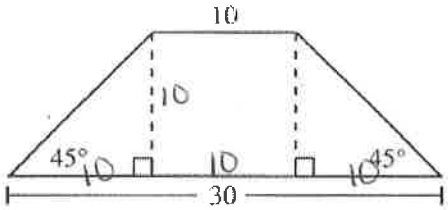
Name: _____

Unit 9: Worksheet 2
a of Trapezoids

Date: _____

A. Calculate the area of the trapezoid shown in each diagram.

1.



$30 - 10 = 20$

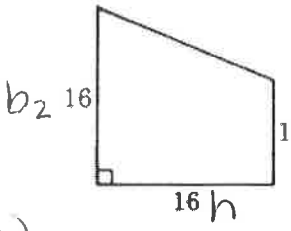
$20/2 = 10$

$A = \frac{1}{2}(10)(10+30)$

$= \frac{1}{2}(10)(40)$

$= 200$

2.

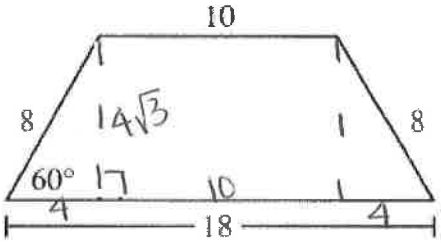


$A = \frac{1}{2}(16)(10+16)$

$= \frac{1}{2}(16)(26)$

$= 208$

3.



$18 - 10 = 8$

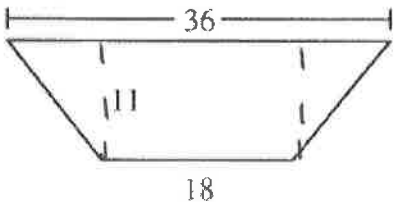
$8/2 = 4$

$A = \frac{1}{2}(4\sqrt{3})(10+18)$

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

$= 56\sqrt{3}$

4.



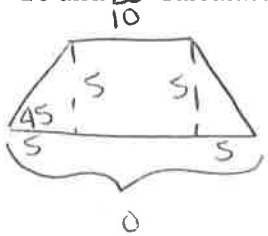
$A = \frac{1}{2}(11)(36+18)$

$= \frac{1}{2}(11)(54)$

$= 297$

B. Draw a sketch of the trapezoid and include all given information. Then calculate the requested measure(s).

5. An isosceles trapezoid has base angles of 45° and bases 10 and 20. Calculate the area.



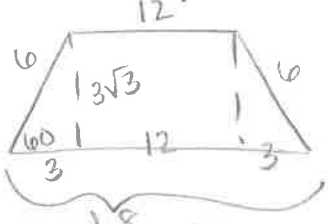
$20 - 10 = 10$

$10/2 = 5$

$A = \frac{1}{2}(5)(10+20)$

$= \frac{1}{2}(5)(30) = 75$

6. An isosceles trapezoid has base angles of 60, legs with lengths 6 and bases 12 and 18. Calculate the area and perimeter.

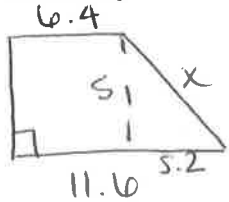


$P = 6 + 6 + 12 + 18 = 42$

$A = \frac{1}{2}(3\sqrt{3})(12+18)$

$A = 45\sqrt{3}$

7. A right trapezoid has a height of 5 and bases 6.4 and 11.6. Calculate the area and perimeter. (Answers may be decimals.)



$A = \frac{1}{2}(5)(6.4+11.6)$

$= \frac{1}{2}(5)(18)$

$= 45$

$P = 6.4 + 5 + 11.6 + 7.2$

$= 30.2$

$5^2 + 5.2^2 = x^2$

$52.04 = x^2$

$7.2 = x$

8. A trapezoid has an area of 112 and median of 16. What is the height?

$A = Mh$

$\frac{112}{16} = \frac{16(h)}{16}$

$7 = h$

C. Area Quiz Review

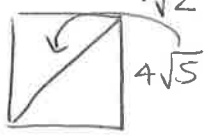
9. The area of a square is 80. Find the side length and the diagonal.

$A = s^2$

$\sqrt{80} = \sqrt{s^2}$

$\sqrt{16 \cdot 5} = s$

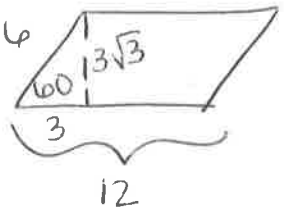
$4\sqrt{5} = s$



$d = 4\sqrt{5} \cdot \sqrt{2}$

$d = 4\sqrt{10}$

10. A parallelogram has sides 12 and 6 with a 60° angle. Calculate the area.



$A = bh$

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

$A = 36\sqrt{3}$

11. An isosceles triangle has a perimeter of 20 and base of 6. Calculate the area.

$20 - 6 = 14$

$14/2 = 7$

$3^2 + h^2 = 7^2$

$9 + h^2 = 49$

$h^2 = 40$

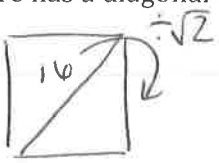
$h = 2\sqrt{10}$

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

$= \frac{1}{2}(6)(2\sqrt{10})$

$A = 6\sqrt{10}$

12. A square has a diagonal of 16. Find the area.



$A = s^2$

$= (8\sqrt{2})^2$

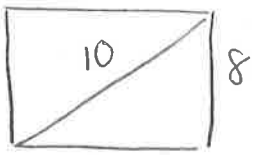
$= 64 \cdot 2$

$A = 128$

$s = \frac{16}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{16\sqrt{2}}{2}$

$= 8\sqrt{2}$

13. A rectangle has a height of 8 and a diagonal of 10. Calculate the area.



$b^2 + 8^2 = 10^2$

$b^2 + 64 = 100$

$b^2 = 36$

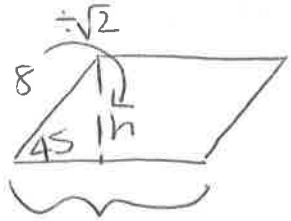
$b = 6$

$A = bh$

$= (6)(8)$

$A = 48$

14. A parallelogram has a 45° angle with sides of 8 and 20. Calculate the area.



$h = \frac{8}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$= \frac{8\sqrt{2}}{2}$

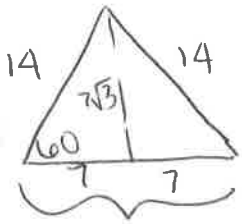
$h = 4\sqrt{2}$

$A = bh$

$= 20(4\sqrt{2})$

$A = 80\sqrt{2}$

15. An equilateral triangle has a perimeter of Calculate the area.

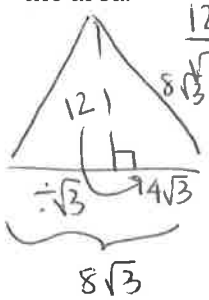


$S = 42/3 = 14$

$A = \frac{1}{2}(14)(7\sqrt{3})$

$A = 49\sqrt{3}$

16. An equilateral triangle has a height of 12. Calculate the area.



$\frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$\frac{12\sqrt{3}}{3}$

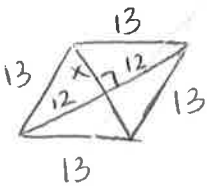
$4\sqrt{3}$

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

$= \frac{1}{2}(8\sqrt{3})(12)$

$A = 48\sqrt{3}$

17. A rhombus has a perimeter of 52 and one diagonal of 24. Calculate the area.



$S = 52/4 = 13$

$A = \frac{1}{2}d_1d_2$

$= \frac{1}{2}(24)(10)$

$A = 120$

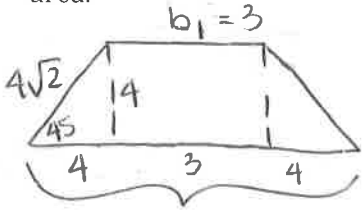
$x^2 + 12^2 = 13^2$

$x^2 + 144 = 169$

$x^2 = 25$

$x = 5$

18. An isosceles trapezoid has 45° base angles, legs with length $4\sqrt{2}$, and a longer base of 11. Calculate the area.



$A = \frac{1}{2}(4)(3+11)$

$= \frac{1}{2}(4)(14)$

$A = 28$