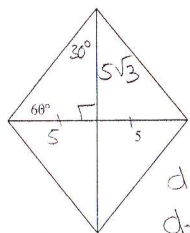


Geometry Chapter 10.1-4 Test

Directions: Read the directions for each question carefully. Complete work and write your answer in the designated box. Attempt EVERY problem. Show ALL work. NO work = NO credit. Good Luck! :)

1. Find the area of the rhombus. Leave your answer in simplest radical form.



Not drawn to scale

$$A = \frac{1}{2} d_1 d_2 \quad (+1)$$

$$= \frac{1}{2} \cdot 10 \cdot 10\sqrt{3} \quad (+1)$$

$$= 50\sqrt{3} \quad (+1)$$

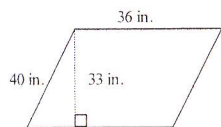
$$d_1 = 10 \quad (+1)$$

$$d_2 = 10\sqrt{3} \quad (+1)$$

1.

$$50\sqrt{3} \quad (+5)$$

2. Find the area.



$$A = bh \quad (+1)$$

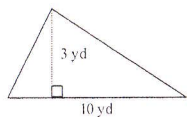
$$= 36 \cdot 33 \quad (+2)$$

$$= 1188 \quad (+1)$$

2.

$$1188 \text{ in}^2 \quad (+4)$$

3. Find the area.



$$A = \frac{1}{2} hb \quad (+1)$$

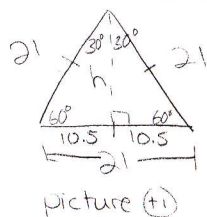
$$= \frac{1}{2} \cdot 3 \cdot 10 \quad (+2)$$

$$= 15 \text{ yd}^2 \quad (+1)$$

3.

$$15 \text{ yd}^2 \quad (+4)$$

4. A piece of art is in the shape of an equilateral triangle with sides of 21 in. Find the area of the piece of art. Round your answer to the nearest tenth.



picture (+1)

$$h = 10.5\sqrt{3} \quad (+1)$$

$$A = \frac{1}{2} hb \quad (+1)$$

$$= \frac{1}{2} \cdot 10.5\sqrt{3} \cdot 21 \quad (+1)$$

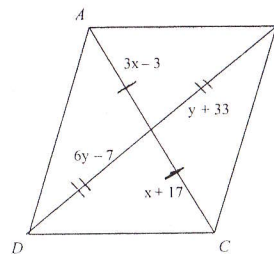
$$= 190.95$$

$$= 191 \text{ in}^2 \quad (+1)$$

4.

$$191 \text{ in}^2 \quad (+5)$$

5. Find values of  $x$  and  $y$  for which  $ABCD$  must be a parallelogram. The diagram is not to scale.



$$3x-3 = x+17 \quad (+1)$$

$$\Rightarrow +3 \quad -x \quad +3$$

$$2x = 20$$

$$x = 10 \quad (+1)$$

$$6y-7 = y+33 \quad (+1)$$

$$\Rightarrow -y \quad -y \quad -17$$

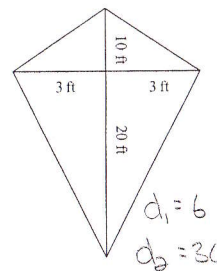
$$5y = 40$$

$$y = 8 \quad (+1)$$

5.  $x = 10$   
 $y = 8$

(+4)

6. What is the area of the kite?



$$d_1 = 6$$

$$d_2 = 30$$

$$A = \frac{1}{2} d_1 d_2 \quad (+1)$$

$$= \frac{1}{2} \cdot 6 \cdot 30 \quad (+2)$$

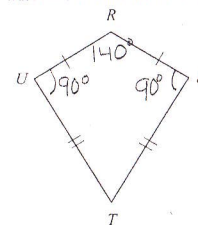
$$= 90 \text{ ft}^2 \quad (+1)$$

6.

$$90 \text{ ft}^2 \quad (+4)$$

(+4)

7.  $m\angle R = 140$  and  $m\angle S = 90$ . Find  $m\angle T$ . The diagram is not to scale.



$$\angle T + 90 + 140 + 90 = 360 \quad (+2)$$

$$\angle T = 40^\circ \quad (+2)$$

7.

$$\angle T = 40^\circ \quad (+4)$$

(+4)

8. Find the area of a regular hexagon with an apothem 16.5 inches long and a side 19 inches long. Round your answer to the nearest tenth.

$$a = 16.5$$

$$p = 19 \cdot 6 = 114$$

$$A = \frac{1}{2} ap \quad (+1)$$

$$= \frac{1}{2} \cdot 16.5 \cdot 114 \quad (+2)$$

$$= 940.5 \quad (+1)$$

8.

$$940.5 \text{ in}^2 \quad (+4)$$

(+4)

9. The area of a parallelogram is  $420 \text{ cm}^2$  and the height is  $35 \text{ cm}$ . Find the corresponding base.

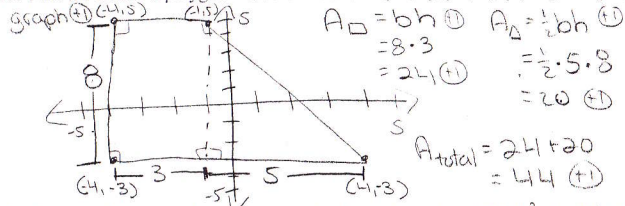
$$A = bh \quad (+1)$$

$$420 = 35b \quad (+2)$$

$$12 = b \quad (+1)$$

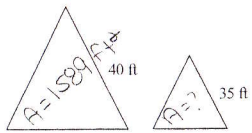
9.  $12 \text{ cm}$  (+4)

10. Find the area of a polygon with the vertices of  $(-4, 5)$ ,  $(-1, 5)$ ,  $(4, -3)$ , and  $(-4, -3)$ .



10.  $44$  (+6)

11. The triangles are similar. The area of the larger triangle is  $1589 \text{ ft}^2$ . Find the area of the smaller triangle to the nearest whole number.



Not drawn to scale

Scale factor:  $\frac{40}{35} = \frac{8}{7} \quad (+1)$

ratio of areas:

$$\frac{8^2}{7^2} = \frac{1589}{x} \quad (+1)$$

$$64x = 77861 \quad (+1)$$

$$x = 1216.57$$

$$= 1217 \quad (+1)$$

11.  $1217 \text{ ft}^2$  (+4)

12. Find the similarity ratio and the ratio of perimeters for two regular pentagons with areas of  $49 \text{ cm}^2$  and  $169 \text{ cm}^2$ .

$$\frac{a^2}{b^2} = \frac{49}{169}$$

want  $\frac{a}{b} = \frac{\sqrt{49}}{\sqrt{169}} = \frac{7}{13} \quad (+2)$

same for similarity ratio & ratio of perimeter

12. Similarity Ratio:  $\frac{7}{13} \quad (+4)$   
 Ratio of Perimeter:  $\frac{7}{13}$

13. A parallelogram has sides measuring  $19.5 \text{ m}$  and  $40.5 \text{ m}$ . The height corresponding to the  $19.5\text{-m}$  base is  $8.1 \text{ m}$ . Find the height, to the nearest tenth of a meter, corresponding to the  $40.5\text{-m}$  base.

$$A = bh \quad (+1)$$

$$19.5 \cdot 8.1 = 40.5h \quad (+1)$$

$$A = 19.5 \cdot 8.1 \quad (+1)$$

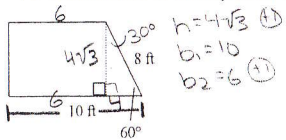
$$157.95 = 40.5h$$

$$A = 40.5h \quad (+1)$$

$$3.9 = h \quad (+1)$$

13.  $3.9 \text{ m}$  (+5)

14. Find the area of the trapezoid. Leave in simplest radical form.



Not drawn to scale

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

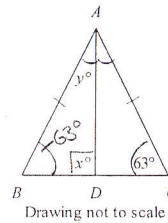
$$= \frac{1}{2} \cdot 4\sqrt{3} \cdot (10 + 6) \quad (+1)$$

$$= \frac{1}{2} \cdot 16 \cdot 4\sqrt{3}$$

$$= 32\sqrt{3} \quad (+1)$$

14.  $32\sqrt{3} \text{ ft}^2$  (+5)

15. Find the values of  $x$  and  $y$ .



Drawing not to scale

$x = 90 \quad (+2)$   
 b/c  $\triangle ABC$  is  
 isos &  $AD$  is an  
 $\angle$  bisector it's also  
 a  $\perp$  bisector

$$y + 63 + 90 = 180 \quad (+1)$$

$$y = 27 \quad (+1)$$

15.  $x = 90^\circ$   
 $y = 27^\circ$  (+4)

16. The legs of an isosceles triangle have lengths  $3x + 4$ ,  $-x + 32$ . The base has length  $2x + 3$ . What is the length of the base?

legs are  $\approx 3x + 4 = -x + 32 \quad (+2)$

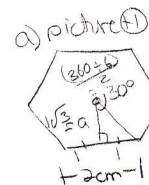
$$4x = 28$$

$$x = 7 \quad (+1)$$

substitute in  $2(7) + 3 = 14 + 3$   
 to get base  $= 17 \quad (+1)$

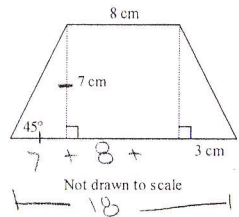
16.  $17$  (+5)

17. a. Find the area of a regular hexagon with sides  $2 \text{ cm}$  long. Leave your answer in simplest radical form.  
 b. Use your answer from part (a) to find the area of a regular hexagon of side length  $8$ .

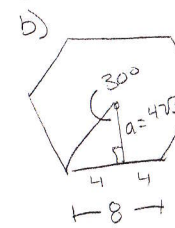


$a = \sqrt{3} \quad (+1)$   
 $A = \frac{1}{2}ap \quad (+1)$   
 $p = 2 \cdot 6 = 12 = \frac{1}{2} \cdot \sqrt{3} \cdot 12 \quad (+1)$   
 $= 6\sqrt{3} \quad (+1)$

Extra Credit



Not drawn to scale



$a = 4\sqrt{3} \quad (+1)$   
 $p = 8 \cdot 6 = 48$   
 $A = \frac{1}{2}ap \quad (+1)$   
 $= \frac{1}{2} \cdot 4\sqrt{3} \cdot 48 \quad (+2)$   
 $= 96\sqrt{3} \quad (+1)$

(a) 5 pt  
 (b) 4 pt b/c can use same pic as a

17. a)  $6\sqrt{3} \text{ cm}^2$   
 b)  $96\sqrt{3} \text{ cm}^2$  (+9)

Extra Credit  
 $91 \text{ cm}^2$   
 (+6)

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

$$= \frac{1}{2} \cdot 7 \cdot (8 + 18)$$

$$= 91 \text{ cm}^2$$