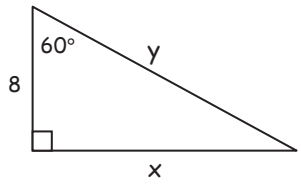
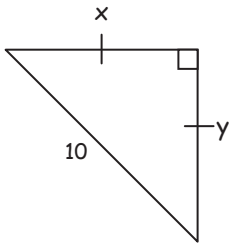
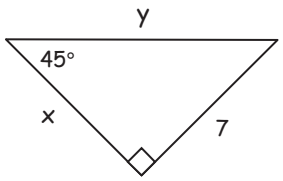
Geometry Practice and Homework **Name**_____#_____
9.4 Special Right Triangles

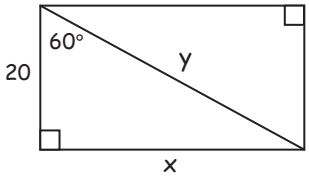
You must show all appropriate work. Leave all answers exact. Simplify and rationalize all radicals.

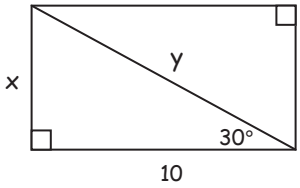
For questions 1-9, solve for x and y in the diagram.

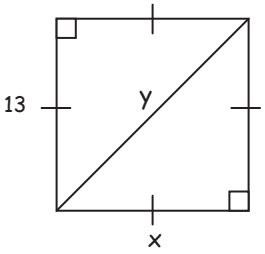
1. 

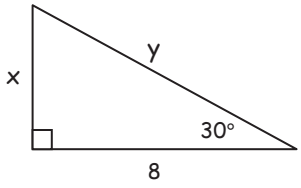
2. 

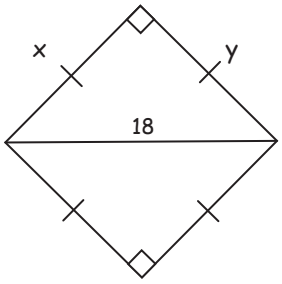
3. 

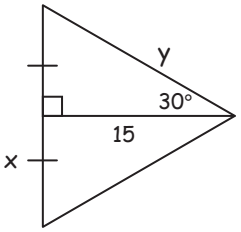
4. 

5. 

6. 

7. 

8. 

9. 

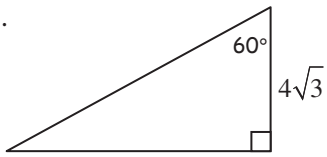
For questions 10-12, sketch the figure that is described, label your diagram, and answer the questions.

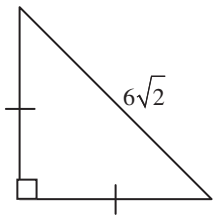
10. The perimeter of an equilateral triangle is 21 inches. Find the length of the altitude.

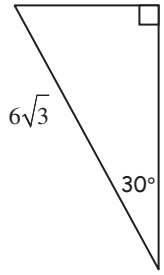
11. The perimeter of a square is 20 cm. Find the length of a diagonal.

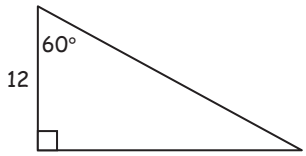
12. The altitude of an equilateral triangle is 18 inches. Find the length of a side and the perimeter.

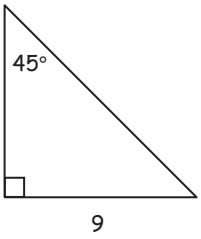
For questions 13-21, find all the "missing parts" in the diagram.

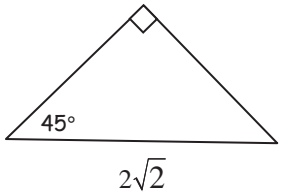
13. 

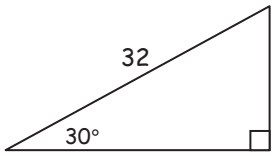
14. 

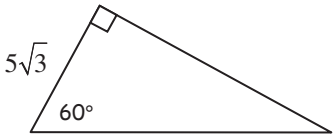
15. 

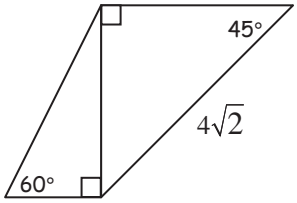
16. 

17. 

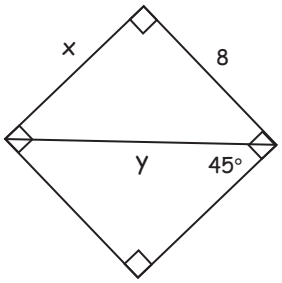
18. 

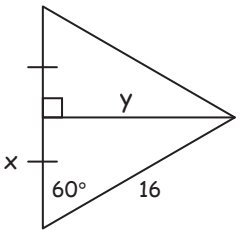
19. 

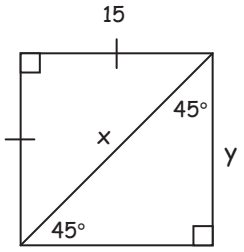
20. 

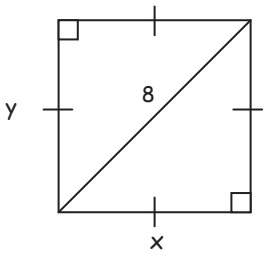
21. 

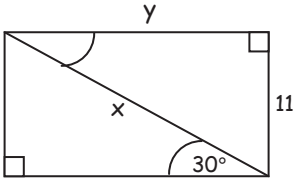
For questions 22-27, solve for x and y in the diagram.

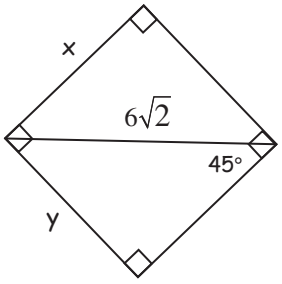
22. 

23. 

24. 

25. 

26. 

27. 

For questions 28-30, sketch the figure that is described, label your diagram, and answer the questions.

28. The perimeter of an equilateral triangle is 15 inches. Find the length of the altitude.

29. The perimeter of a square is 36 cm. Find the length of a diagonal.

30. The diagonal of a square is 26 inches. Find the length of a side and the perimeter.

Geometric Mean Review (See Section 8.1 & 8.2 Notes for the formula if you don't remember!)

31. Find the geometric mean between 4 and 20.

32. Find the geometric mean between 3 and 18.

33. **Bonus:** The geometric mean between "w" and 15 is $3\sqrt{5}$. Solve for "w."

Answers

	x =...	y =...
1.	$8\sqrt{3}$	16
2.	$5\sqrt{2}$	$5\sqrt{2}$
3.	7	$7\sqrt{2}$
4.	$20\sqrt{3}$	40
5.	$\frac{10\sqrt{3}}{3}$	$\frac{20\sqrt{3}}{3}$
6.	13	$13\sqrt{2}$
7.	$\frac{8\sqrt{3}}{3}$	$\frac{16\sqrt{3}}{3}$
8.	$9\sqrt{2}$	$9\sqrt{2}$
9.	$5\sqrt{3}$	$10\sqrt{3}$

10. Altitude= $\frac{7\sqrt{3}}{2}$
11. Diagonal= $5\sqrt{2}$
12. Side= $12\sqrt{3}$, Perm= $36\sqrt{3}$
13. Long = 12, Hyp = $8\sqrt{3}$
14. Legs = 6
15. Short = $3\sqrt{3}$, Long = 9
16. Long = $12\sqrt{3}$, Hyp = 24
17. Leg = 9, Hyp = $9\sqrt{2}$
18. Legs = 2
19. Short = 16, Long = $16\sqrt{3}$
20. Long = 15, Hyp = $10\sqrt{3}$
21. isosceles sides:4
    other triangle: long 8sqrt3/3
    short 4sqrt3/3

	x =...	y =...
22.	8	$8\sqrt{2}$
23.	8	$8\sqrt{3}$
24.	$15\sqrt{2}$	15

	x =...	y =...
25.	$4\sqrt{2}$	$4\sqrt{2}$
26.	$11\sqrt{3}$ ↔	22 x and y swap
27.	6	6

28. Altitude= $\frac{5\sqrt{3}}{2}$
29. Diagonal= $9\sqrt{2}$
30. Side= $13\sqrt{2}$, Perm= $52\sqrt{2}$
31. $4\sqrt{5}$
32. $3\sqrt{6}$
33. 3