Name_____ Date_____

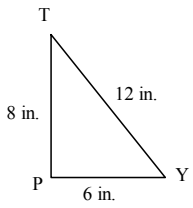
# Pythagorean Theorem –Synthesis

1. A rectangle has an area of 60 sq. ft. and a width of 5 ft. Find the length of the rectangle and length of the diagonal.

2 Can 7, 23, and 24 be the sides of a right triangle?

3. Can 22, 120, and 122 be the sides of a right triangle?

4. Is ΔPYT a right triangle?



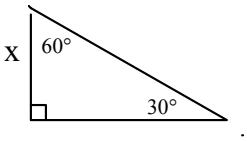

5. Find the area of an isosceles triangle with a base of length 10cm and each of the congruent sides of length 13cm.

6. Find the perimeter of a rectangle with a diagonal of 50 cm and a side of 14 cm.

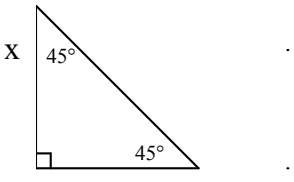
7. How high up on a building will a 12-foot ladder reach if the foot of the ladder is placed five feet from the building?

8. A rectangular closet is 2 feet deep, 4 feet wide, and 8 feet high. What is the length of the longest pole that can fit within the closet?

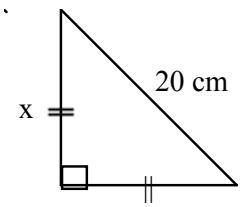
9. Fill in the missing sides for the given 30°, 60°, 90° triangle.



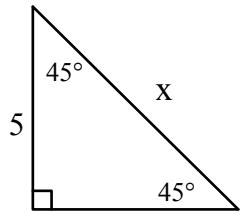

10. Fill in the missing sides for the given 45°, 45°, 90° triangle.



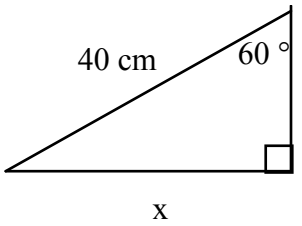

11. Find the side named by x.



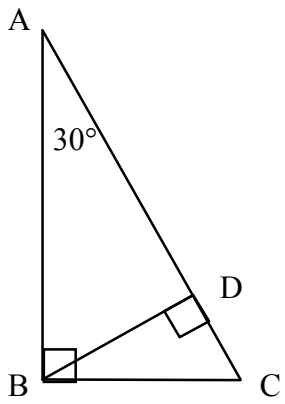
12. Find the side named by x.




13. Find the side named by x.




14. In the figure below if BC = 8 then AD =




Find the distance between the two points.

15. ( 7, 5 ) and ( 1, 13)

16. ( 4, – 1) and ( – 4, 1)

Find the center and radius of the circle whose equation is given.

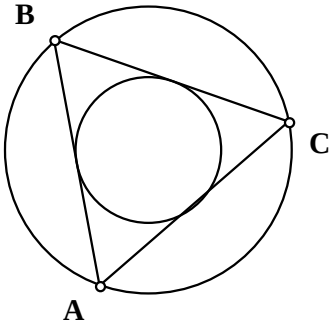
17. $y^2 + 6y + x^2 + 8x = 0$

18. $x^2 + y^2 – 20y = 21$

19. Write the equation of the circle with a diameter whose endpoints are (17, 25) and (7,1)

20. Write the equation of the circle which has center (3,4) and contains point (4, 7)

21. Triangle ABC is equilateral. AB = $10\sqrt{3}$.
Find the area of the inscribed circle, the circumscribed circle, and the triangle.



**Answers**

1. length = 12 ft. diagonal = 13 ft.

2. $7^2 + 23^2$ $24^2$

   49 + 529 576

   578 ≠ 576 not a right triangle

3. $22^2 + 120^2$ $122^2$

   484 + 14400 14484

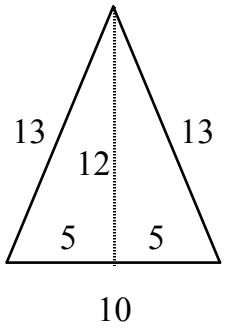
   14484 = 14484 it is a right triangle

4. $6^2 + 8^2$ $12^2$

   36 + 64 144

   100 ≠ 144 not a right triangle

5.




area = $\frac{10 \times 12}{2}$ = 60 sq. cm.

6. $14^2 + l^2 = 50^2$

   $196 + l^2 = 2500 \rightarrow l^2 = 2304$

   $l = 48$

   perimeter = 2(48 + 14) = 124

7. $5^2 + f^2 = 12^2$

   $25 + f^2 = 144 \rightarrow f^2 = 119$

   $f = \sqrt{119} \approx 10.9$ feet

8. $\sqrt{2^2 + 4^2 + 8^2} = \sqrt{84} \approx 9.2$

9. $2x , x\sqrt{3}$

10. $x , x\sqrt{2}$

11. $x = \frac{20}{\sqrt{2}} = \frac{20}{\sqrt{2}} \frac{\sqrt{2}}{2} = 10\sqrt{2}$

12. $5\sqrt{2}$

13. short leg = 40/2 = 20
    long leg = x = $20\sqrt{3}$

14. BC = 8 → CD = 4

    CD = 4 → BD = $4\sqrt{3}$

    BD = $4\sqrt{3}$ → AD = $4\sqrt{3}\sqrt{3} = 12$

15. 10

16. $2\sqrt{17}$

17. C( – 4 , – 3) and radius is 5

18. C( 0, 10) and radius is 11

19. $(x - 12)^2 + (y - 13)^2 = 169$

20. $(x - 3)^2 + (y - 4)^2 = 10$

21. Big circle $100\pi$
    little circle $25\pi$ triangle $27\sqrt{3}$