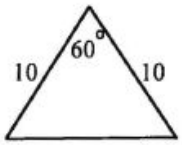
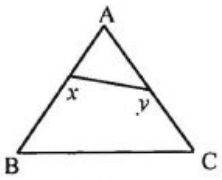
SATPREP
Assignment:*Special Triangle*

Easy

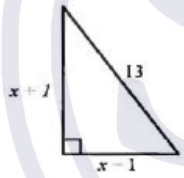


1. What is the length of the third side in the triangle above?
   a) 8
   b) 9
   c) 10
   d) 12

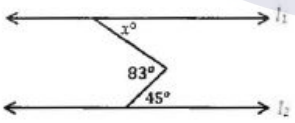


2. In the figure above, ΔABC is an equilateral triangle. What is the value of $x + y$ in degrees?

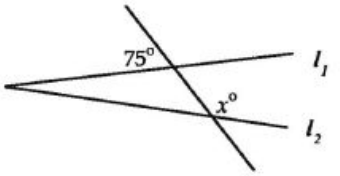
3. A 24-foot-long ladder is placed against a building to form a triangle with the sides of the building and ground. If the angle between ladder and ground is 60°, how far is the bottom of the ladder to the base of the building?
   a) 10
   b) $10\sqrt{3}$
   c) 12
   d) $12\sqrt{3}$



4. In the figure shown above, we assume that $x > 1$. What is the value of $2x^2 + 1$?
   a) 166
   b) 167
   c) 168
   d) 169

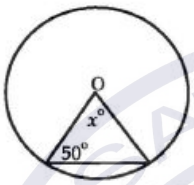


5. In the figure above, lines l_1 and l_2 are parallel. What is the value of x?
   a) 110
   b) 95
   c) 85
   d) 38



Note: Figure not drawn to scale.

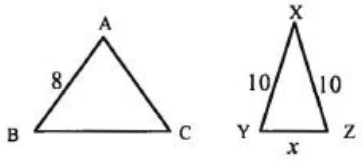
6. In the figure above, which of the following CANNOT be the value of x?
   a) 100
   b) 110
   c) 115
   d) 120



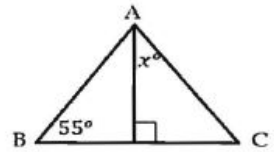
7. In the figure above, point O is the center of the circle. Whit is the value of x?
   a) 85
   b) 80
   c) 60
   d) 55

8. A square and an equilateral triangle have equal perimeter. If the square has an area of 36 square feet, what is the length of one side of the triangle, in feet?
   a) 4
   b) 6
   c) 8
   d) 10

9. The perimeter of ΔABC is equal to the perimeter of ΔXYZ, which are shown below. If ΔABC is equilateral, what is the value of x?

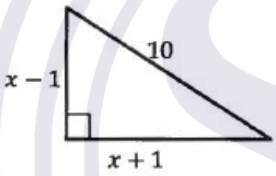


   a) 4
   b) 5
   c) 6
   d) 8

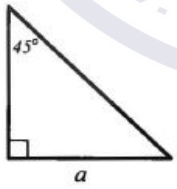


10. If AB = AC in the figure above, what is the value of x, in degrees?
    a) 30°
    b) 35°
    c) 40°
    d) 45°

11. The area of equilateral triangle ΔXYZ is 4 times the area of equilateral triangle ΔABC. If the perimeter of ΔABC is 12, what is the length of one side of ΔXYZ?
    a) 6
    b) 8
    c) 10
    d) 12



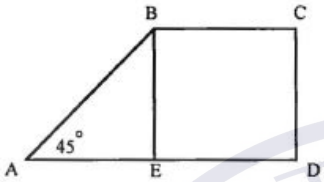
12. The figure above is a right triangle. If $x > 1$, what is the value of x?
    a) 6
    b) 7
    c) 8
    d) 9



13. In the figure above, the perimeter of the triangle is $12 + 6\sqrt{2}$. What is the value of a?
    a) 3
    b) 6
    c) $3\sqrt{2}$
    d) $6\sqrt{2}$

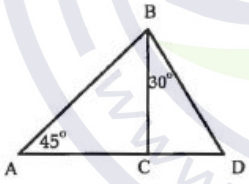
Medium

14. An isosceles right triangle has a hypotenuse with a length of $6\sqrt{2}$. What is the area of this triangle?
    a) 12
    b) 15
    c) 18
    d) $12\sqrt{3}$

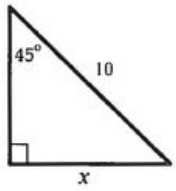


15. In the figure above, BCDE is a square and its area is 64. The points A, E and D are on the same line. What is the length of $\overline{AB}$?
    a) 8
    b) $8\sqrt{2}$
    c) $8\sqrt{3}$
    d) 10

16. In the figure below, if $\overline{AB} = 8\sqrt{2}$, what is the area of ΔABD?



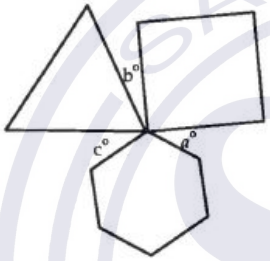
    a) 32
    b) 64
    c) $32\sqrt{3}$
    d) $32(1 + \frac{1}{\sqrt{3}})$



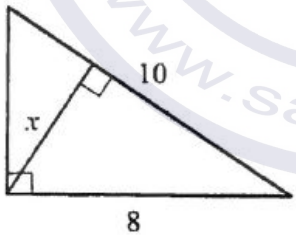
17. What is the value of x in the figure above?

a) 5
b) $5\sqrt{3}$
c) 8
d) $5\sqrt{2}$

18. In the figure below, the vertices of a square, an equilateral triangle, and a regular hexagon intersect at one point. What is the value of $a + b + c$?

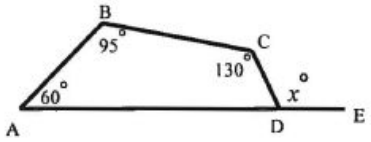


a) 60
b) 90
c) 100
d) 110



Note: Figure not drawn to scale..

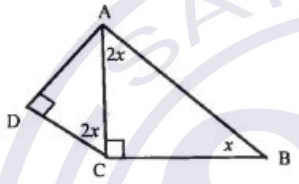
19. In the right triangle above, what is the length of x?



Note: Figure not drawn to scale..

20. The figure above shows a quadrilateral ABCD and its exterior angle ∠CDE. What is the value of x, in degrees?

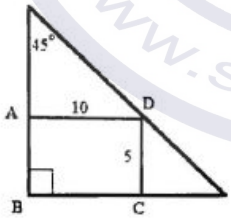
21. In the figure below, AB = 2. What is the length of AD?



Note: Figure not drawn to scale.

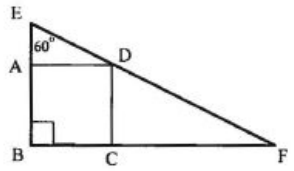
a) $\sqrt{3}$
b) 1
c) $\frac{1}{2}$
d) $\frac{\sqrt{3}}{2}$

Hard



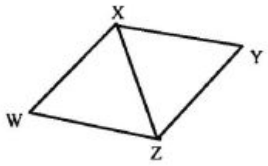
22. In the figure above, if ABCD is a rectangle, what is the length of the big triangle's hypotenuse?

a) 15
b) 20
c) $15\sqrt{2}$
d) $15\sqrt{3}$

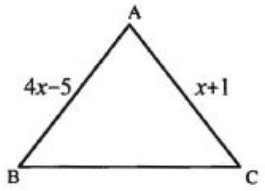


23. In the figure above, if ABCD is a square with area of 16, what is the area of triangle BEF?
    a) 12
    b) 18
    c) $16(1+\frac{2\sqrt{3}}{3})$
    d) $16\sqrt{3}$

24. In the figure above. ΔABC is an equilateral triangle with side of length 8. What is the radius of a circle that is inscribed inside of ΔABC?

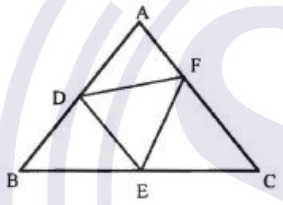


25. If the five line segments in the figure above are all congruent, what is the ratio of the length of WY (not shown) to the length of XZ?



26. In the figure above, if ΔABC is an equilateral triangle, what is the perimeter of ΔABC?
    a) 6
    b) 9
    c) 12
    d) 15

27. In the figure below, ΔABC is an isosceles triangle where $m\angle B = m\angle C$ and ΔDEF is an equilateral triangle. If the measure of $\angle ABC$ is 55° and the measure of $\angle BDE$ is 75°, what is the measure of $\angle DFA$?



    a) 40°
    b) 55°
    c) 60°
    d) 65°