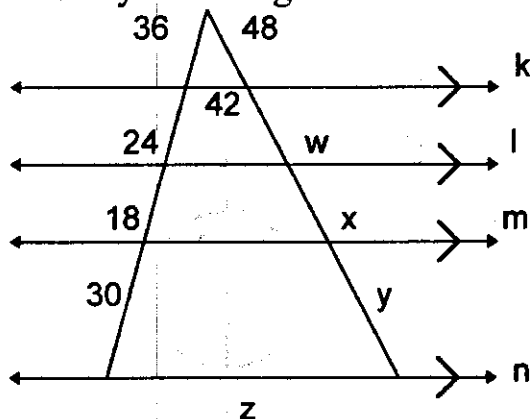
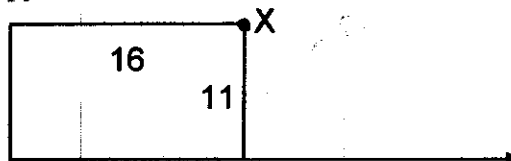


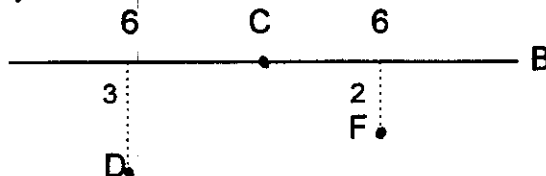
1. Find $\sqrt{w + x + y + z + 3}$ given that lines $k, l, m,$ and n are all parallel.



2. If Skippy the goat is tied, by a 22 foot rope, to the corner of a rectangular garage at point x , and there is a fence coming off of the side of the garage. How much room has Ockshmall left for Skippy to run around?

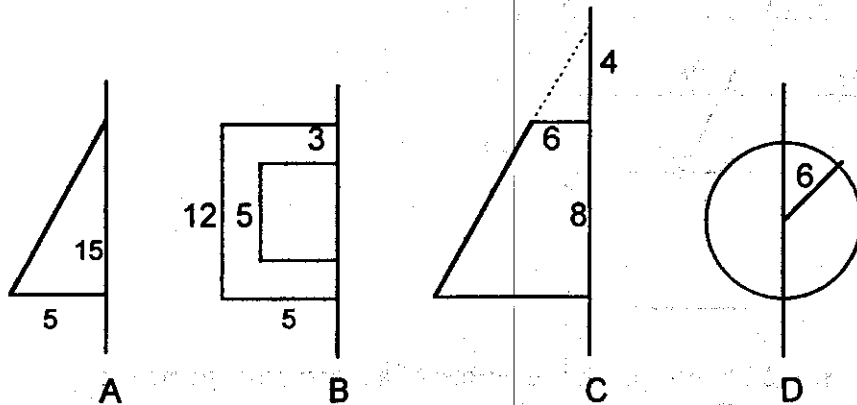


3. If Paco has a triangular pyramid made of cannon balls, which has 16 cannon balls on a side of the base, how many cannon balls are there in the whole pyramid?
4. The areas of two similar octagons are in the ratio of $9 : 5$. The ratio of the sides of the larger one are $9 : 7 : 7 : 6 : 5 : 4 : 4 : 2$. Find the length of the longest side of the small octagon if the perimeter of the large one is 132.
5. A 30 ft. ladder is leaning against a building such that it's base is 24 ft. from the building. The top of the ladder slides down the building 6 ft. How far is the base from the building?
6. Mary, Cindy, and Kerri are at points $D, F,$ and C respectively.
 If: $x =$ the shortest distance between Mary and Cindy by touching wall B
 $y =$ the shortest distance between Mary and Cindy
 $z =$ the shortest distance between Mary and Cindy by touching Kerri
 Find: $15x/39y^2 \cdot z$

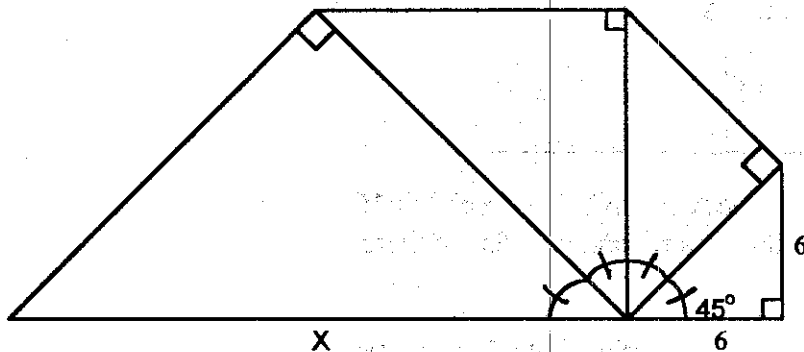


7. If A, B, C, and D are the volumes of the solids created by spinning the respective shapes around their respective vertical axes, then find:

$$(C - A - B - D)/4$$



8. Find x:



9. Simplify:

$$[\sin 30 + \tan 45 + \cos 51 (\sin 45 - \cos 45 + \cot 45) \sec 51] - [\tan 30 (\sin 33 + \cos 60 - \cos 57) \cot 30] - [\csc 30 + \cos 60 - 2\cot 45 + \sin 30]$$

10. Given triangle ABC, with vertices A (-3,0) and B (0,-4) and C (0,0). Find:

- I. the coordinates of the circumcenter of the triangle
- II. the coordinates of the incenter of the triangle
- III. the coordinates of the centroid of the triangle
- IV. the coordinates of the orthocenter of the triangle

11. If: a = volume of a cylinder of height 12 and radius 3

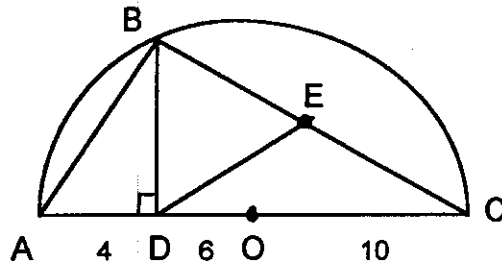
b = surface area of a sphere of radius 5

c = the area of a hexagon of side length 6

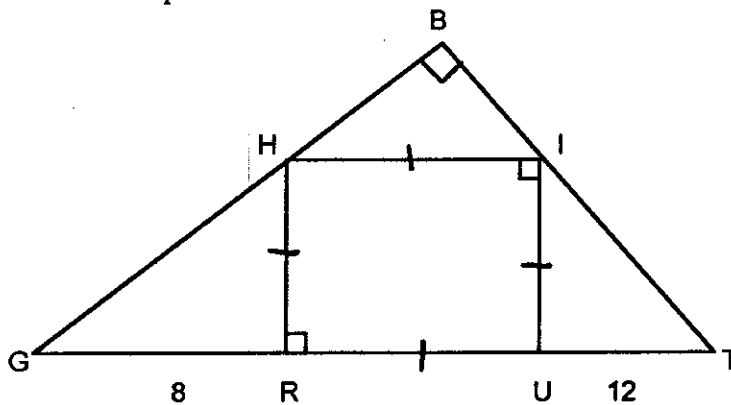
d = the height of a square pyramid of volume 576 and a base length of 8

Find $a + b + (c \times d)$

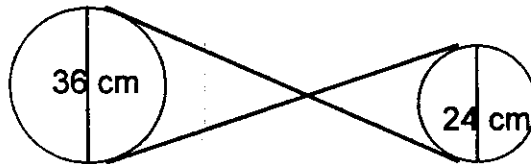
12. If: a = the area of semi-circle ACB
 b = the area of triangle ACB
 c = the length of median DE
 Find $a + (b \times c)$



13. Find the area of trapezoid $GHIT$.



14. A belt runs between two wheels crossing between them so that the larger wheel turns the smaller wheel in the opposite direction. The diameter of the larger wheel is 36 cm., and the diameter of the smaller wheel is 24 cm. The distance between the centers of the two wheels is 60 cm. The belt crosses 24 cm. from the center of the smaller wheel. Find the length of the belt.



15. A can of tennis balls has an inside diameter of 7 cm. and a height of 20 cm. If the diameter of the tennis ball is 6 cm., what percentage of the volume of the can do the three tennis balls occupy? Round your answer to the nearest tenth of a percent.