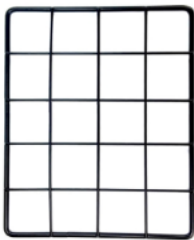
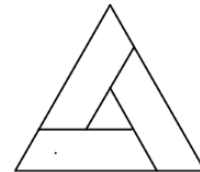


Geometry Round

30 minutes | 15 problems

1. In Block Blast, you can place blocks in a rectangle that is 15 tiles wide and 10 tiles long. What is the area of the rectangle?

2. The outer equilateral triangle has area 63, the inner equilateral triangle has area 12, and the three trapezoids are congruent. What is the area of one of the trapezoids? (Figure not drawn to scale.)

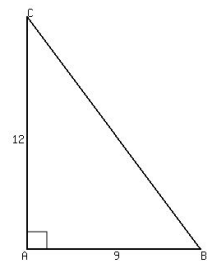


3. Randy is playing a game of Tetris. Somehow, he manages to break the game and only gets L-shaped blocks, as shown to the left. If the playing area is a 4x5 rectangle of blocks, how many L-shaped blocks can he fit (if they can be rotated)?

4. Pikachu runs along an arc of a circle with a radius of 50 meters, covering an angle of 120 degrees. How long is the arc that Pikachu runs along in terms of π ?

5. In Minecraft, you can build structures using cubes with a side length of 1 meter. You decide to make a rectangular prism-shaped house with the length being 10 meters, the width being 6 meters, and the height being 4 meters. What is the surface area of the outside of the house?

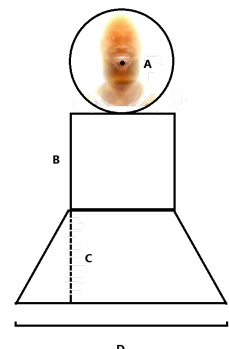
6. In an online multiplayer game, Joey wants to build a fence for his triangular backyard shown below. If each fence post must be placed 3 feet apart, how many fence posts are needed for his backyard?



7. Steve has just built a house in his favorite game, Minecraft. It consists of 20 cubes, each with edge lengths of 3 feet. What is the volume of those cubes?

8. Mario is rolling a wheel of cheese up a hill. If the radius of the wheel is 7, and it takes him 5 complete revolutions to climb the hill, how far has Mario rolled this wheel of cheese? Express your answer in terms of π .

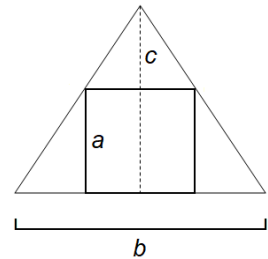
9. It's the year 2042, and our glorious king LeBron James has just retired from the NBA. In his honor, 2K42 has released a collectable trophy shown below, consisting of a circle, square, and trapezoid. Side B, altitude C, and the diameter of circle A all share the same length of 4. Side D has a length of 8. What is the total area of this trophy commemorating LeBron James,



the sunshine of our world? Express your answer in the form $a + b\pi$, where a and b are constants.

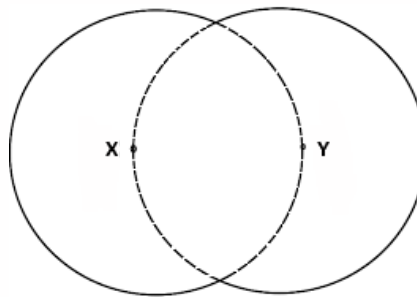
10. Mario, Luigi, and Princess Peach are standing in positions so that they form an equilateral triangle. If Mario is standing 2m away from Luigi, what is the area of the triangle can be expressed in the form $\sqrt{a}$. What is the value of a ?

11. Brady is playing Rocket League and takes a shot at the other team's goal. The goal is represented by a square inscribed within a triangle, which represents the entire area where he could potentially shoot the ball. Assuming $a = 3$ ft, $b = 7$ ft, and $c = 5$ ft, if Brady shoots at a random point in the diagram, what is the probability that he will score a goal?



12. In the game *Geometry Dash*, a player's cube can just barely make a three-spike jump. If each spike is an equilateral triangle with side lengths of 2, The total area of all three spikes can be expressed in the form $a\sqrt{b}$. What is the value of $a + b$?

13. Jimmy is coding a gaming project for homework. One part of his game is a Venn diagram, shown below. If circle X and circle Y share a radius of 3, what is the perimeter of the whole diagram? Express your answer in terms of π .



14. The circumference of the eye of the storm in Fortnite decreases at a rate of 3π miles per minute. The circumference of the circle starts at 60π miles when the game starts. After 8 minutes, how much of the area of the circle is decreased in terms of π ?

15. Mario races along a circular track. He finds a shortcut though, represented by the chord between points B and C in the picture to the side, reducing his travel amount! Points B and C create a 90 degree arc on the circular track. What is the distance Mario saved from traveling? Your answer should be in the form $\frac{A}{B}\pi - 5\sqrt{2}$ where A and B are integers with no common factors. On your answer sheet, write the product of A and B.

