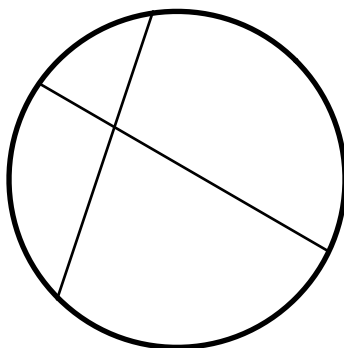


Cayuga Heights 4th Grade Math Club
Solutions for November 14, 2019

1. The following diagram shows how to cut a pie into 4 pieces with 2 straight cuts. What is the largest number of pieces it can be cut into with 3 straight cuts?



Answer:

It can be cut into at most pieces!

2. Olivia is building a fence to enclose her garden. Her garden is a rectangle exactly twice as long as it is wide, and it takes 42 feet of fence to enclose it. What is the length of the garden?

Answer:

The perimeter of the rectangle is 42 feet, so the long dimension of the rectangle is long. Try using guess-and-check as a strategy.

3. Alex wants to build a rectangular garden too, but she only has 36 feet of fence to use. What is the area in square feet of the largest garden she can build?

Answer:

The largest garden will be a square garden, so it will be $9' \times 9'$, meaning an area of $9^2 =$. Compare this to the area of $8 \times 10 = 80$ or $7 \times 11 = 77$. The more oblong the shape becomes, the lower its area.

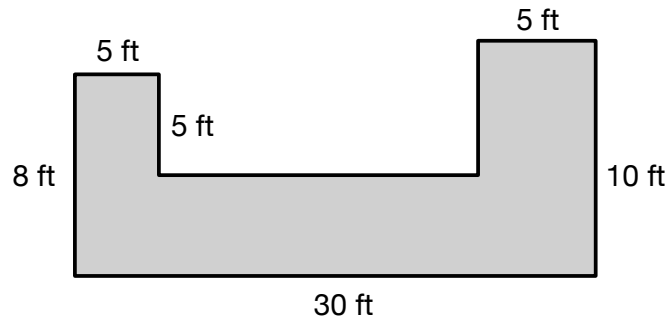
4. The *perimeter* of a shape is the length of the path that encloses it. If the area and the perimeter of a square are equal, what is the length of the side of the square?

Answer:

idea 1: guess-and-check. If it's 2, the area is 4 and the perimeter is 8. If it's 3, the area is 9 and the perimeter is 12. Closer. Now we try 4 and it works.

idea 2: If S is the side length, $4 \times S$ is the perimeter and S^2 is the area. These are equal if $S = 4$.

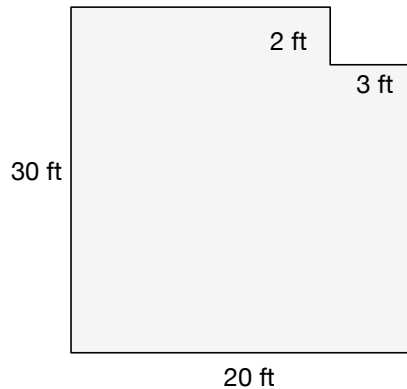
5. Sam is building a miniature golf course. One part of the course is laid out in the following shape. How many square feet of artificial turf does he need to cover this shape?



Answer:

The trick is to divide the shape up into rectangles. If the divisions are all vertical, you get three rectangles with areas $40 + 60 + 50 = 150$ square feet in total.

How many square feet would he need for *this* shape?



Answer:

Here we can divide the shape into 2 big rectangles, but it's much easier to instead subtract the area of the notch! $30 \times 20 - 2 \times 3 = 600 - 6 = 594$ square feet

6. Pavan uses one full bucket of paint to paint a square that is 10 meters on a side. How many buckets of paint will he need to paint a square that is 30 meters on a side? How about if it is 50 meters on a side?

Answer:

9 for 30 meters, and 25 for 50 meters.

7. A four-digit number is written on a piece of paper. Oren spills juice on it and two of the digits are no longer readable; all he can see is 86??. Fortunately, he remembers that the number was divisible by 3, by 4, and by 5, so he can figure out what the erased digits ?? were. What was the four-digit number?

Answer:

Since it is even and divisible by 5, the last digit must be 0. The third digit must be added to $8+6=14$ to get a multiple of 3, so the third digit must be 1, 4, or 7. However, only 4 makes the final number a multiple of 4, since 40 is a multiple of 4. So the answer is 8640.