# Keep Your BRAIN FIT!

## 8 Summer Math Fitness Challenges

## FOR GRADES 6-8

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# SUMMER MATH FITNESS CHALLENGE:

*Do a problem a week to keep your brain fit!*

Grades 6 - 8

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# Challenge Problems:


A palindrome is a number that is read the same forward and backward such as 88 and 242. Find the number of palindromes there are between 0 and 1000. Write a phrase or sentence that is a palindrome.


It is summer and you and your family are off on a road trip for a summer vacation. You begin your trip at one highway marker, and you end the trip at another highway marker. The number on the beginning marker is the lowest three digit palindrome, and the number on the ending marker is the highest three-digit palindrome. Driving at a rate of 55 miles per hour, how long would it take to finish the trip? Round your answer to the nearest minute. (Hint: highway markers indicate the number of miles travelled from a given point.)


Imagine a highway from the Earth to the Moon. If you left Earth on January 1, 2015, and drove at an average speed of 55 miles per hour, driving both day and night, on what day would you arrive at the moon? (You will probably need a nap when you get there!)


Imagine painting the four lanes in a mile of highway, each lane being a different color. If one gallon of paint covers 500 square feet of area, how many gallons of paint would you need for a one-coat cover? This might be a very colorful highway! (Hint: You will want to find out how wide a highway lane is.)


The horizontal length of the United States flag is called the FLY. The vertical width is called the HOIST. The UNION is the upper left portion of the flag that shows the 50 stars on a blue background. What is the area of the UNION on a United States flag with a FLY of a 9 ½ feet and a HOIST of 5 feet?

# Challenge Problems:

## WEEK 6

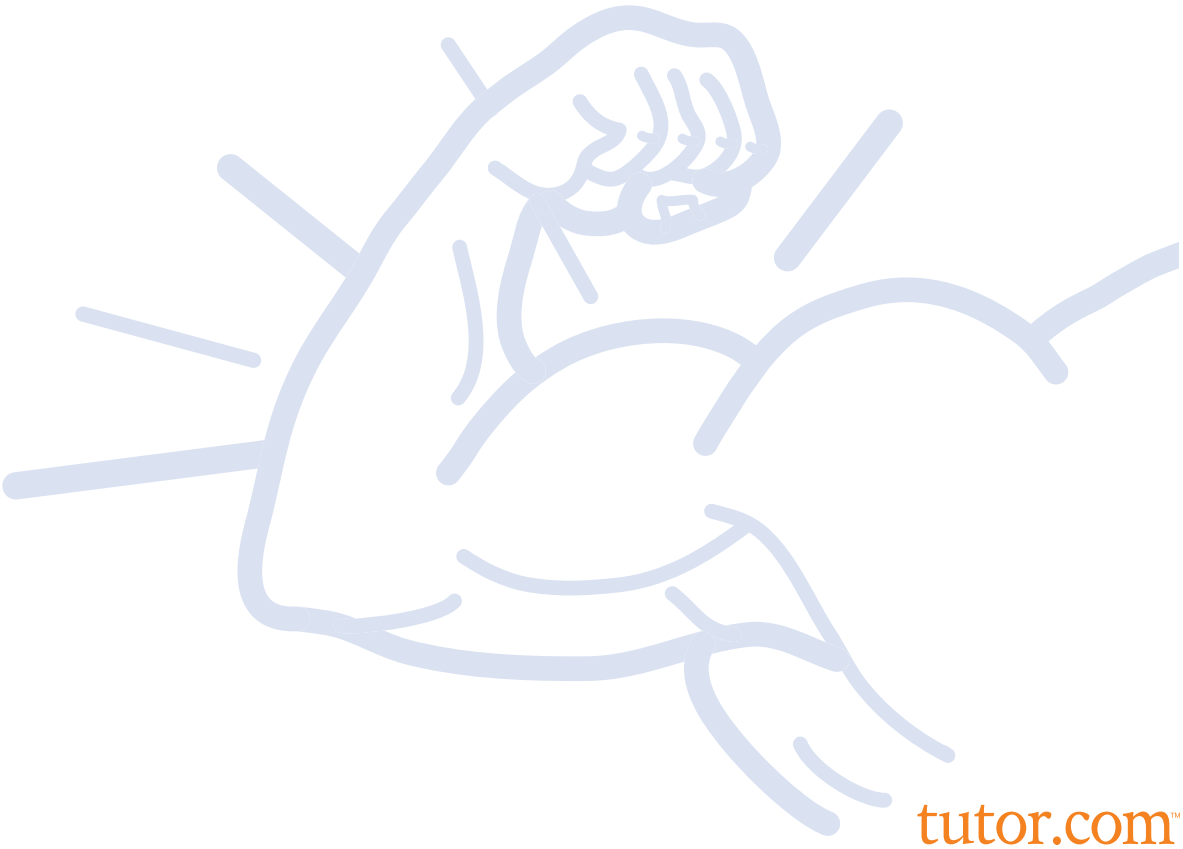
Welcome to landscaping work! The Chamblee Garden Club has a job for you. There is a square garden in their city park and dogs and other small animals tend to run through it. The garden is divided into five rectangular flower beds that are as long as one side of the square. The perimeter of each rectangle is 60 meters. The club would like you to build a fence around the entire garden, but first they need to know how much fencing they would need to purchase?

## WEEK 7

Have you ever been in an earthquake? They can be pretty scary! The Richter Scale is used to measure the strength of earthquakes. How many times stronger is an earthquake measuring 8 than an earthquake measuring 2 on the Richter Scale?

## WEEK 8

Here's a measurement challenge that will take you off to Paris! How many 7 ½ inch pencils would have to be placed end to end to reach from the ground to the top of the TV mast on the Eiffel Tower?



# Solutions:

## WEEK 1 SOLUTION:

Find the number of palindromes there are between 0 and 1000.
90 (11, 22… 99, 111, 121…191, 212, 222…292, 313, 323…393, 414, 424…494, 515, 525… 595, 616, 626…696, 717, 727…797, 818, 828…898, 919, 929…999)

Write a phrase or sentence that is a palindrome.
Answers may vary. (Examples: Desserts, I stressed!, Never odd or even.)

## WEEK 2 SOLUTION:

The lowest three digit palindrome is 101.
The highest three digit palindrome is 999.
The total miles traveled is 999 – 101 = 898 miles.
898 miles ÷ 55 mph = 16.33 hours (rounded)

It would take 16 hours and 20 minutes to finish the trip.

## WEEK 3 SOLUTION:

The distance from Earth to Moon is 238,900 miles.
238,900 miles ÷ 55 mph = 4343.6364 hours (rounded)
4343.6364 hours ÷ 24 = 180.98 days

You would arrive on the moon the evening of June 29th.

## WEEK 4 SOLUTION:

A mile is 5280 feet. A highway lane is 12 feet wide. The area of one lane in one mile of highway is 63, 360 square feet (12 feet x 5280 feet). One gallon of paint covers 500 square feet. You will need 127 gallons (63,360 ÷ 500 = 126.72; you cannot purchase part of a gallon so you have to round up). To paint all four lanes, you will need 508 gallons of paint (127 gallons x 4 lanes).

## WEEK 5 SOLUTION:

The UNION is 4/10 of the FLY. 9 ½ x 4/10 = 38/10 feet

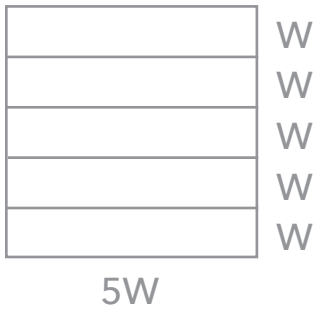
The UNION is 7/13 of the HOIST. 5 x 7/13 = 35/13 feet

Area = length x width
38/10 feet x 35/13 feet = 1330/130 = 10 30/130 = 103/13 square feet

The area of the UNION is 10 3/13 square feet.

# Solutions:

## WEEK 6 SOLUTION:




The perimeter of an individual rectangle:

w + 5w + w + 5w = 60
12w = 60
W = 5

The width of each rectangle is 5 meters.

Each side of the square is 5w meters, which would be 5(5) or 25 meters. So, the perimeter of the square is 4(25) which is 100 meters.

The club would need to purchase 100 meters of fencing material to enclose the garden.

## WEEK 7 SOLUTION:

An earthquake measuring 2 on the Richter Scale is 10 times stronger than an earthquake measuring 1 on the Richter Scale.

An earthquake measuring 3 on the Richter Scale is 100 times stronger than an earthquake measuring 1.

An earthquake measuring 8 on the Richter Scale is 10,000,000 times stronger than an earthquake measuring 1 and 1,000,000 times stronger than an earthquake measuring 2.

## WEEK 8 SOLUTION:

The Eiffel Tower is 1, 052 feet 4 inches tall (including the TV mast).

1,052 x 12 = 12,624 inches
12,624 + 4 = 12,628 inches
This is the height of the Eiffel Tower in inches.

12,628 ÷ 7 ½ = 1683.73

It would take 1684 pencils to reach the top of the Eiffel Tower.