

Marathon Math Problems - Week 4

You should write all answers on a *separate sheet of paper*.

Problem 1

Three consecutive whole numbers sum to 246. What are the three numbers? Explain how you got your answer.

Problem 2

Three different *pairs* of whole numbers sum to 6.

$$1 + 5 = 6$$

$$2 + 4 = 6$$

$$3 + 3 = 6$$

How many *pairs* of whole numbers sum to 1000? Explain how you got your answer.

Problem 3

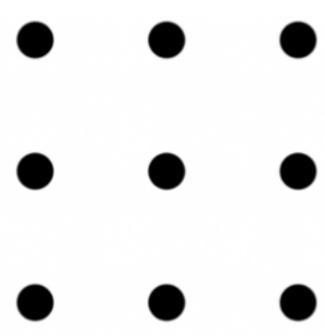
How many three-digit numbers have a larger first digit than second digit? Explain how you got your answer.

Marathon Math Problems - Week 11

Name: _____

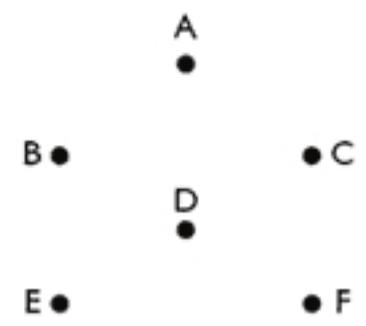
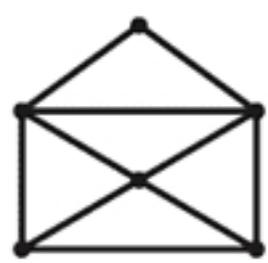
Problem 1

Without lifting your pencil, draw 4 straight lines to connect all 9 dots.



Problem 2

Connect six points (labeled A-F) with line segments. When connected, they should look like an envelope with its flap open, as shown. You must do this without lifting your pencil, crossing over any lines, or retracing any lines. Circle the letter you start at, and draw arrows showing which directions you drew your lines.



Marathon Math Problems - Week 12

Name: _____

1. A black bag contains 5 red marbles, 4 yellow marbles, 3 green marbles, and 3 blue marbles. You are going to take marbles out of the black bag, one at a time, and move them to a white bag, without looking at the color of the marble. You must be SURE that the white bag ends up with at least one marble of each color (still no looking!). What is the minimum number of marbles that guarantees this? How do you know? Write complete sentences explaining your reasoning.

2. A mother, a father, and two children need to cross a river. However, their small boat can only carry the weight of 1 adult, or 2 children (but not both). Can the family get across the river? Explain your reasoning with complete sentences.

Marathon Math Problems - Week 13

Name: _____

1. Four people are contestants on a game show competing for a prize of \$1000. They must stand as seen in the picture, and only face forward. They are not allowed to move even their heads. There is a brick wall between A and B that cannot be seen through. They are told that in total, 2 black hats and 2 white hats are going to be placed on their heads. However, each person *cannot* see which color hat is placed on their own head. To win the prize, they must be the first to announce the color of their own hat with certainty, AND to explain how they KNOW what color it is. After a few minutes, one of them calls out the answer. Who calls out, and how do they know?

