

Roman Numerals I

Warm Up: an Optical Illusion

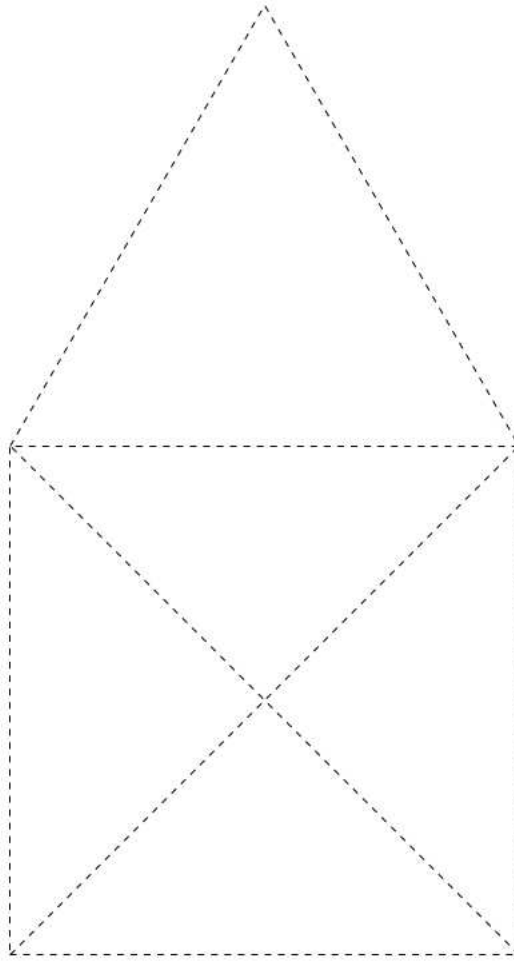
Look at the picture below.



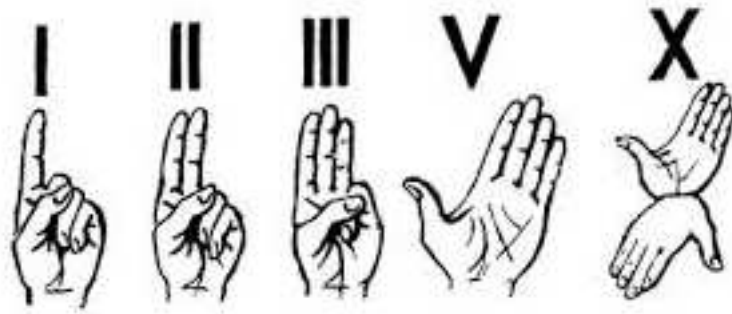
- What does the picture show?
- Can you see anything else in this picture?
- Does your partner see the same thing?
- If not, can both of you be right?
- What is an optical illusion?

Warm Up

Trace the shape below without lifting pencil from paper.



Roman Numerals (one through ten)



Roman numerals I, V and X are basic. We can make other numbers using these basic ones.

1. Make the Roman numerals representing the numbers from 1 through 10 using craft sticks. Show your work to your teacher.
2. How many sticks do you need in all to make all the Roman numerals from I to X?
3. Which of the Roman numerals I through X requires the biggest number of craft sticks to make?
4. Which of the Roman numerals look like English letters?

5. Insert the missing Roman numerals:

I, II, III, , V, VI , , IX, X

6. Someone made many mistakes when writing these Roman numerals. Rewrite them correctly.

• IIII \longrightarrow

• VIIII \longrightarrow

• IIV \longrightarrow

• IIIX \longrightarrow

• VX \longrightarrow

• VIX \longrightarrow

Addition and Subtraction

Some addition and subtraction problems are easy to solve with Roman numerals.

For example,

- $V+I=$

- $V+III=$

- $III-I =$

- $VII-I =$

- $VIII-II=$

- $IX+I=$

Other problems are more complicated:

- $\text{III} + \text{II} =$

- $\text{V} + \text{V} =$

- $\text{IV} + \text{IV} =$

- $\text{IV} + \text{V} =$

- $\text{VI} - \text{II} =$

- $\text{VII} - \text{IV} =$

- $\text{VI} - \text{II} =$

- $\text{X} - \text{VI} =$

Move a stick (example)

The number sentence below is made out of craft sticks:

$$\text{II}+\text{II}=\text{VI}$$

Unfortunately, it is not correct, $2 + 2 \neq 6$.

We will move one stick to correct it.

There are two ways to do it:

First way: $\text{II}+\text{II}=\text{VI} \rightsquigarrow \text{II}+\text{II}=\text{IV}$

Second way: $\text{II}+\text{II}=\text{VI} \rightsquigarrow \text{II}+\text{III}=\text{V}$

Make the above number sentences on the left out of craft sticks. Then, move one craft stick to make the corrected number sentences on the right.

Move a stick (problems)

Make the number sentences below out of craft sticks.

Move one stick to correct each number sentence.

Write down the correct number sentence.

Some problems have multiple solutions.

1. $VI + II = VI$

2. $IV + IV = X$

3. $IX - V = VI$

Homework

1. Show your family how to write Roman numerals and how to use them.
2. Finish solving all the problems from the class.
3. Make your own “Move a stick” problem. Write it down on a index card. We will exchange the index cards next time and solve your problems in class as a warm-up.