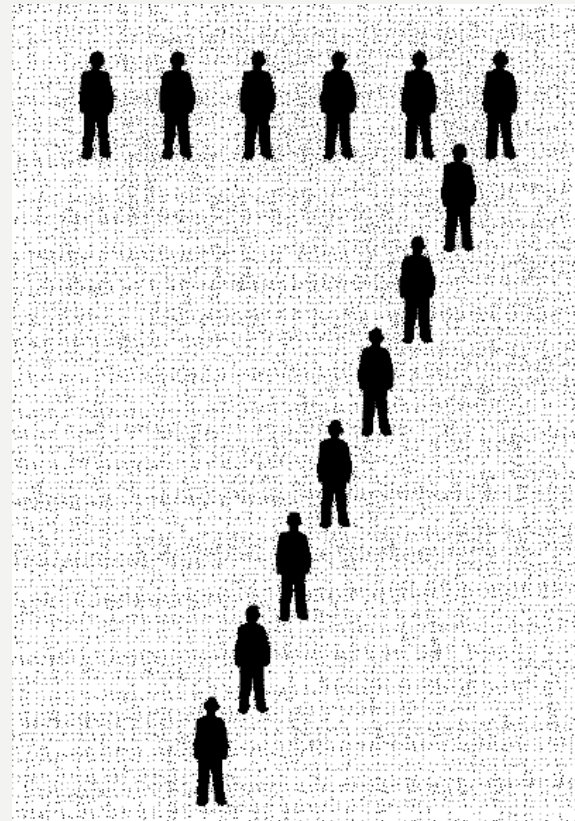


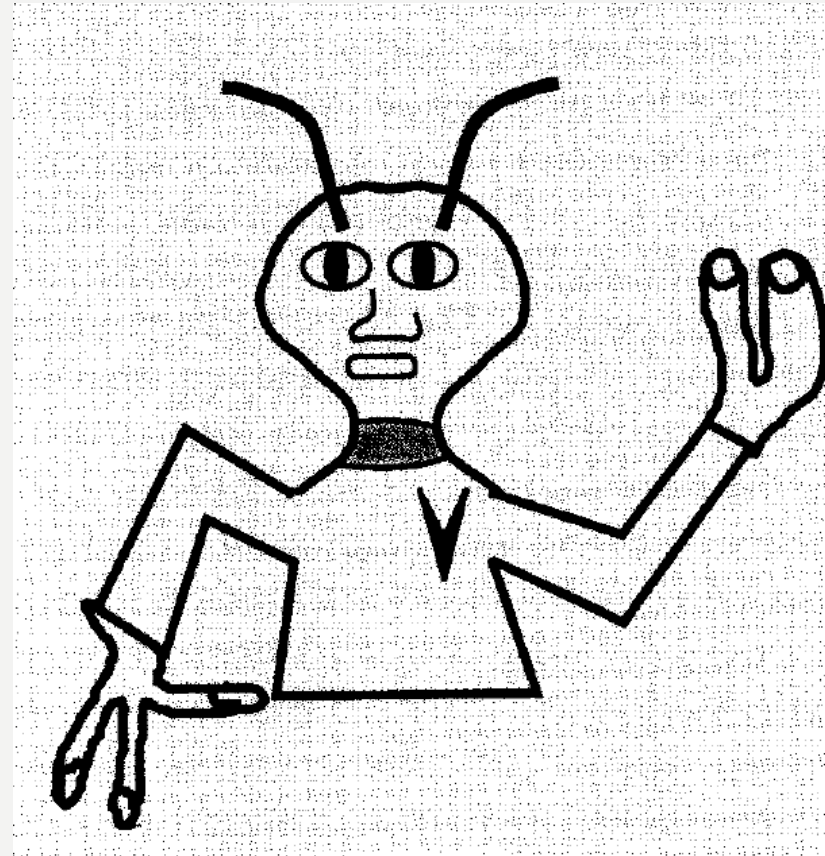
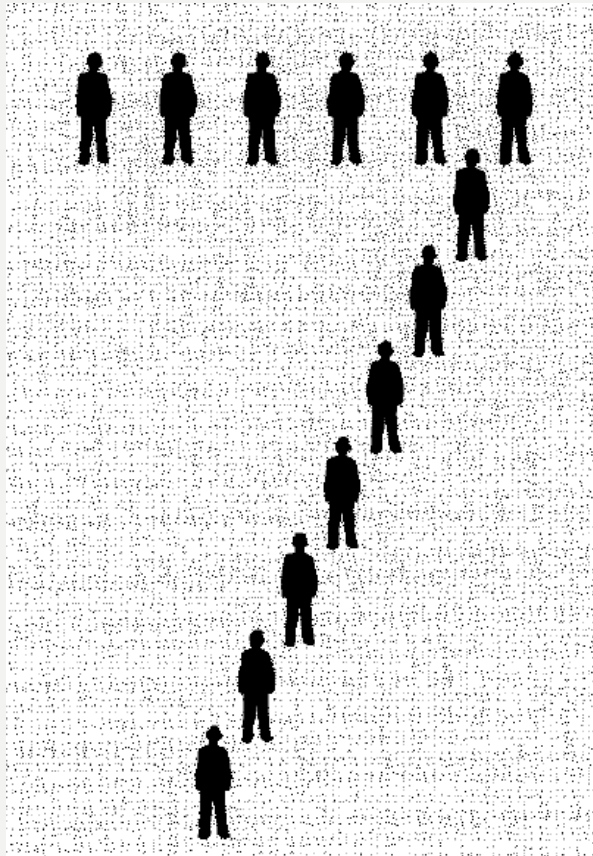
# **NUMERATION SYSTEMS**

**SECTION 3.1**

An alien from the nearby Andromeda galaxy visits Earth and catches a glimpse of a marching band in formation. The alien takes a photo and reports back to the mother ship: “Look at this! These Earth folks sure are funny looking!” Meanwhile, the intergalactic census recorder looks at the photo and writes down a number. Did he write 13, 7, or 23?



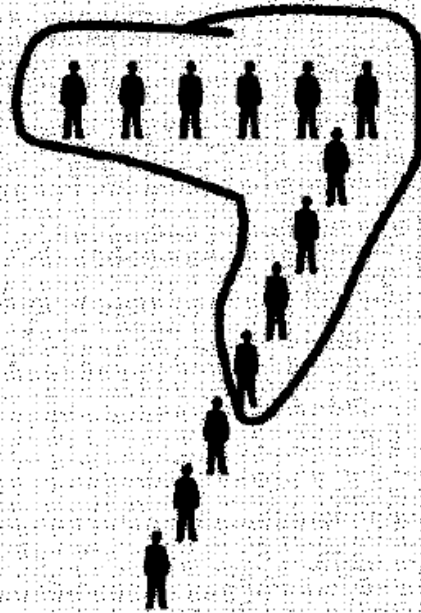
# WHAT DOES THE ALIEN LOOK LIKE?



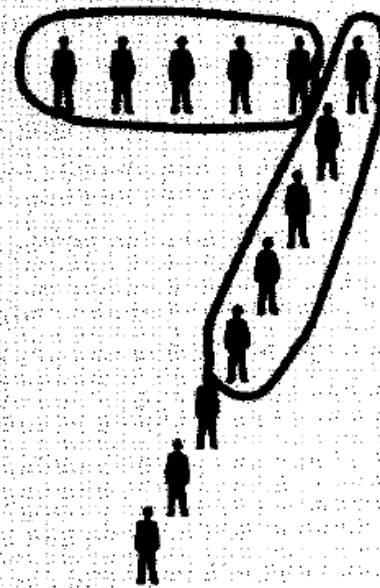
Again: Did he write 13, 7, or 23?

# EARTHLINGS VS. EXTRATERRESTRIALS

## Earthly and extraterrestrial counting systems

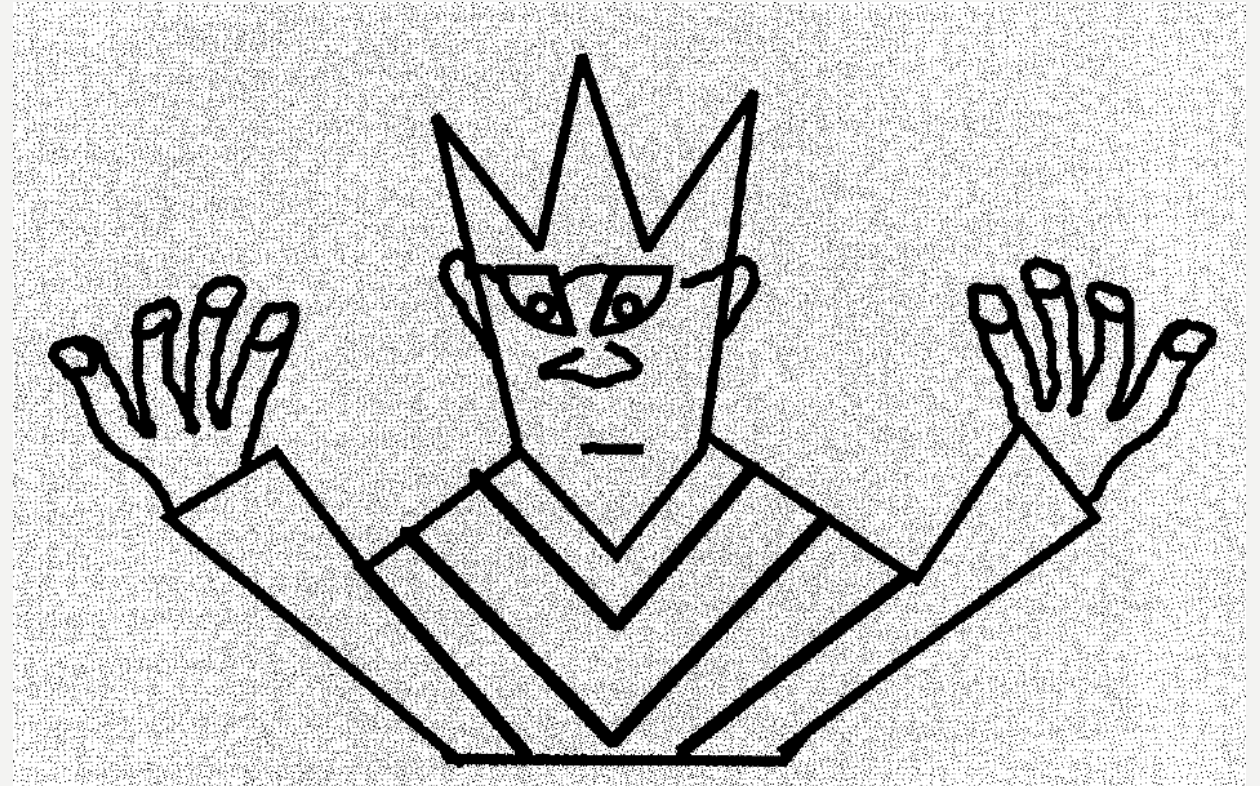
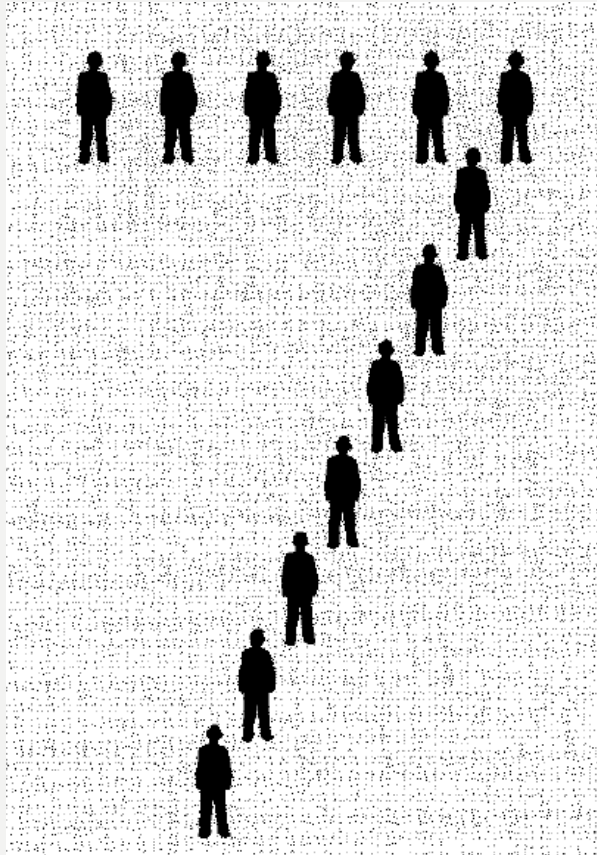


How the Earthling counts:  
1 group of ten and  
3 left over = 13

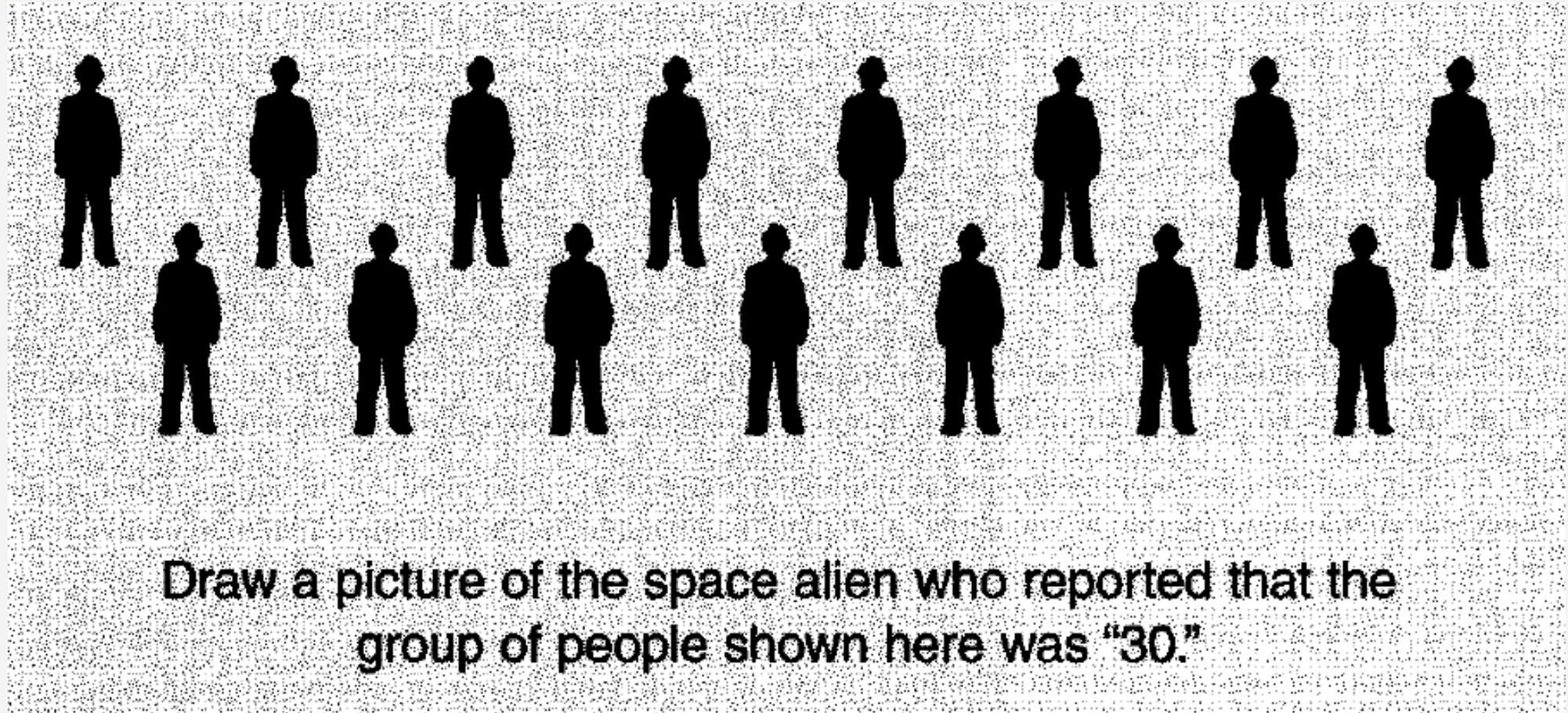


How the extraterrestrial counts:  
2 groups of five and  
3 left over = "23"

# WHAT NUMBER WOULD THIS ALIEN WRITE DOWN?

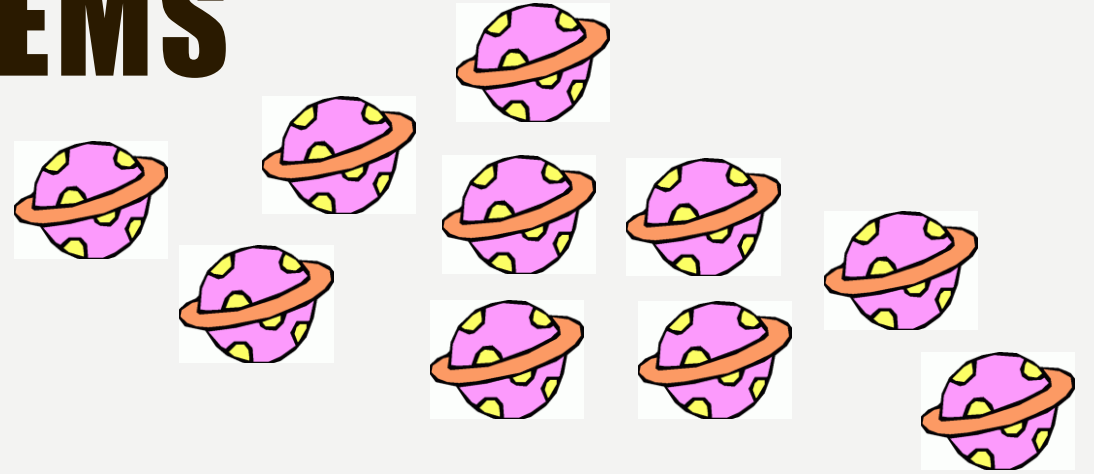


# HOW ABOUT THIS?



# PROBLEMS

Problem 1: A four-fingered alien sees these planets. What number did she write down?

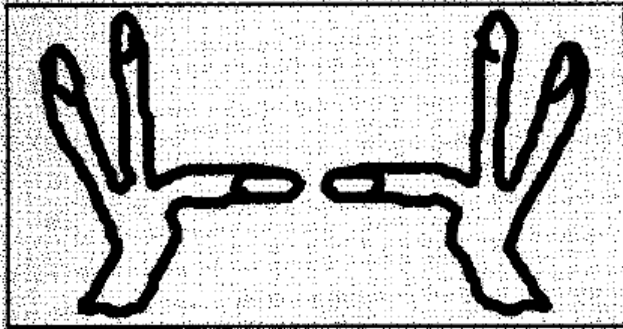


Problem 2: A space traveler with 6 fingers writes down “42.” How many objects did he actually see?

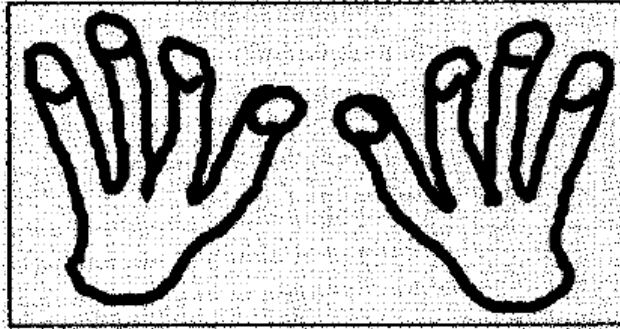


Problem 3: A space alien sees these stars and records “20.” How many fingers does this alien have?

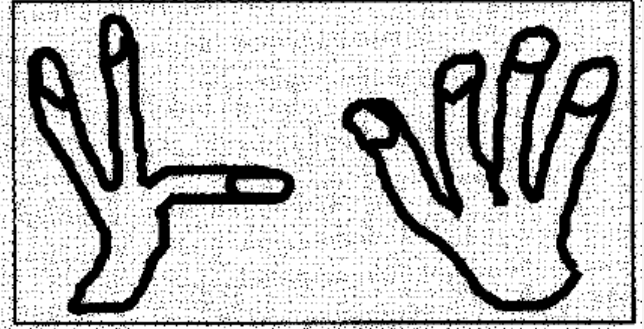
Source: Berkman, 1998 (NCTM)  
clipartpanda



Handprint "A"

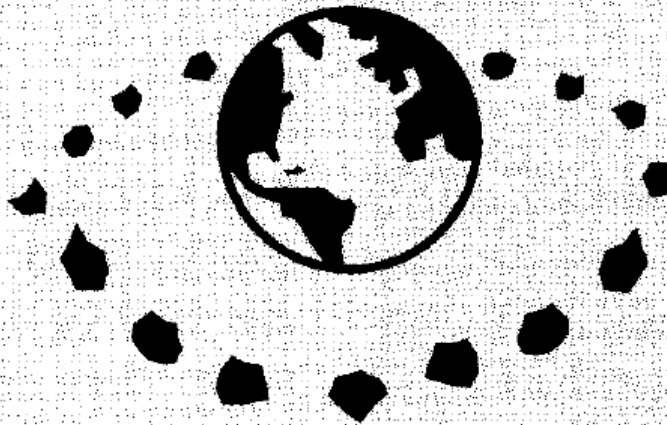


Handprint "B"



Handprint "C"

Fifteen asteroids are circling a planet.  
Match the numerals each alien wrote out below with their handprints above.



17

21

23