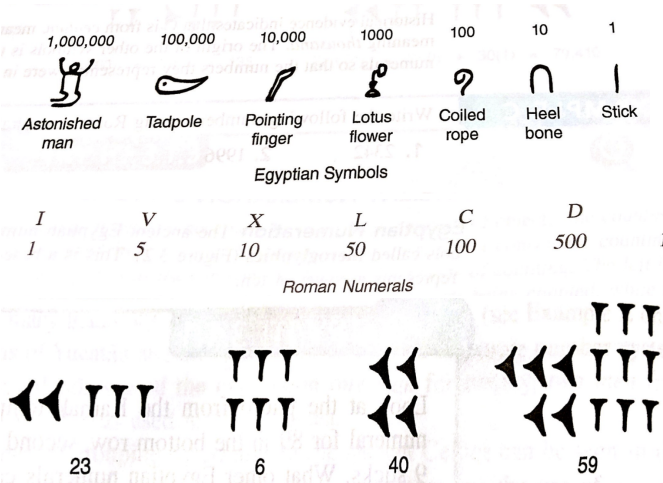
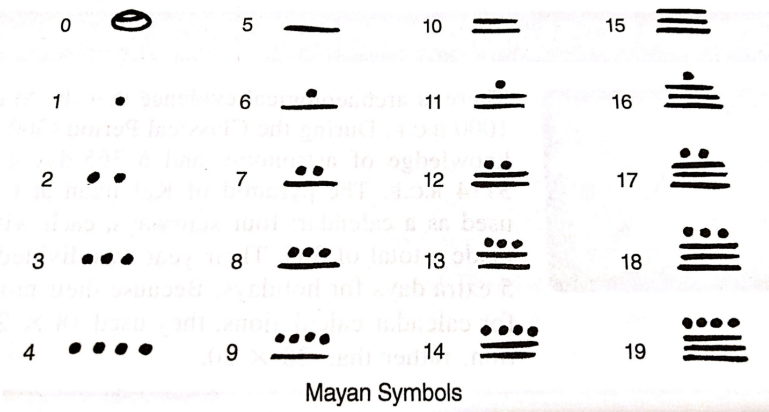
Number Systems

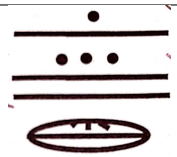
While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.





1. Fill in the missing entries in the table below:

Hindu-Arabic	Babylonian	Mayan	Roman	Egyptian
				
				

2. Consider the placement system with the base of 5.

   (a) Describe what the 'longs' would look like in base 5. That is, what is 10_{five}?

   (b) Describe what the 'flats' would look like in base 5. That is, what is 100_{five}?

   (c) Convert 23_{five} into our normal Hindu-Arabic base 10 system.

3. We can expand placement number systems with different bases. For example 43_{five} expands to 4 fives and 3 ones or $4 \cdot 5^1 + 3 \cdot 5^0$. Do this for the following:

   (a) 57_{eight}

   (b) 252_{six}

   (c) 1010111_{two}

4. Which is bigger?

   (a) 58_{nine} or 42_{twelve}

   (b) 110110_{two} or 63_{seven}

5. Find the base.

   (a) $42_{\text{five}} = 34_{\text{b}}$

   (b) $57_{\text{eight}} = 47_{\text{b}}$