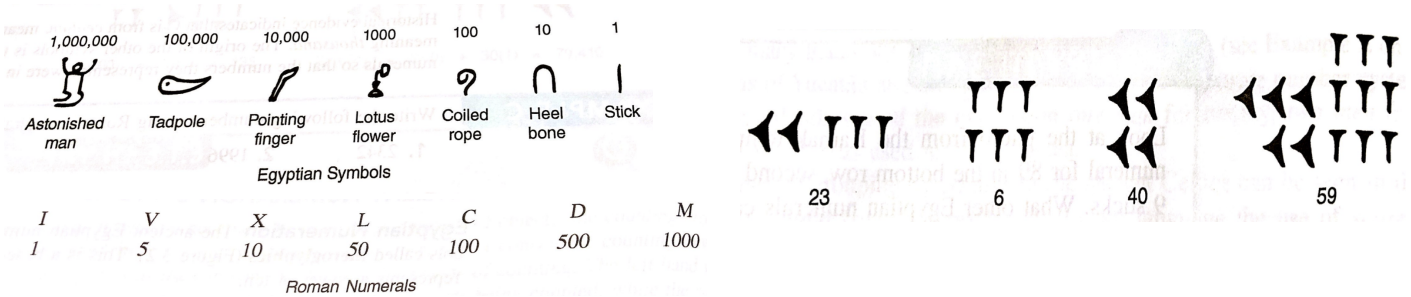



# Number Systems

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	Roman	Egyptian
2420			
			

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

- Describe what the ‘longs’ would look like in base 5. That is, what is  $10_{\text{five}}$ ?
- Describe what the ‘flats’ would look like in base 5. That is, what is  $100_{\text{five}}$ ?

- Convert  $23_{\text{five}}$  into our normal Hindu-Arabic base 10 system.

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

(a)  $57_{\text{eight}}$

(b)  $252_{\text{six}}$

(c)  $1010111_{\text{two}}$

4. Which is bigger?

(a)  $58_{\text{nine}}$  or  $42_{\text{twelve}}$

(b)  $110110_{\text{two}}$  or  $63_{\text{seven}}$

5. Find the base.

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

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