

Here is how to encrypt with numbers.

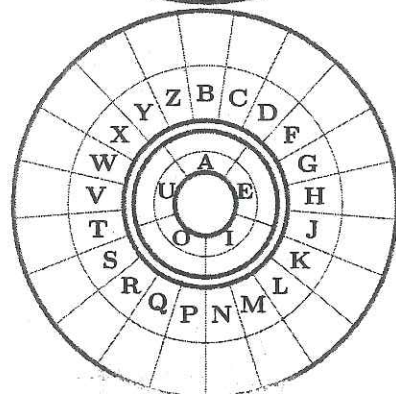
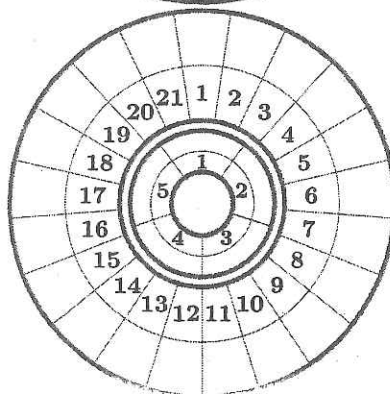
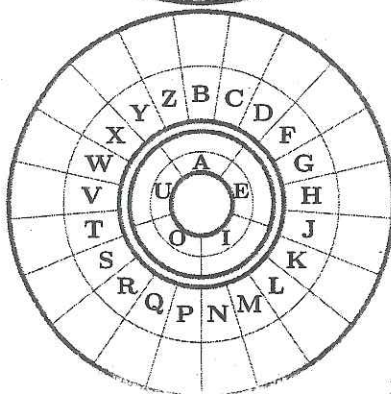
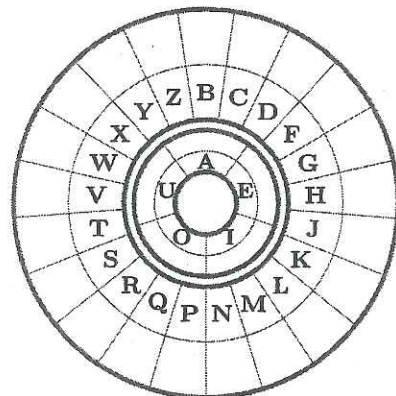
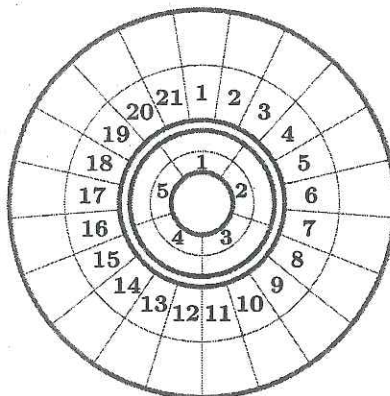
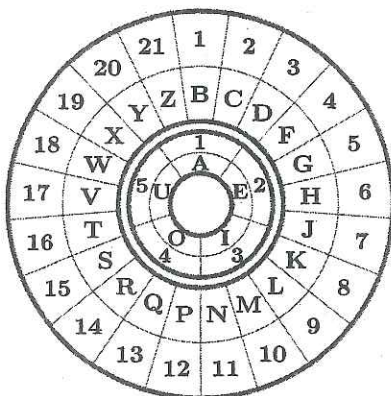
Encrypt **subtract if too big** using the shift cipher with key 12.

plaintext	s	u	b	t	r	a	c	t	i	f	t	o	o	b	i	g
as numbers	15	5	1	16	14	1	2	16	3	4	16	4	4	1	3	5
add 12	27	17	13	28	26	13	14	28	15	16	28	16	16	13	15	17
sub 21 if cons too big	6		13	7	5		14	7		16	7			13		17
now to letters	H		Q	J	G		R	J		T	J			Q		V
sub 5 if vowel too big		12				8			10			11	11		10	
and again		7				3			5			6	6		5	
and again		2				3			5			1	1		5	
now to letters		E				I			U			A	A		U	
all together!	H	E	Q	J	G	I	R	J	U	T	J	A	A	Q	U	V

So the encrypted message is **HEQJGIRJ UT JAA QUV**.

Decrypt "ISS QIRY JA TUM COVIJUKOH" using the shift cipher with key 12.

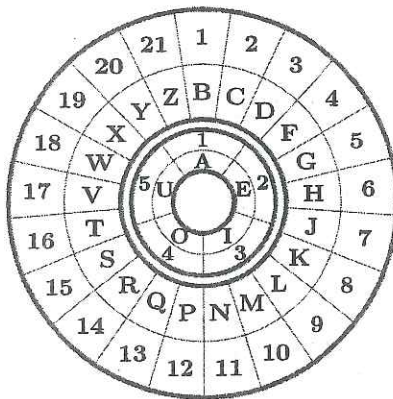
CIPHERTEXT	I	S	S	Q	I	R	Y	J	A	T	U	M	C	O	V	I	J	U	K	O	H
as numbers	3	15	15	13	3	14	20	7	1	16	5	10	2	4	17	3	7	5	8	4	6
subtract 12	-9	3		1		2	8	-5	-11	4	-7	-2	-10	-8	5	-9			-4		-6
fix numbers add 5 to vowels add 21 to cons	-4	✓		✓		✓	✓	16	-6	-2	19		11	-3	✓				17		15
to letters	Add back to fix negatives																				



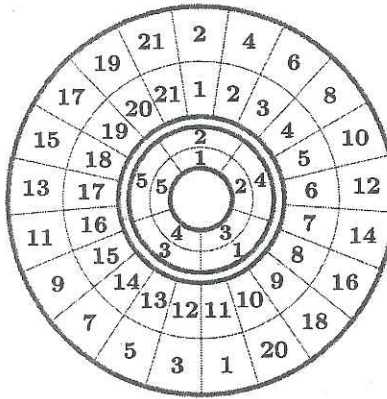
Oh no! Your parents have figured out the shift ciphers and are back to reading all your messages. It's time to get **SERIOUS**.

Look at the following code.

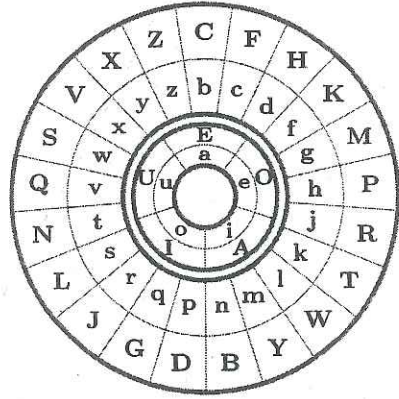
Letters to numbers
(nothing new)



Encrypt numbers
(inner rings to outer)



Encrypt letters
(**inner** to **OUTER**)



How does it work? (Be ready to explain it to the class.)

Homework!

Encrypt this message "this is twice as secret!"

plaintext	t	h	i	s	i	s	t	w	i	c	e	a	s	s	e	c	r	e	t	!
as numbers	16	6	3	15	3	15	16	8	3	2	2	1	15	15	2	2	14	2	16	
homework encrypt...																				
fix numbers																				
	11	12	19	19	11	15	14	4	2	9	9	4	4	7	4	11				
to letters	N	P	A	L	A	L	N	S	A	F	O	E	L	L	O	F	J	O	N	

Answer:

NPAL AL NSAFO EL LOFJON!

How do you decrypt?

Homework!

Vowels are easier to find a pattern; magic number is 3. For consonants it is 11.