Name _____ **Date**_____

Chapter 1: Caesar Ciphers

(Text page 4)

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C

Caesar cipher with shift of 3

1. a. Encrypt "keep this secret" with a shift of 3.

plaintext:	k	e	e	p		t	h	i	s		s	e	c	r	e	t	
ciphertext:																	

b. Encrypt your teacher's name with a shift of 3.

plaintext:																	
ciphertext:																	

2. Decrypt the answers to the following riddles. They were encrypted using a Caesar cipher with a shift of 3.

a. **Riddle:** What do you call a sleeping bull?
Answer:

plaintext:																	
ciphertext:	D		E	X	O	O	G	R	C	H	U						

b. **Riddle:** What's the difference between a teacher and a train?
Answer:

plaintext:																	
ciphertext:	W	K	H		W	H	D	F	K	H	U		V	D	B	V	

"Q	R		J	X	P		D	O	O	R	Z	H	G."		W	K	H	

W	U	D	L	Q		V	D	B	V		"F	K	H	Z		F	K	H	Z."

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(Text page 5)

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D

Caesar cipher with shift of 4

3. Decrypt the following note Evie wrote to Abby. She used a Caesar cipher with a shift of 4 like the one above.

plaintext:																		
ciphertext:	W	S	V	V	C.		P	I	X'	W		Y	W	I				

G	M	T	L	I	V	W		J	V	S	Q		R	S	A		S	R.

4. Use a shift of 3 or 4 to encrypt someone's name. It could be someone in your class or school or someone your class has learned about. (You'll use this to play Cipher Tag.)

plaintext:																	
ciphertext:																	

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(Text pages 6–7)

5. a. Encrypt "private information" using a cipher wheel with a shift of 5. (Shift the inner wheel five letters counterclockwise.)

plaintext:	p	r	i	v	a	t	e		i	n	f	o	r	m	a	t	i	o	n
ciphertext:																			

b. Encrypt your school's name using a cipher wheel with a shift of 8.

plaintext:																			
ciphertext:																			

Use your cipher wheel to decrypt the answers to the following riddles:

6. **Riddle:** What do you call a dog at the beach?
Answer (shifted 4):

plaintext:																			
ciphertext:	E		L	S	X		H	S	K										

7. **Riddle:** Three birds were sitting on a fence. A hunter shot one. How many were left?
Answer (shifted 8):

plaintext:																			
ciphertext:	V	W	V	M.		B	P	M		W	B	P	M	Z	A				

N	T	M	E		I	E	I	G.										

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(Text page 7)

8. **Riddle:** What animal keeps the best time?
Answer (shifted 10):

plaintext:																	
ciphertext:	K		G	K	D	M	R	N	Y	Q							

9. Write your own riddle and encrypt the answer. Put your riddle on the board or on a sheet of paper that can be shared with the class later on. (Tell the shift.)

Riddle: _____

_____

_____

_____

Answer:

plaintext:																	
ciphertext:																	

Name _____ **Date**_____

Chapter 2: Sending Messages with Numbers

(Text page 10)

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

1. a. **Riddle:** What kind of cookies do birds like?
   Answer:

plaintext:																	
ciphertext:	2	7	14	2	14	11	0	19	4		2	7	8	17	15		

   b. **Riddle:** What always ends everything?
   Answer:

plaintext:																	
ciphertext:	19	7	4		11	4	19	19	4	17		6					

Return to Text

2. a. Encrypt using the cipher strip at the top of the page.

plaintext:	J	a	m	e	s		B	o	n	d							
ciphertext:																	

   b. Encrypt using this cipher strip that is shifted 3.

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	0	1	2

plaintext:	J	a	m	e	s		B	o	n	d							
ciphertext:																	

   c. Describe how you can use arithmetic to get your answer to 2b from your answer to 2a.

_____

_____

_____

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(Text page 11)

3. Encrypt the following with the given shift:

a. shift 4

plaintext:	L	i	n	c	o	l	n
numbers:							
shifted numbers:							

b. shift 5

plaintext:	L	u	k	e
numbers:				
shifted numbers:				

c. shift 3 (What is different about encrypting the letter **x**?)

plaintext:	e	x	p	e	r	i	m	e	n	t
numbers:										
shifted numbers:										

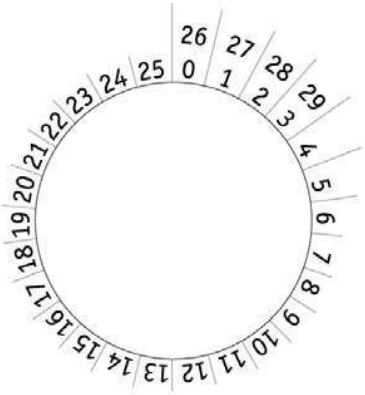
_____

_____

_____

Return to Text

4. What numbers between 0 and 25 are equivalent on the circle to the following numbers?



a. 28 _____ b. 29 _____

c. 30 _____ d. 34 _____

e. 36 _____ f. 52 _____

5. Describe an arithmetic pattern that tells how to match a number greater than 25 with an equivalent number between 0 and 25.

_____

_____

_____

6. Encrypt each word by adding the given amount. Your numbers should end up between 0 and 25.

a. add 4

plaintext:	x	-	r	a	y
numbers:					
shifted numbers:					

b. add 10

c	r	y	p	t	o	g	r	a	p	h	y