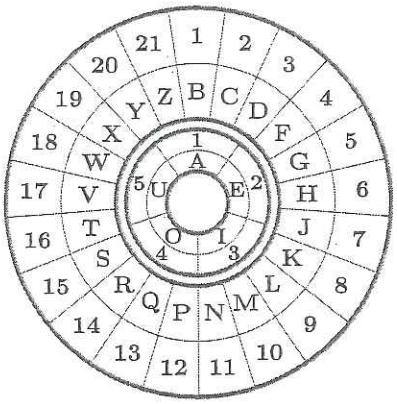
Mini-Exam 2 Name: KEY



1. (a) Convert "**miniexam**" into numbers.

10 3 11 3 2 19 1 10
c v c v v c v c

(b) What vowel goes with the number 2?

E

2. (a) What consonant goes with the number 32?

32 - 21 = 11, N

(b) What consonant goes with the number -2?

-2 + 21 = 19, X

(c) What vowel goes with the number 437,578,381? (four hundred thirty seven million five hundred seventy eight thousand three hundred eighty one)

1, A

3. (a) Where does the shift by 2 cipher take **miniexam**?

12 5 13 5 4 21 3 12
P U Q U O Z I P

PUQUOZIP

(b) What was shifted by 2 to get **IEJEVWEV**?

3 2 7 2 17 18 2 17
1 0 5 0 15 16 0 15
A U G U S T U S

AUGUSTUS

4. (a) What shift turns **miniexam** into **PUQUOZIP**?

2

(b) What shift turns **miniexam** into **VIWIEGAV**? (harder, explain your answer)

m → V
10 → 17

Shift Consonants by 7 ≡ 28 ≡ 49 ≡ 70
Leave Vowels alone

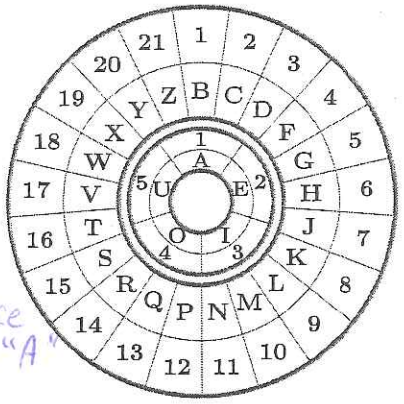
Works for both vowels and consonants

KEY

5. A shift cipher was applied to a short English sentence to get **A OW POLIVEIC**

(a) How many words did the sentence have before it was encrypted?

3 words



(b) How many letters did the first word have?

1 letter, a vowel

(c) What was the first word (probably)?

I or A

To be a sentence hard to start with "A"

(d) What did the message (probably) say?

A→I so O→A, I→U, E→O

I A? ?A?U?OU?

AM
AN
AS
AT

to be a sentence need a verb

so W→M 18→10
P→F
L→B
V→L
C→S

I AM FABULOUS

6. (a) Where does the double-it cipher take **bat**?

1 1 16
↓
2 2 32
C E N

CEN

(b) The double-it cipher was applied to an English word to get **LFEJX**. What was the original word?

L F E J X
9 4 2 7 19
15 2 1 14 20
S C A R Y

SCARY

7. (a) What happens if you encrypt a message more than once? For instance, is there a simpler way of describing the "triple-ripple cipher" other than "first shift by 5, then shift by 9, then shift by 5 again"?

Shift by 5+9+5 = 19

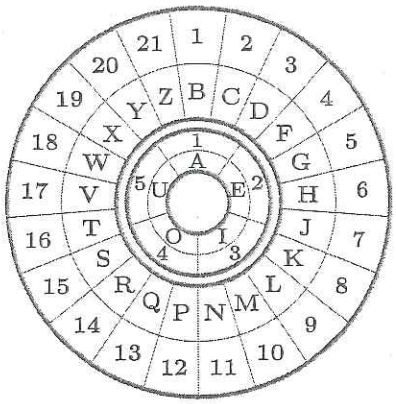
Shift consonants by −2
Vowels by −1

(b) Is the triple-ripple cipher three times as secure as a regular shift cipher?

No. It is a regular shift cipher

Mini-Exam 2

Name: KEY



1. (a) Convert "**miniexam**" into numbers.

10, 3, 11, 3, 2, 19, 1, 10

(b) What vowel goes with the number 3?

I

2. (a) What consonant goes with the number 30?

30 - 21 = 9, L

(b) What consonant goes with the number -3?

-3 + 21 = 18, W

(c) What vowel goes with the number 437,578,382? (four hundred thirty seven million five hundred seventy eight thousand three hundred eighty two)

2, E

3. (a) Where does the shift by 3 cipher take **miniexam**?

13, 6, 14, 6, 5, 22, 4, 13
Q A R A U B O Q

QARAUBOQ

(b) What was shifted by 3 to get **GOUWOV**?

5, 4, 5, 18, 4, 17
2, 1, 2, 15, 1, 14
C A E S A R

CAESAR

4. (a) What shift turns **miniexam** into **ZOBOILEZ**?

m → Z
10 → 21

Shift by 11, also work for vowels

(b) What shift turns **miniexam** into **RISIECAR**? (harder, explain your answer)

m → R
10 → 14

Shift by 4 for consonants
Leave vowels alone,

4 + 21 = 25 works for both

KEY

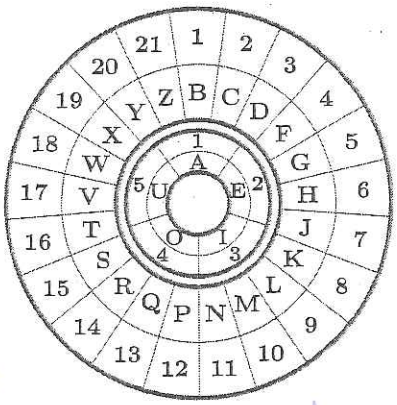
5. A shift cipher was applied to a short English sentence to get **U IB ILOHABO**.

(a) How many words did the sentence have before it was encrypted?

3 words

(b) How many letters did the first word have?

1 letter, a vowel



(c) What was the first word (probably)?

I or A

hard to make 3 word sentence unless first word is I

(d) What did the message (probably) say?

U→I so I→A, O→E, A→O

I A? A?E?O?E

AM
AN
AS
AT

need a verb

So B→M
I→10
L→W
H→5
B→M

I AM AWESOME

6. (a) Where does the double-it cipher take **day**?

3 1 20
6 2 40
" "
19
HEX

HEX

(b) The double-it cipher was applied to an English word to get **MPILN**. What was the original word?

16 12 39 11
5 6 4 15 16
GHOST

GHOST

7. (a) What happens if you encrypt a message more than once? For instance, is there a simpler way of describing the "triple-ripple cipher" other than "first shift by 5, then shift by 7, then shift by 5 again"?

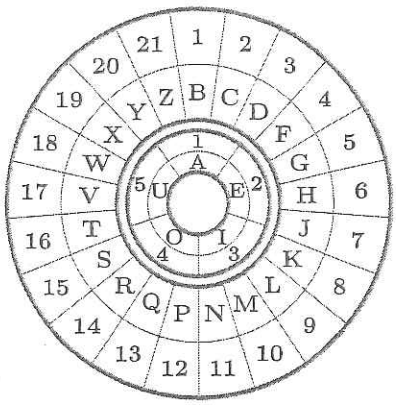
Shift by 5+7+5=17

Shift consonants by -4
Shift vowels by 2

(b) Is the triple-ripple cipher three times as secure as a regular shift cipher?

No. It is a regular shift cipher

Mini-Exam 2 Name: KEY



1. (a) Convert "**miniexam**" into numbers.

10, 3, 11, 3, 2, 19, 1, 10

(b) What vowel goes with the number 4?

O

2. (a) What consonant goes with the number 40?

40 − 21 = 19, X

(b) What consonant goes with the number -4?

−4 + 21 = 17, V

(c) What vowel goes with the number 437,578,383? (four hundred thirty seven million five hundred seventy eight thousand three hundred eighty three)

3 e, I

3. (a) Where does the shift by 4 cipher take **miniexam**?

14, 7, 15, 7, 6, 23, 5, 14 RESEACUR

c v c v v c vc

(b) What was shifted by 4 to get **NOQEOX**?

11, 4, 13, 2, 4, 19

7, 0, 9, −2, 0, 15 ⟶ JULIUS

4. (a) What shift turns **miniexam** into **CADAUNOC**?

2, 1, 3

"

23 Shift by 13

(b) What shift turns **miniexam** into **DIFIEPAD**? (harder, explain your answer)

D = 3 Shift consonants by −7 ≡ 14 ≡ 35

m = 10 Leave vowels alone

↑ works for both

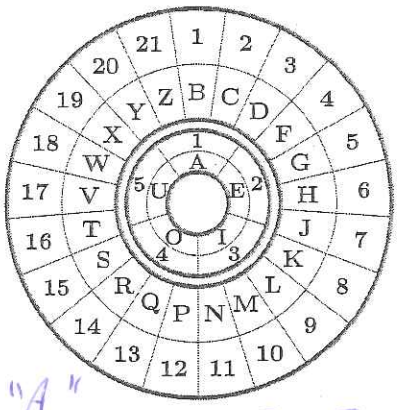
5. A shift cipher was applied to a short English sentence to get **E UR URUFESL**

(a) How many words did the sentence have before it was encrypted?

3 words

(b) How many letters did the first word have?

1 letter, a vowel



(c) What was the first word (probably)?

I or A

hard to be a sentence if "A"

(d) What did the message (probably) say?

E→I, so U→A

I A? A?A?I??

AM ✓ Best Chance at sentence is a verb
AN
AS
AT

F→Z
S→N works!
L→G

R→M so I AM AMAZING

6. (a) Where does the double-it cipher take **cat**?

cat
3 1 16
4 2 3 2
11
F E N

FEN

(b) The double-it cipher was applied to an English word to get **YIBLNOJ**. What was the original word?

Y I B 2 N O J
20 3 1 9 11 4 7
10 4 11 15 16 2 14
M O N S T E R

MONSTER

7. (a) What happens if you encrypt a message more than once? For instance, is there a simpler way of describing the "triple-ripple cipher" other than "first shift by 5, then shift by 8, then shift by 5 again"?

Shift by 5+8+5 = 18 or Shift consonants by −3 vowels by +3

(b) Is the triple-ripple cipher three times as secure as a regular shift cipher?

No. It is a regular shift cipher