

## MATH 100 - REVIEW FOR QUIZ 2

0	1	2	3	4	5	6	7	8	9	10	11	12
A	B	C	D	E	F	G	H	I	J	K	L	M
13	14	15	16	17	18	19	20	21	22	23	24	25
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

- (1) Write each number from 1 to 25 as a sum of as few squares as possible. Then factor the numbers into primes over  $\mathbb{Z}$  and  $\mathbb{Z}[i]$ .
  
- (2) Factor  $5 + i$  over  $\mathbb{Z}[i]$ .
  
- (3) Encrypt RAIN using
  - (a) The Caesar shift  $y = x - 5$ .
  - (b) The affine shift  $y = 7x$ .
  - (c) The Vigenere code with codeword MANCHESTER BLUFF.
  
- (4) Decrypt the following (encrypted as above).
  - (a) WJRN
  - (b) HUYW
  - (c) NOJU