

Breaking the Route Cipher

1. What are the factors of the following numbers?

16: _____

What is this type of number called? _____

24: _____

21: _____

17: _____

What is this type of number called? _____

Try to decrypt the following messages by working out the size of the **square** grid. Remember extra letters might have been added.

2. **CEIXOTOXMINTSX**

How many letters are there? _____ What size will the square grid be? _____

Draw the grid and decrypt the message:

Decrypted message: _____

3. **BKSOCEOAZ**

How many letters are there? _____ What size will the square grid be? _____

Draw the grid and decrypt the message:

Decrypted message: _____

Extension:

Encrypt these messages using a **square** grid (remember to add extra letters to fill in the gaps).

4. I like buttons

How many letters are there? _____

What size square grid will you need? _____

How many extra letters will you need to add? _____

Draw the grid and encrypt the message (remember to write it in UPPER CASE):

Encrypted message: _____

5. I will call at midnight

How many letters are there? _____

What size grid will you need? _____

How many extra letters will you need to add? _____

Draw the grid and encrypt the message (remember to write it in UPPER CASE):

Encrypted message: _____

Further Extension

Decrypt this message using a rectangle grid. You will need to find out what size rectangle to use.

DSLAAOOWLRTOGIBKNN

1. How many letters? _____
2. Write down the factors: _____
3. There are six possible grid sizes. Write them down in this table:

Columns	x	Rows
	x	
	x	
	x	
	x	
	x	
	x	

4. Which two grids would not be sensible to use for encryption? _____ & _____
5. Draw the other four grids in the space below. Put in the encrypted text and see which grid gives you a sensible message. Remember to write going down the columns and read going across.

Decrypted message: _____

What size grid did you use? Columns = _____ Rows = _____

Try it yourself

Now try to make up your own encrypted message and see if a friend can work it out.

1. Write out your **actual** message below.

2. Count the number of letters in your message and write out the factors of that number below.

3. Draw out a grid below, using a pair of factors from the list you wrote above.

4. Now write out your **encrypted** message:

5. Write the encrypted message on a piece of spare paper. Swap messages with a friend and see if they can decrypt it. You can use the space below to decrypt their message.