



Class 5 Home Learning

THURSDAY 18TH NOVEMBER 2021

Maths

Please practise your 3, 4, and 5 times tables.

Today we will be focusing on prime numbers.

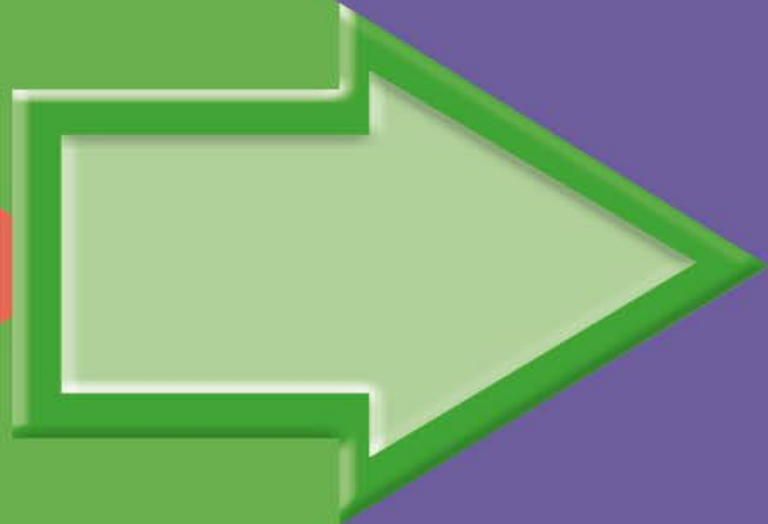
Follow the slides to complete your maths activity.

2 is a prime number.

True

2 has exactly two factors.

PRIME NUMBERS



GET READY



- 1) How many factors does 1 have?

- 2) List the factors of 9

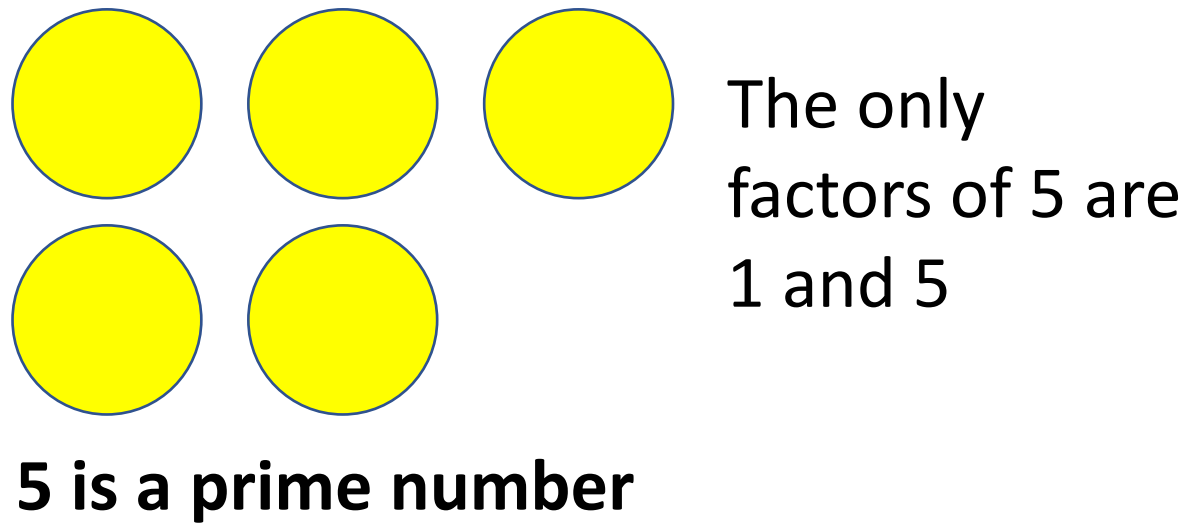
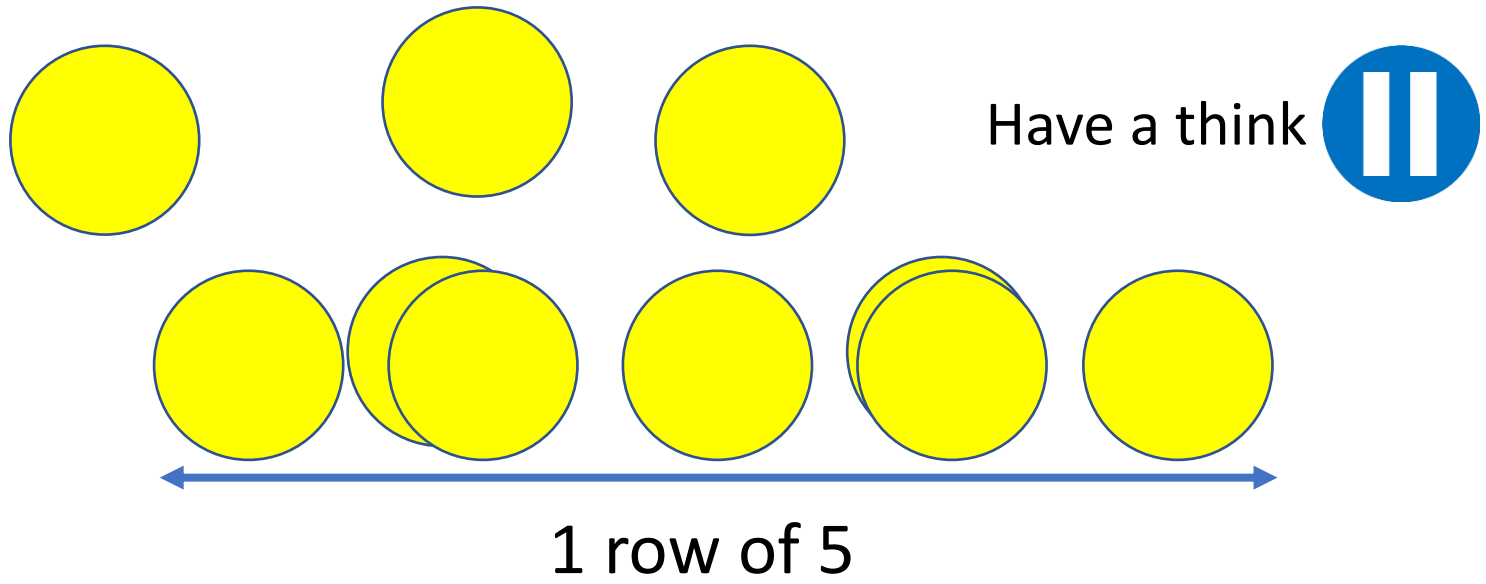
- 3) List the factors of 17

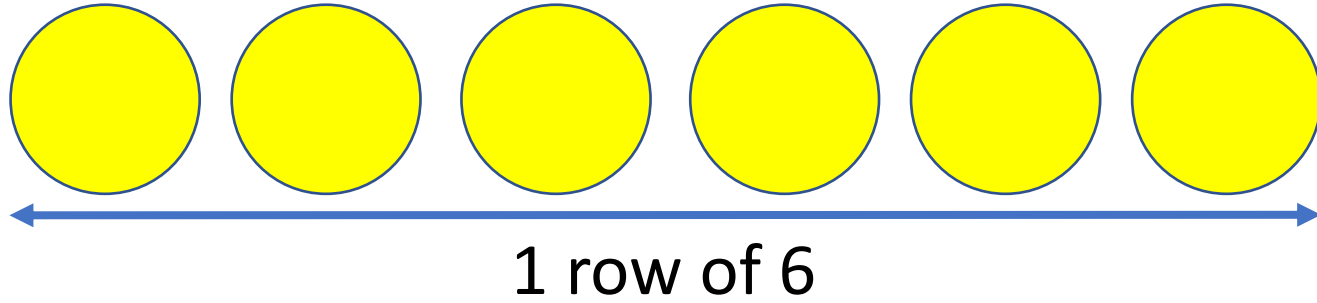
- 4) What is the highest common factor of 12 and 24?


- 1) How many factors does 1 have? 1
- 2) List the factors of 9 1, 3, and 9
- 3) List the factors of 17 1 and 17
- 4) What is the highest common factor of 12 and 24? 12

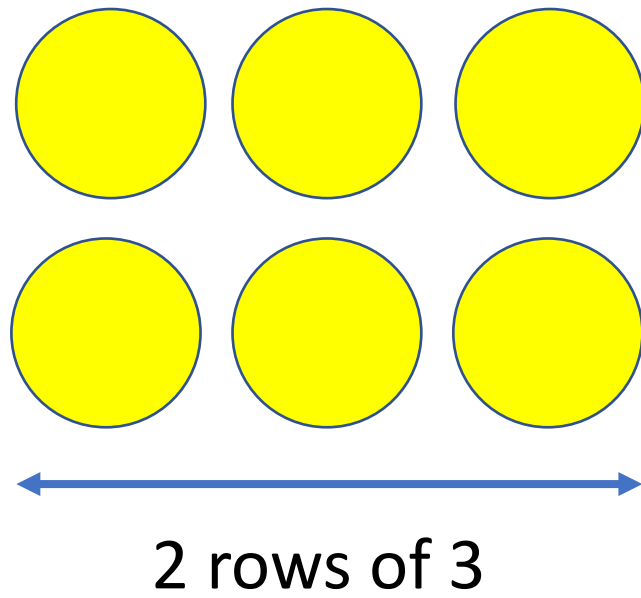
LET'S LEARN







Have a think 

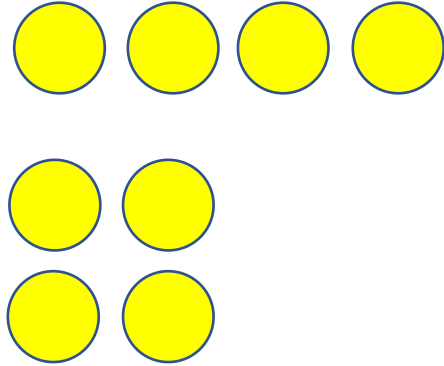


With which of these numbers
can you only make one
rectangular array?

Have a think



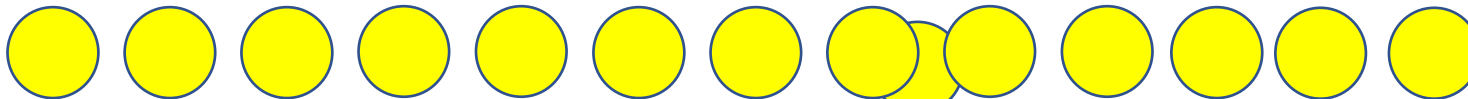
4



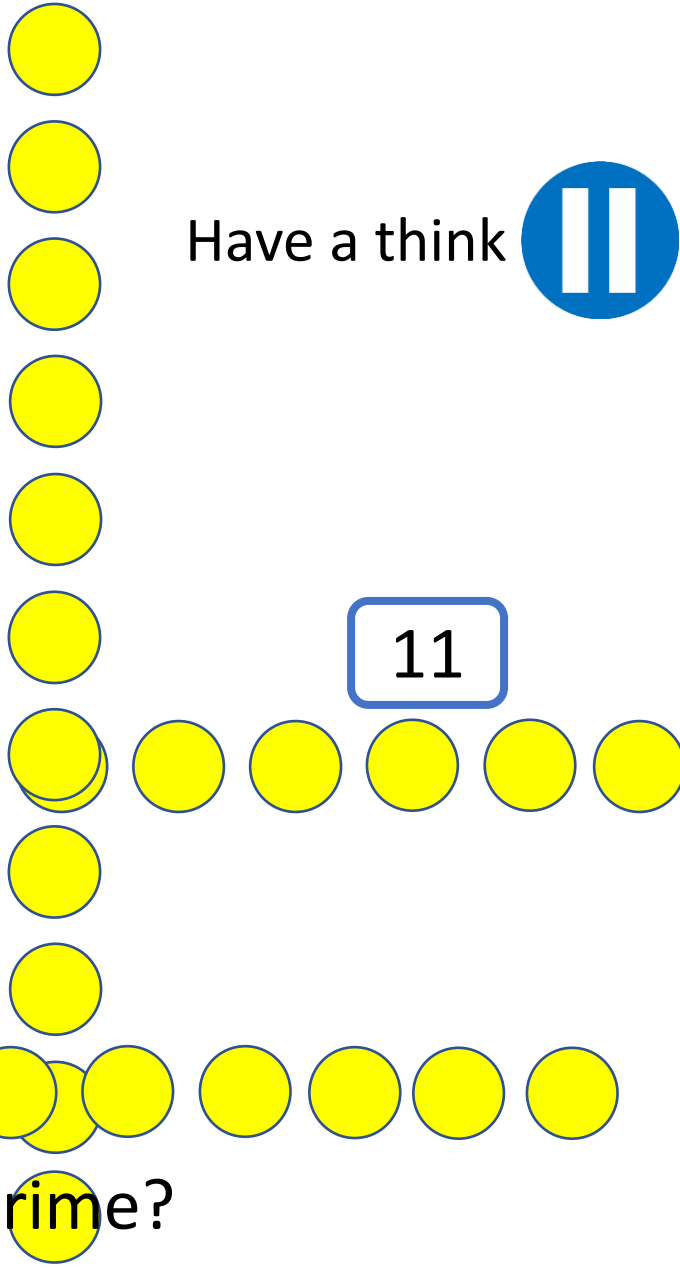
11



13



Which of these numbers is prime?



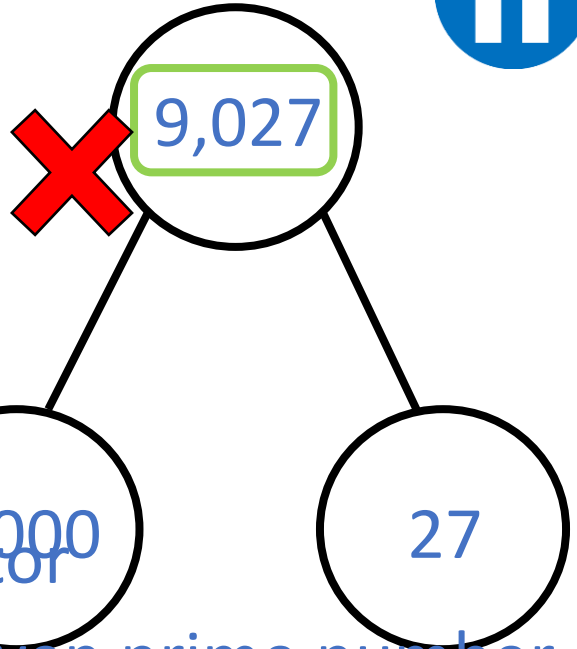
Are any of these numbers prime numbers?

A prime number is a whole number with exactly two factors: 1 and itself.

1,263 

7,314 

8,455 



$1 + 2 + 6 + 3 = 12$

Ends in a 4

12 has 3 as a factor Even number

1,263 has 3 as a factor 2 is the only even prime number

A multiple of 5

Has 5 as a factor

9,000

27

Both have 9 as a factor



Teddy is thinking of a prime number.

Have a think



- It has 2 digits.
- It is between 10 and 39
- It is 1 more than a multiple of 6
- It is 3 less than a multiple of 10

What is Teddy's number? 37

6	12	18	24	30	36
7	13	19	25	31	37

Choose at least 3 activities from one of the slides below to complete on paper. There are 10 questions and each is a bit harder than the one before.

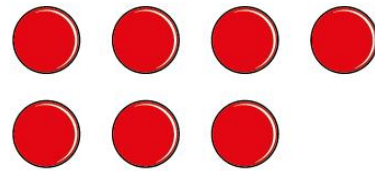
Remember that you can start from whichever question you like and can move on if you want more of a challenge.

Prime numbers

- 1 Aisha makes different arrays with 7 counters.
She makes an array with 1 counter in each column.



She makes an array with 2 counters in a column.



- a) Is it possible to arrange the counters in another way so that they make a rectangular array? _____



1

Draw counters to support your answer.

b) What are the factors of 7?

and

c) Explain why 7 is a prime number.



2 Complete the table.

Number	Factors	Is the number prime?
5	1 and 5	Yes
9		
11		
14		
15		
19		

- 3 A prime number has two factors: 1 and itself.
List the prime numbers up to 20
-

- 4 Is 25 a prime number? _____
How do you know?

- 5 Here are sequences of consecutive prime numbers.
Complete the sequences.

a) 7, 11, 13, , 19

b) 37, 31, 29, , 19

6 Colour all the prime numbers.

51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

7 Here are some numbers.

126

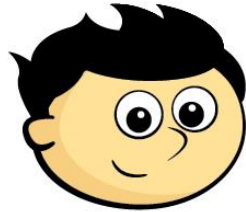
175

2,378

777

381

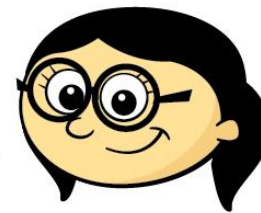
9,000



Jack

The numbers are big. It's hard to check if they are prime.

I can tell quickly that none of these numbers are prime.



Annie

7

How does Annie know that none of the numbers are prime?

Compare answers with a partner.



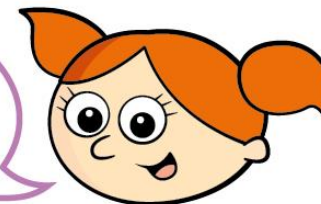


8

Mo and Alex are talking about prime numbers.



Prime numbers
are always odd.



I think prime
numbers can
be even.

Who is correct? _____

How do you know?



- 9 Teddy writes five consecutive numbers.
Three of the numbers are prime.

What are the five consecutive numbers?

	,		,		,		,	
--	---	--	---	--	---	--	---	--

- 10 Kim is thinking of a prime number.
It is in between a multiple of 11 and a factor of 48
What number is Kim thinking of?

English

In this session we are going to combine our skills from this week and start writing our story. Today your challenge is to write the opening part of your story using descriptive language and building up the characters and setting.

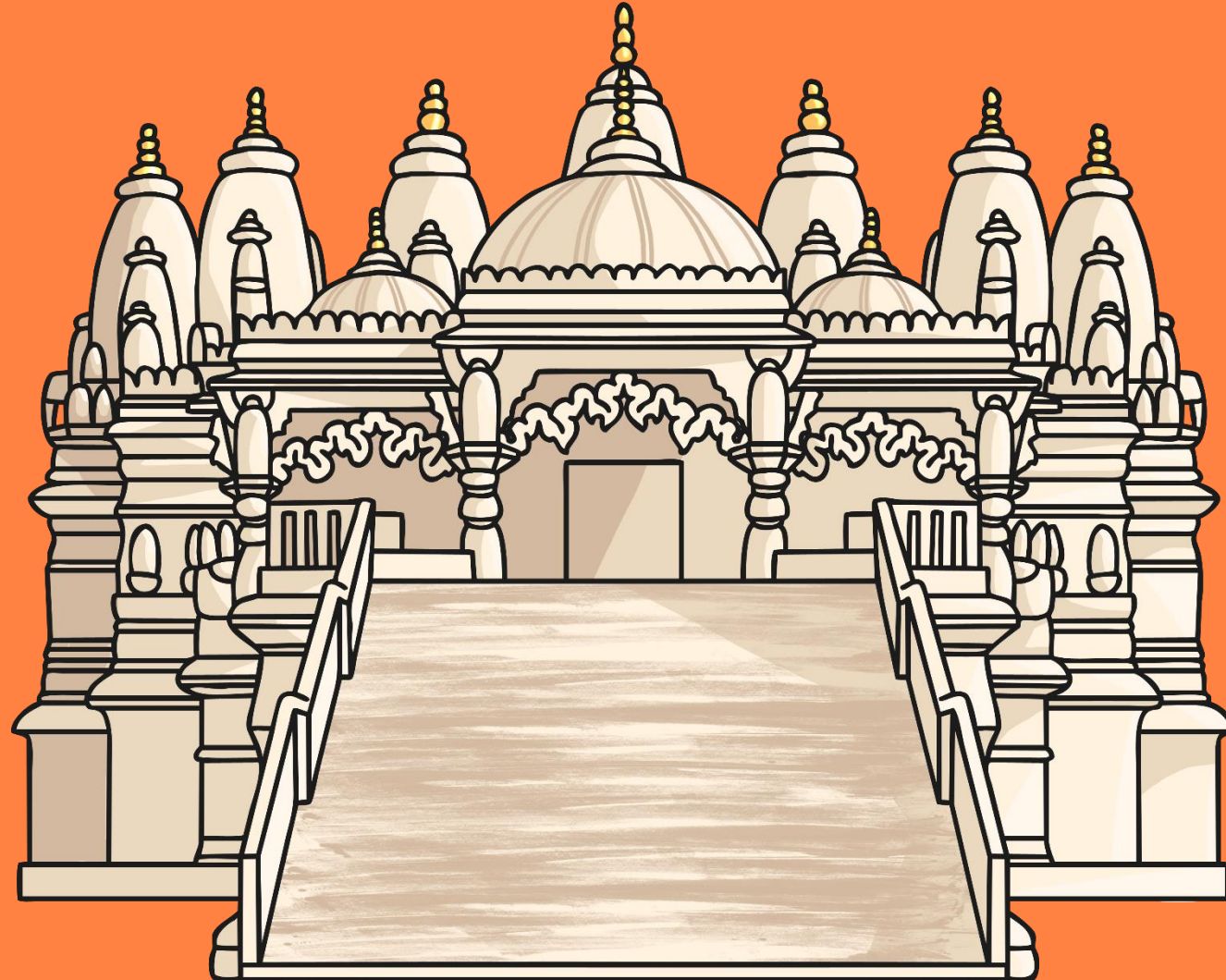
R.E.

This half term we are looking at the big question - "If God is everywhere why go to a place of worship?"

This week our focus question is "What is a Hindu place of worship?" We will be looking at mandirs/temples around the world and the features that you can commonly find inside them.

Look at the following slides to explore Hindu temples and their functions.

Places of Worship



A task setting PowerPoint about the Hindu Mandir for Key Stage 2.

Starter Activities



All of these buildings look different, but what do they all have in common?
Who might visit them?
What might happen there?

Learning Objective

- To learn about a Hindu place of worship and what it is used for.

Success Criteria

I can name and describe some key features of a Hindu place of worship.

I can compare Hindu worship at home and at the mandir.

I can give reasons why some Hindus may choose to go to the mandir when they could stay at home to worship (or vice versa)?



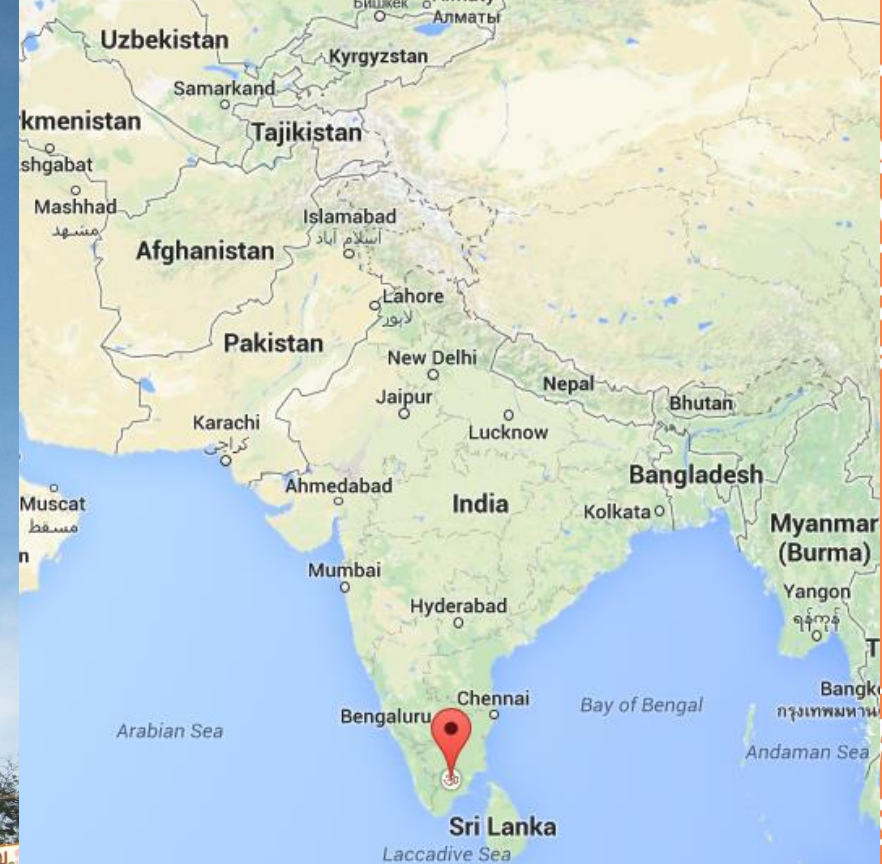
Hindu Mandirs Around the World



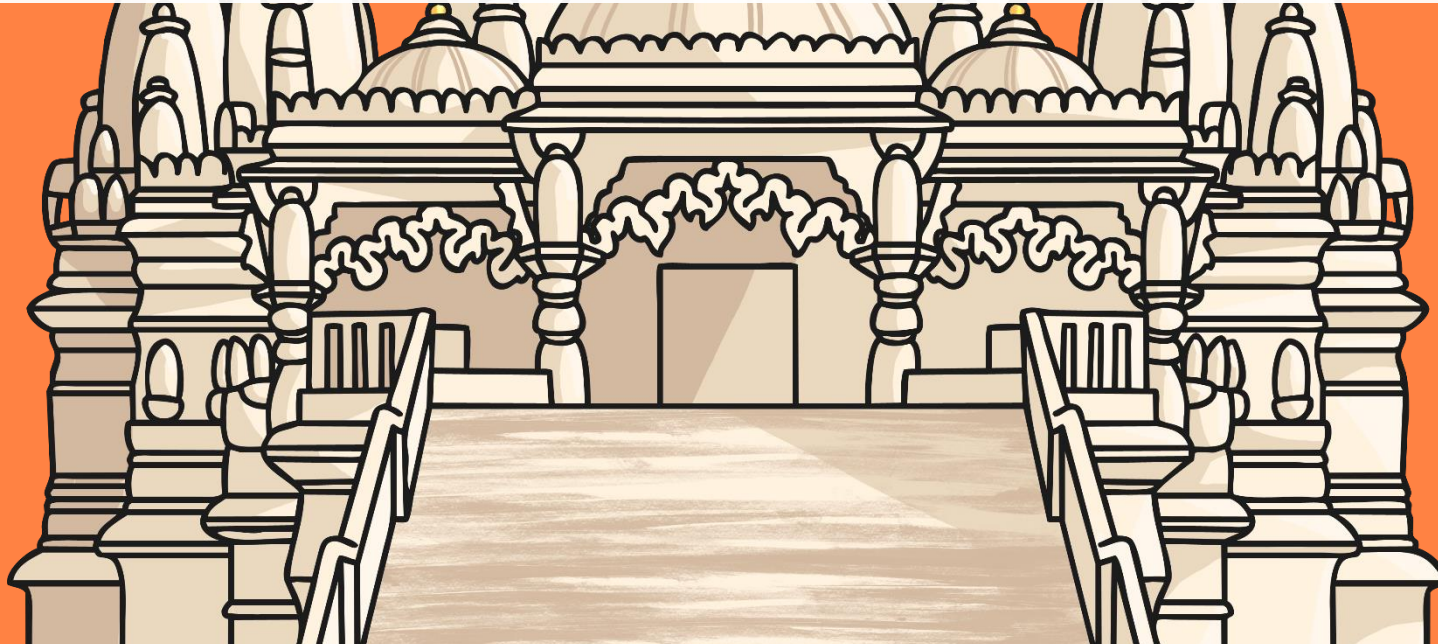
Prambanan is the largest temple in Indonesia.



The Meenakshi Amman Temple is one of the most important Indian Hindu temples with 14 towers!



The Sree Ganapathy Temple, in London, is a busy and exciting place. As well as being used for worship, birth, wedding and death ceremonies, it is also a place where visitors can go and discuss and strengthen their faith, take part in meditation classes and yoga.



At a Hindu temple, different parts of the building have a special meaning, for example, the central shrine inside the mandir represents the heart of the Hindu worshipper, and if the temple has a tower this symbolises a connection with heaven.



Shoe Rack

A place to store shoes before entering the mandir.

Murti

A murti is a statue of God, or a god or goddess.



Important Features of a Hindu Mandir

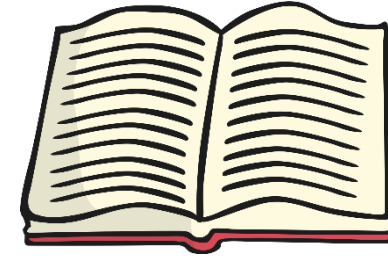


Main Shrine

This is the heart of the temple to represent the heart of the worshipper. It is usually at the front of the temple.

Aum

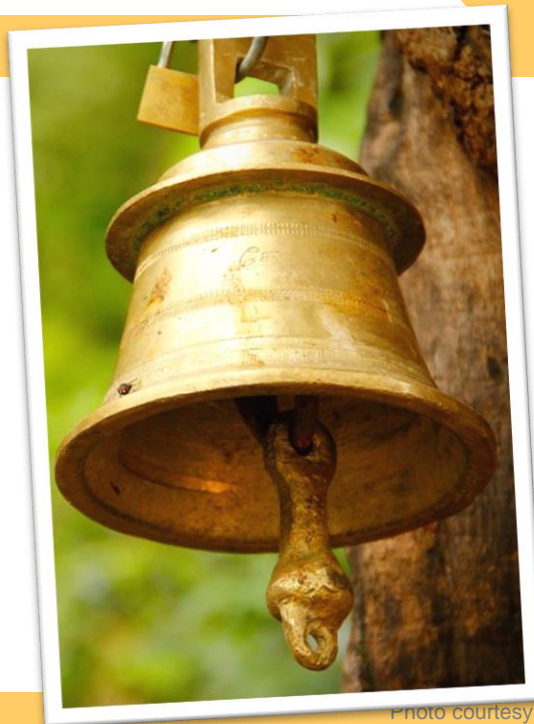
This is the Hindu symbol. You may see this if you are ever visiting a Hindu temple.



Vedas

These are the ancient Hindu texts. They are kept safe in a special case.

Important Features of a Hindu Mandir



Bell

Worshippers ring the bell before entering to let God know they have arrived.

Why do people go to a Hindu Mandir?



Worship, or 'puja', takes place here. Hindus can come at any time to be peaceful, pray and sing religious songs.

Each mandir is dedicated to a god and inside will be a shrine to that god. Offerings or 'prasad' such as flowers, fruit, water, milk, nuts or sweets are made. Incense is burned to make the temple feel special and during worship, Hindus chant the names of their favourite gods and goddesses.



Worshipping at the mandir is a special time to be together with other Hindus.

Mandirs are seen as a place where heaven meets the earth so many mandirs are tall buildings, like mountains reaching up into the sky.

Hindu Worship at Home



Hindus can worship at home and at the mandir. Making offerings to the gods is something that can be done at home too.

In a Hindu home there may be a shrine where offerings can be made and prayers are spoken. The shrine could be as big as a room, a small corner or a statue.

Activity

Watch the clips about and discuss reasons why Hindus would go to the mandir or worship at home.

Make a list of things that happen.

<http://www.bbc.co.uk/learningzone/clips/worship-in-a-hindu-shrine/3619.html>

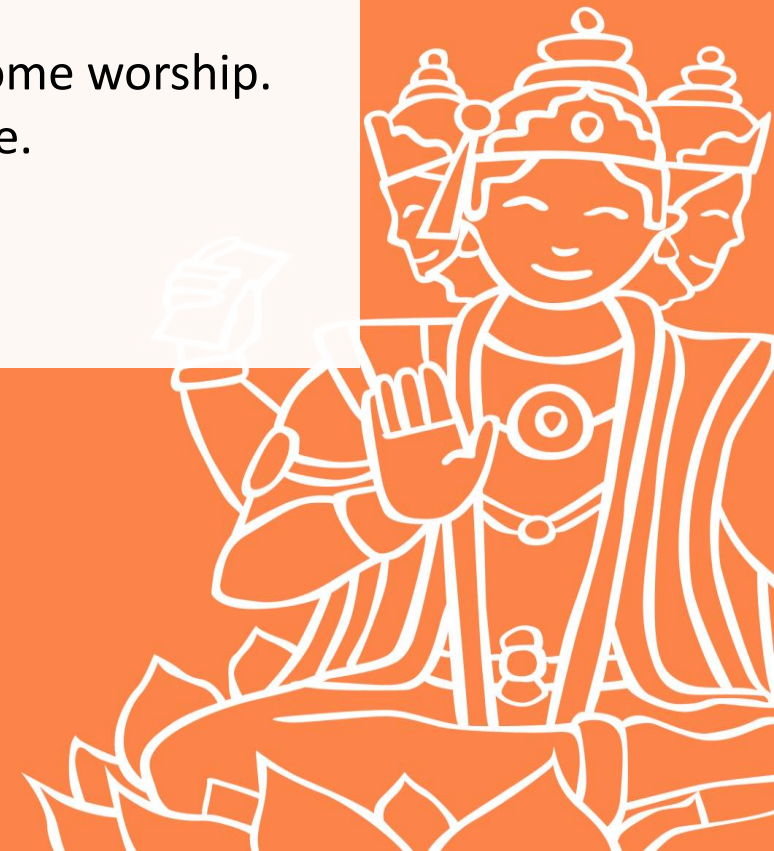
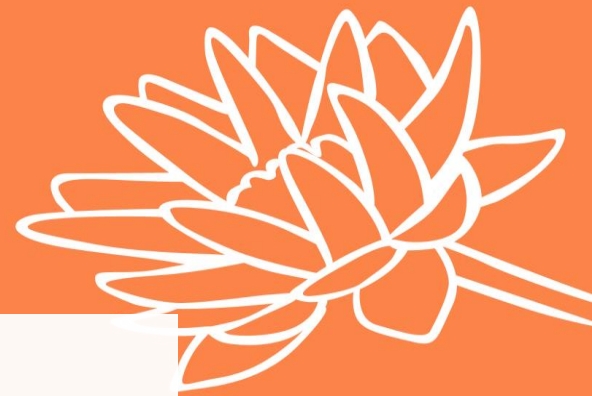
www.truetube.co.uk/film/holy-cribs-mandir

www.bbc.co.uk/education/clips/zh2hyrd



Re-watch the clips.

- One half of the class look for things that are different in home worship.
- The other half of the class look for things that are the same.

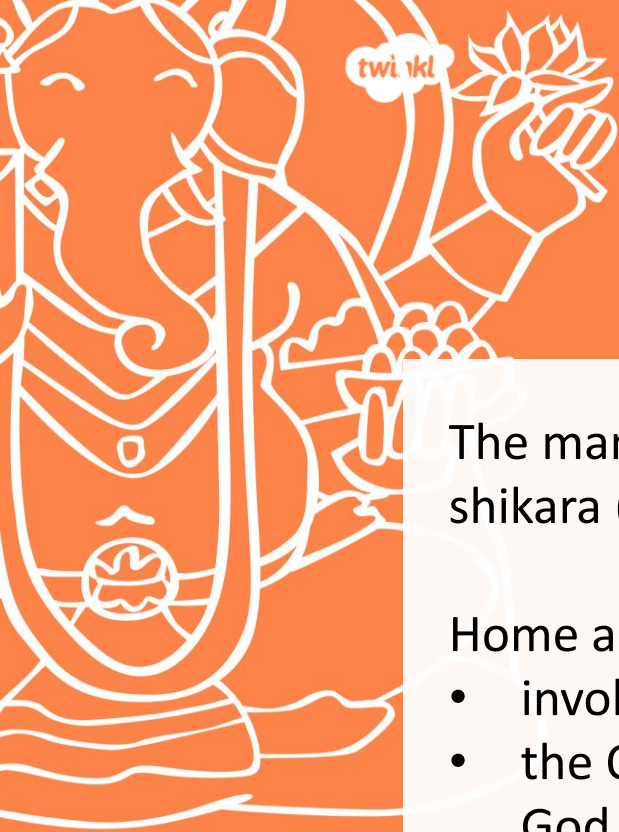


Similarities and Differences

The mandir has sadhus (holy men), a huge space, a gate and steps, and shikara (towers reaching to the sky)

Home and Mandir worship

- involve water and food,
- the OM sound - Hindus say this when meditating to bring their minds to God
- a murti – an image, statue or carving of a god. When worship begins, Hindus believe the spirit of God enters the image.
- a bell and a lamp.





Task

Write the differences and similarities between worship in the home and at the mandir.





Plenary

What difference does worshipping at the mandir or home make?

Why go to the mandir when you could stay at home (or vice versa)?



Computing

We are cryptographers - session 3 the Caesar cipher.

This week we are looking at the Caesar cipher and how we can use this to create and crack codes. If you have a computer or tablet you will be able to access Scratch online for free by searching for it on the internet. It does work on mobiles as well but is very difficult to use!

Please remember if you are accessing the internet to complete today's lesson to keep yourself safe online.

- Tell an adult what you are doing, if possible have an adult nearby so if you need help with anything that upsets you help is already there.
- Do not publish any codes you create without getting permission from the adult looking after you.
- Keep any passwords or accounts secure and do not give out any personal information, pictures or communicate with people you do not know.

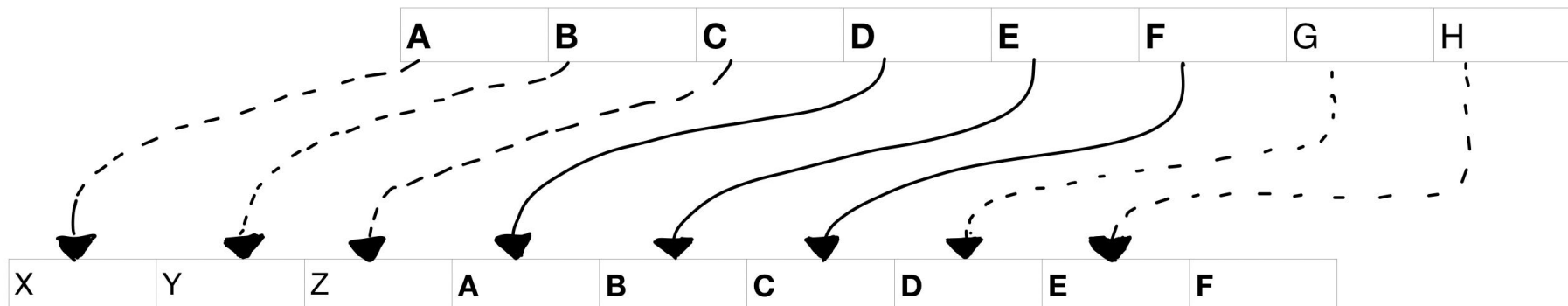
Session 3: Using the Caesar cipher to create and crack codes

To use the Caesar cipher to create and crack codes

Let's learn

In this session, you will learn about **ciphers** and decode **messages** using the Caesar cipher. You will explain the cipher as an algorithm, outlining the steps to crack the **code**.

The Caesar cipher is where each letter of the alphabet is substituted by another letter being shifted a certain number of positions along the alphabet.



Do you know what a **cipher** is?
Click on this box to see the definition.

Let's discuss

How might you **transmit** a *secret* message using **semaphore** or **Morse code**?

One possibility is agreeing on a cipher with the person receiving the message. For example, each letter would be shifted once along in the alphabet.

Let's try

In pairs, try sending messages to one another this way.

HELLO

What would IFMMP mean?
Click to find out!

Let's try

Can you decode this message using the cipher where each letter of the alphabet moves one space to the right?

Answer on the next slide!



ESP HZCO

OTYZDLFC NZXPD

QCZX ESP RCPPV

WLYRFLRP LYO

XPLYD EPCCTMWP

WTKLCO.



ESP HZCO
OTYZDLFC NZXPD
QCZX ESP RCPPV
WLYRFLRP LYO
XPLYD EPCCTMWP
WTKLCO.

**THE WORD
DINOSAUR COMES
FROM THE GREEK
LANGUAGE AND
MEANS TERRIBLE
LIZARD.**

Let's do

This is an **encrypt** script in a Scratch project. Take time to try to work out what each part of the script does. Click the image to see the script in Scratch.

The image shows a Scratch project with a script editor on the left and a stage on the right.

Script Editor:

- Function Definition:** A function named 'encrypt clear' is defined. It sets a variable 'i' to 0 and 'cryptogram' to an empty string. It then repeats a loop for the length of 'clear'. Inside the loop, it increments 'i' by 1 and sets 'loc' to 1. A 'repeat until' loop checks if 'letter loc of plain = letter i of clear' or 'loc > 27'. Inside this loop, 'loc' is incremented by 1. After the 'repeat until' loop, an 'if' statement checks if 'loc > 27'. If true, 'cryptogram' is set to 'join cryptogram ' '. If false, 'cryptogram' is set to 'join cryptogram letter loc of cipher'.
- Click Event:** When the 'Encrypt' button is clicked, 'plain' is set to 'abcdefghijklmnopqrstuvwxyz' and 'cipher' is set to 'PQRSTUVWXYZABCDEFGHIJKLMNO'.
- Sprite Click Event:** When this sprite is clicked, it asks 'What would you like me to encrypt?' and waits for an answer. It then calls the 'encrypt answer' function and says 'cryptogram'.

Stage:

- Buttons: 'Encrypt' (red), 'Decrypt' (black), 'Guess a password' (blue), 'Letter Count' (green).
- Text: 'eklem' (orange), 'What would you like me to encrypt?' (speech bubble), 'cryptogram WTAAD' (text box).
- Input: A text input field containing 'l' and a checkmark button.
- Sprite List: Shows four sprites: 'Sprite2' (Encrypt), 'Sprite3' (Decrypt), 'Sprite1' (Guess a password), and 'Sprite4' (Letter Count).

Do you know what **encrypt** means? Click on this box to see the definition.

Let's learn

The Scratch script can be changed to use a different Caesar cipher by shifting the alphabet.

Let's do

1. Click in the *set cipher* block.
2. Move some of the letters from the front to the end.

You've created a Caesar cipher, starting on a different letter.



Let's learn

Explore the Caesar cipher tool at The Black Chamber website. The website allows you to type in a cipher and see which letters it would change to.

Click on the top image to visit the website!

It also allows you to type a message into 'Plaintext' and have it encrypted into 'Ciphertext' and vice versa.

Let's do

1. Click in the plaintext box and type some text.
2. Click 'Encipher Plaintext'.
3. The ciphertext should reveal the message which has been encoded.

The BLACK Chamber

According to Suetonius, Caesar simply replaced each letter in a message with the letter that is three places further down the alphabet. Cryptographers often think in terms of the plaintext alphabet as being the alphabet used to write the original message, and the ciphertext alphabet as being the letters that are substituted in place of the plain letters. When the plaintext alphabet is placed above the ciphertext alphabet, as shown below, it is clear to see that the ciphertext alphabet has been shifted by three places. Hence this form of substitution is often called the Caesar Shift Cipher. A cipher is the name given to any form of cryptographic substitution, in which each letter is replaced by another letter or symbol.

Type your message into the box labelled 'Plaintext', then click the button labelled 'Encipher Plaintext' to encrypt your message. You can produce new versions of the cipher by changing the size of the shift.

Offset: << 10 >>

Plaintext:	Ciphertext:	Keep spaces between words: <input checked="" type="radio"/>
A	S	Slow Encrypt: <input type="radio"/>
B	T	Fast Encrypt: <input checked="" type="radio"/>
C	U	Plaintext:
D	V	<input type="text"/>
E	W	Ciphertext:
F	X	<input type="text"/>
G	Y	Encipher Plaintext
H	Z	Decipher Plaintext
I	A	Clear Boxes
J	B	Print Ciphertext
	C	Caesar Shift Puzzle
	D	
	E	
	F	
	G	
	H	
	I	
	J	

1

Plaintext:

2

[Encipher Plaintext](#)
[Decipher Plaintext](#)
[Clear Boxes](#)
[Print Ciphertext](#)
[Caesar Shift Puzzle](#)

3

Ciphertext:

Let's do

Use the Caesar cipher to decode the following statement.

Click to see the answer!

Can you explain how the cipher works?

P WXVW-FJPAXIN RDBEJIXCV TSJRPIXDC
TFJXEH EJEXAH ID JHT RDBEJIPIXDCPA
IWXCZXCVC PCS RGTPIXKXIN ID JCSTGHIPCS
PCS RWPCVT IWT LDGAS.

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world.

Let's discuss

What was the algorithm that you used to **decrypt** the message?

Click to see two example algorithms.

Are they similar to yours?

Do you know what a **decrypt** means?
Click on this box to see the definition.



Example algorithms

1. Repeatedly changing the number of places shifted along the alphabet by one.
2. Checking to see that the message makes sense.

Let's try

In pairs, try to encrypt further messages using the Caesar cipher and challenge your partner to decrypt them without knowing the 'key' (how many spaces the alphabet letters are shifted).

Ciphertext:

```
TB XOB ZOVMQLDOXMEBOP!
```

Ciphertext:

```
MU QHU SHOFJEWHQFXUHI!
```

Can you crack these codes? They say the same thing. What is the cipher for each?