

MATHS CHALLENGE KS3



THIS BOOK BELONGS TO

LEEDS CASTLE'S KS3 MATHS CHALLENGE

WELCOME TO LEEDS CASTLE

THE FOOTBRIDGE

Go to the middle, from here you will get your first sight of the castle.

This bridge was rebuilt in 2010 by the 70 Gurkha Field Support Squadron.

It was estimated that 12 men would take 15 days to complete the work.



- 1 a) On two days it rained and the project was delayed by one full day. Leeds Castle management then asked for extra cladding, which took two extra days of work. How many days in total did the bridge take to build?

- 1 b) If they had used half the number of men for the construction, how many days would it have taken?

- 2 a) How many red steel side panels can you see?

- 2 b) If they had built a straight bridge estimate the number of panels they would have needed.

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THE TRIANGLE

Walk through the Wood garden until you arrive at the area known as The Triangle.

It is known as The Triangle because three roads form a piece of land in the middle in the shape of a triangle.

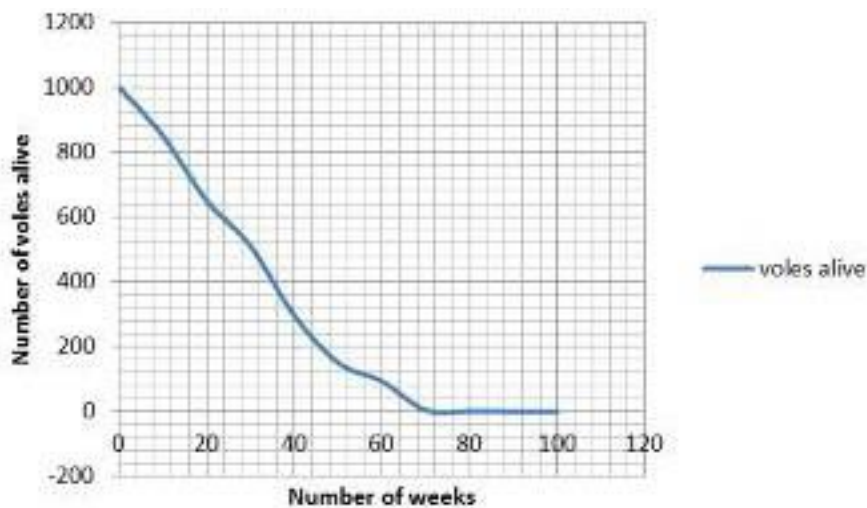
3) What type of triangle do you think it is?

- a) Equilateral
- b) Isosceles
- c) Scalene

Walk towards the castle and look out over the Great Lake.

There are several key areas on the Leeds Castle Estate which have high populations of Water Vole and we are dedicated to their preservation.

In a recent study a scientist recorded data on 1000 of these voles that were born on the same day. The graph shows how many voles were still alive after a given number of weeks.



4 a) Using the graph estimate the number of water voles still alive at 20 weeks old.

4b) Estimate the age of the oldest water vole

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OUTSIDE THE CASTLE



Looking at the front of the castle, the 2 inner towers are 17m high and the outer ones are 15m. The height to the battlements is 11.3m. The width of the frontage is the total of all 3 heights minus 50 centimetres (.5m)

5 a) How much higher than the battlements are the inner towers?

5 b) How wide is the castle?

6 a) How many windows are there at the front of the castle?

6 b) If it costs £12.50 to wash each large window, how much will it cost to wash all of them?

LEEDS CASTLE'S KS3 MATHS CHALLENGE

The table below shows the times for some extra activities available during Half Term.

Activity	Start Time	Length of time activity takes
History Set in Stone Tour	11:30 am & 3:00 pm	1 hour
Woodland Walk	11:30 am	1 hour
Meet the Falconer	12.00 & 2:30 pm	30 minutes
Falconry Display	1:30 pm	40 minutes
Story telling	3.00 pm	30 minutes
Swan Feed	3.30 pm	30 minutes

7 a) The Woodland walk starts at 11:30. What time does it finish?

Answer: _____

7 b) One activity finishes at 3:30pm. Which activity is it?

Answer: _____

7 c) A visitor arrives at 1:10pm. How long before the next activity starts and what is it?

Answer: _____

7 d) He does not want to attend the story telling. How many other activities will he be able to join in with?

Answer: _____

LEEDS CASTLE'S KS3 MATHS CHALLENGE

INSIDE THE CASTLE THE LIBRARY

If the Library is closed feel free to miss this page out, however you should be able to answer these questions without setting foot in the library.

There are 3000 books in the library, made up from the collections of Lady Baillie and her father.

750 of the books are about interior design

900 are encyclopaedias

300 are books of poetry

8a) What percentage of books are about interior design?

Answer: _____

8b) What percentage of books are poetry?

Answer: _____

8c) How many books are of another category?

Answer: _____

8d) What percentage of books is this?

Answer: _____

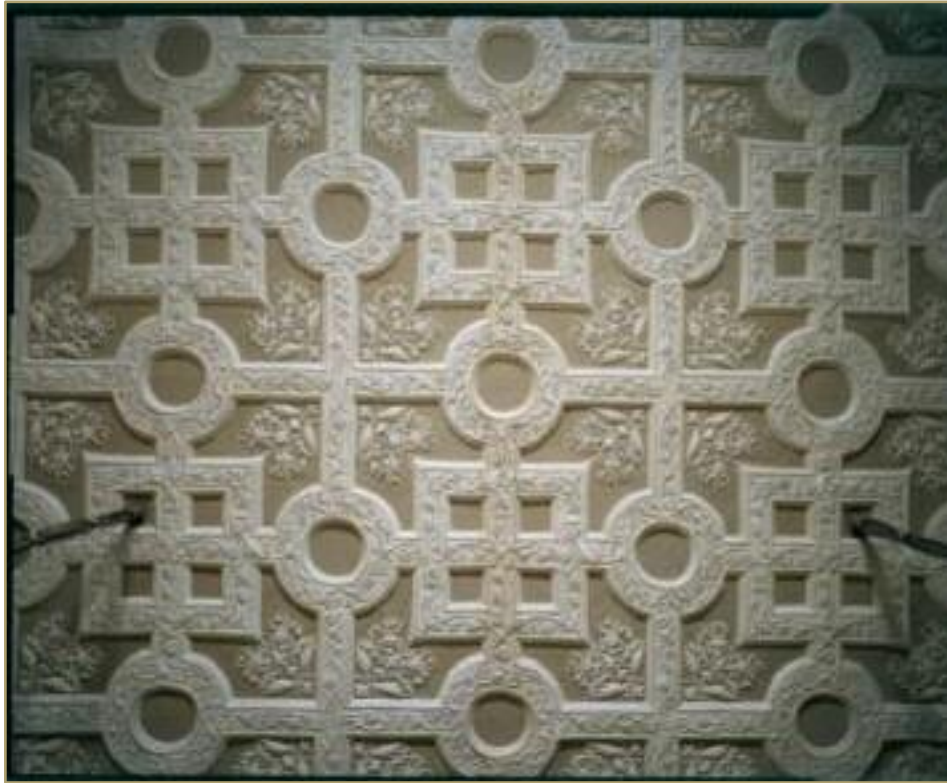
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THE SERVANTS QUARTERS

Once you have had a look around the room, look up to the ceiling where you will see a beautiful Jacobean strapwork* ceiling.



Admire the symmetry.

9 a) How many circles are there?

8 b) How many squares are there?**

*Strapwork

Decorative work, consisting of interlacing straplike bands, often used in low relief on ceilings, screens, and panels.

**Clue: Each large square contains 4 smaller ones.

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THE SALON

Having walked through the Private Dining Room and Writing Room, you will arrive at The Salon.

This is where Lady Baillie hosted her extravagant parties. A lot of wine was drunk at the parties! Her staff knew how much wine to purchase by using a ratio of guests to wine bottles.

If Lady Baillie invited 150 guests, her staff bought 300 bottles of wine.

10a) What ratio of guests to wine bottles did her staff use?

Answer : _____

10b) If the 150 guests drink 223 bottles, how many were left over?

Answer : _____

Lady Baillie also liked to serve canapés at her parties. The ratio used for guests to canapés was 1:5

10c) How many canapés were left over if 552 were eaten?

Answer : _____



Lady Baillie

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THE CULPEPER GARDEN

The Culpeper garden occupies the site of the Castle's kitchen garden. It looks different with each season.



11 a) The garden is made up of several sections. How many sections are there?

11 b) By counting the plants you can see in one section, estimate the total number of plants in the garden.

11 c) How many of the large box hedges line the path to the Maze?)



11 d) Using the picture calculate the volume of all the large, cube shaped hedges. Each hedge is 3m x 3m x 2m

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THE MAZE AND GROTTTO



The maze was created in 1987 using 2,400 yew trees.

Assume that a team of 6 gardeners worked on creating the maze and that each gardener could plant 12 trees per hour.

They all worked from 8 – 12:00 then took 1 hour for lunch. They finished work at 4pm.

12 a) How many trees they did they plant in 1 morning?

12 b) At what time did the lunch break finish?

12 c) How many trees were planted in 1 afternoon?

13 How many days did it take to plant the maze?

14 The average time taken to complete the maze is 20 minutes, how long did it take you?

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The table below shows information about the rainfall recorded at two castles in the United Kingdom.

Place	Mean Rainfall	No. of months	Months
Edinburgh Castle	10cm per month	8	Feb - Oct
	20 cm per month	4	Nov - Jan
Leeds Castle	5 cm per month	9	May - Jan
	40cm per month	3	Feb - April

15) Which of the places has more rainfall on average over the whole year?

Answer: _____

WILDLIFE

One Canada Goose eats approximately 3 - 4lbs grass and defecates 2 -3lbs per day

Assume that one goose defecates 2lbs each per day.

One Mute Swan eats 8lbs of vegetation per day, then defecates an average of 5lbs per day.

Ducks have a very varied diet. Assume that given their size, they will defecate a quarter the amount that a goose does, so an average of $\frac{1}{2}$ lb per day.

We currently have approximately 141 geese, 26 swans and 180 ducks living on the estate at Leeds castle.

16 a) How much poop does Leeds Castle have in a leap year?*

16 b) Convert your answer to Kilogrammes

*Hint: 1lb = 0.45Kg

LEEDS CASTLE'S KS2 MATHS CHALLENGE

NOTES AND CALCULATIONS