



# Castle maths trail

Name(s): \_\_\_\_\_

## I) SOUVENIR SUMS



A French coach with 37 tourists arrives at the castle. They go to buy tickets and are offered a guide book which costs £2.50. Out of the whole group, 19 people do not choose to buy a guide book.

How many people bought a book?

What is the total cost?

### Extension activity

(a) Use the ticket prices to work out the cost of entry to the castle for each part of the group.

i) 25 adults

ii) 6 children age 5-15

iii) 3 concessions

iv) 3 children under 5

### Admission prices:

Adult	£6
Child (5-15)	£3.60
Concession	£4.80
Under 5	free

(b) What is the total ticket price for the whole group?

## 2) A DIFFERENT ANGLE

Accurate measurements were essential when building castles. Builders used lots of different ways of measuring including string, sticks, compasses and even body parts!

**1** Choose a part of the castle with tall walls and a large flat space below and stand at the bottom of the wall. **Estimate in metres how high you think the castle is:**

\_\_\_\_\_ m.

**2** With your back to the wall, walk forward in a straight line, stopping often to bend over and look between your legs, (be careful to check it's safe). **Stop walking when you can see the top of the building back through your legs**, then measure the distance in metres between the castle and your stopping location using a measuring tape. **Write down the distance at the bottom the diagram (in metres).**

**3** When you looked at the top of the castle through your legs, you were looking at a  $45^\circ$  angle, which you can see on the diagram. Look carefully at the diagram. **What three-sided shape is formed when you join up the three lines** of the ground, the castle wall and the dotted line extending at  $45^\circ$  from where you could see the top of the castle wall back through your legs?

It's a \_\_\_\_\_ shape.

**4** Look at the angle where the line of the wall and the line of the ground meet. **Can you work out its size from just looking?** Write this on the diagram.

**5** You know two angles of this three-sided shape now. **Can you use the rules of this shape to work out the third angle** (between the top of the castle and the dotted line) and write it on the diagram?

6

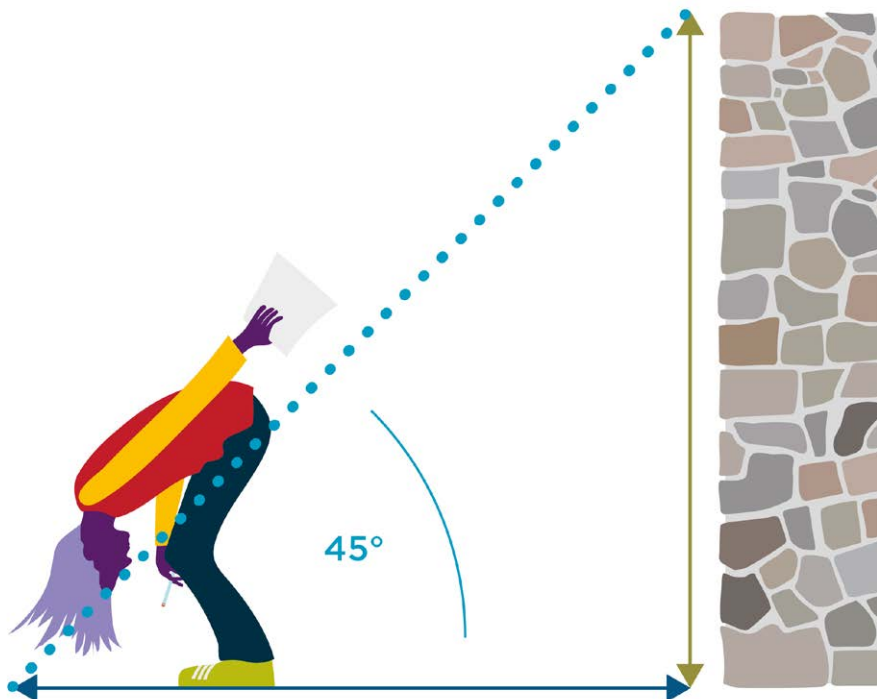
Have a think about the three angles.  
**What kind of three-sided shape is this?**

It's a \_\_\_\_\_.

7

Are there other rules for this particular type of three-sided shape which will help you work out the height of the castle, using the measurement you took in Step 2? **Write what you think the height of the castle is on the diagram (in metres).** Is it anywhere close to your original estimate?

Castle wall calculated to be \_\_\_\_\_ metres high



\_\_\_\_\_ metres measured along the ground

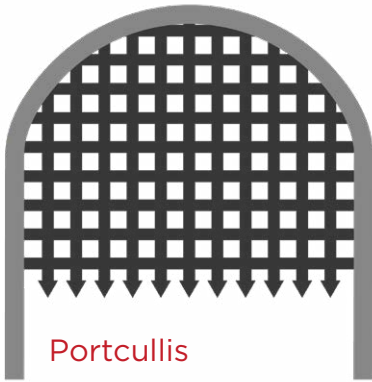
(between foot of castle wall and where you could see the top of the castle when looking through your legs)

### 3) SHAPE SPOTTING

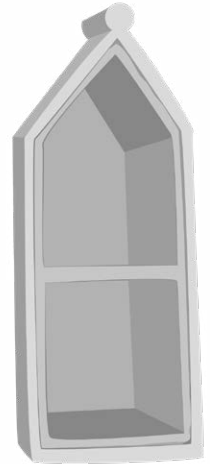
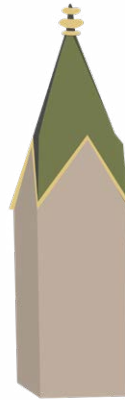


Castles are made up of lots of different structures.

Explore the castle to find structures like these images. Discuss the properties of the 2D shapes and 3D objects you find and why you think they were used when building the castle.



Portcullis



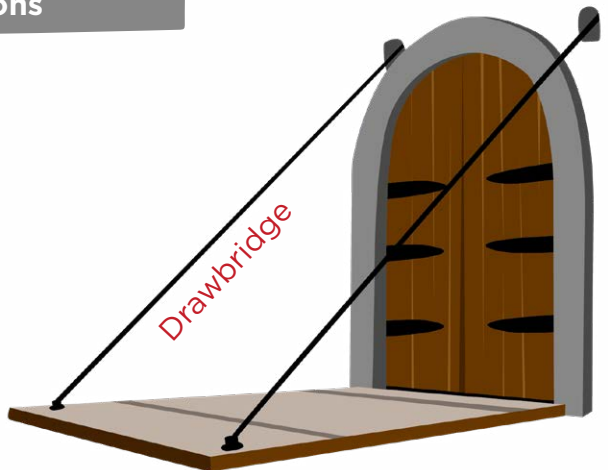
Aumbry

Merlons

Crenels

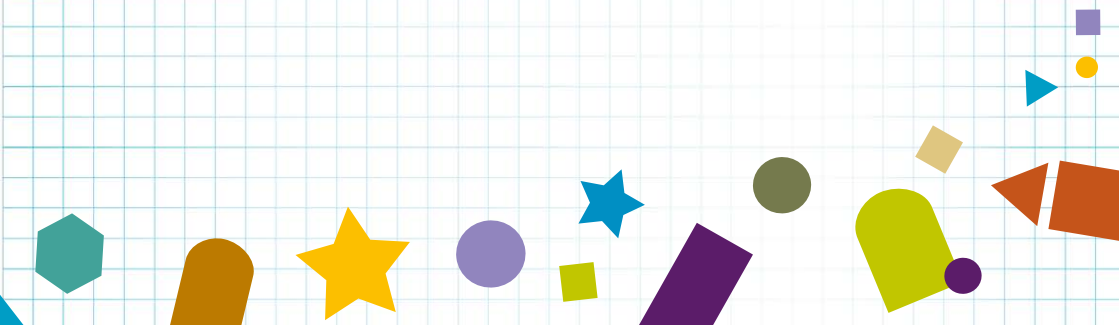
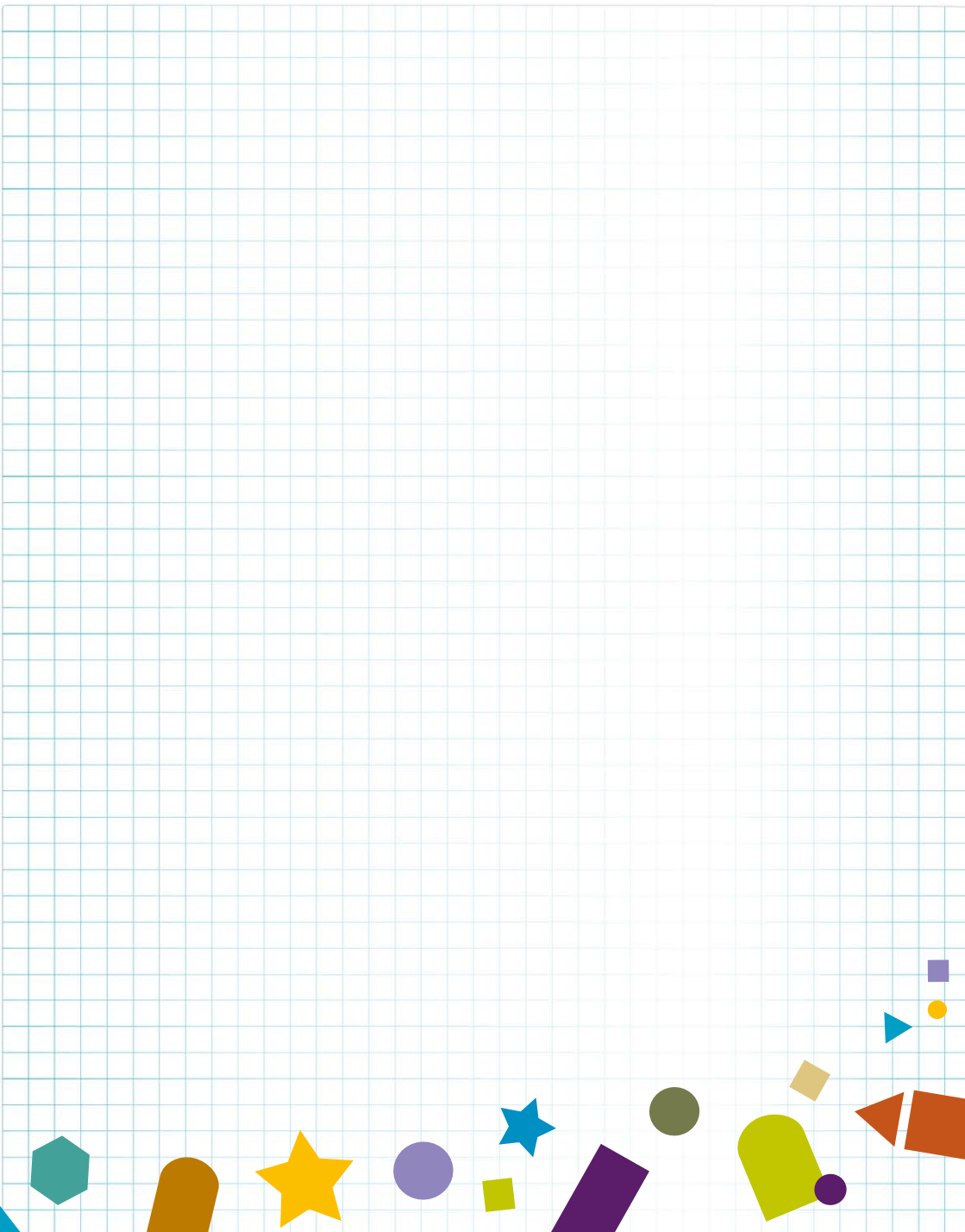


Crenellations



Drawbridge

Draw or record the shapes or objects you see.



## 4) MASONS' MARKS

Masons took large hunks of stone from quarries and turned them into the blocks needed to build castles.

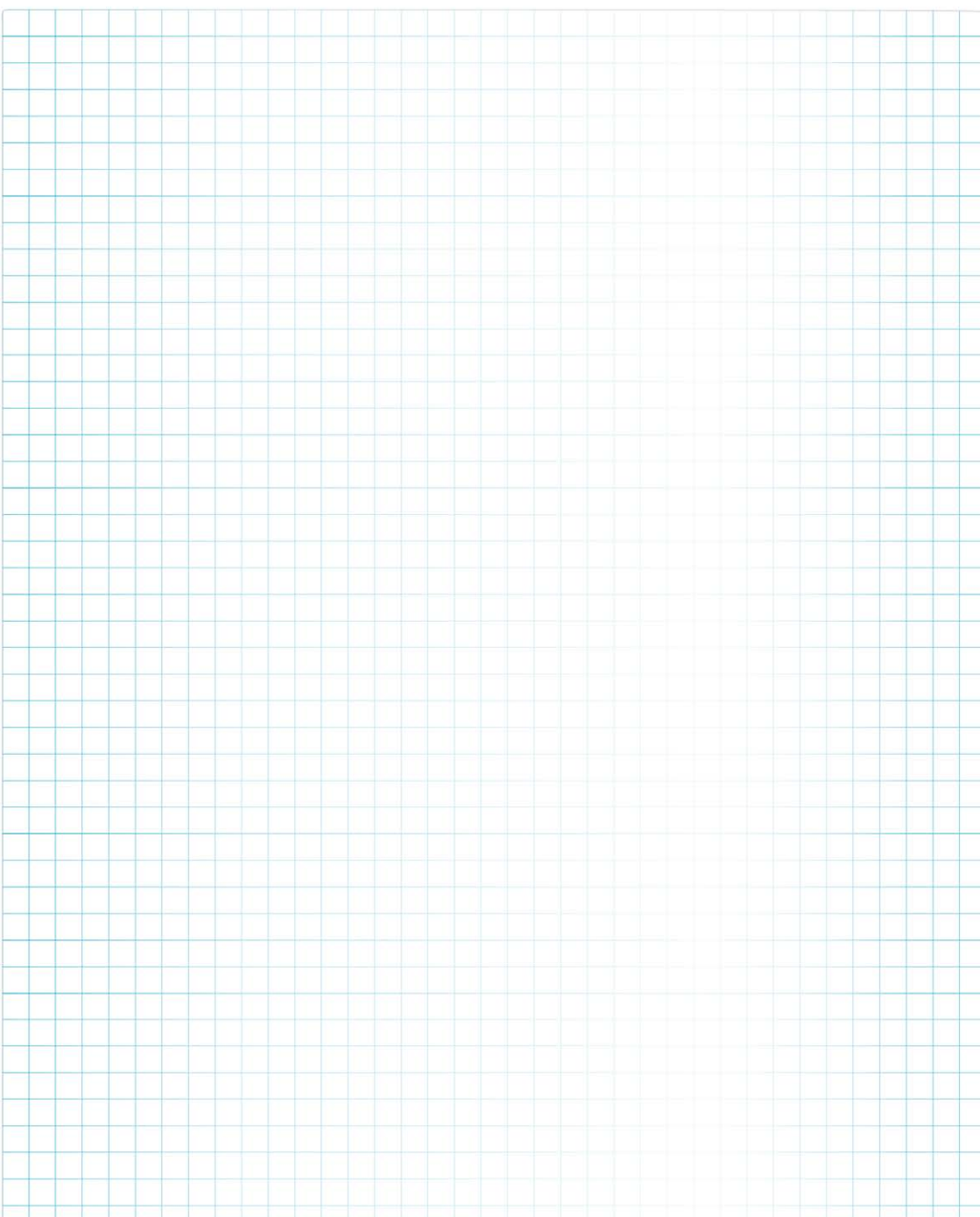
After carving each block they would mark it with an individual symbol called a mason's mark. This mark was so the mason could claim the stone and get paid for their work.

Each symbol would have between two and five straight lines.

See if you can spot any masons' marks around the castle.



Create your own masons' marks below that have 4 or 5 lines of symmetry.



## 5) CASTLE FEAST

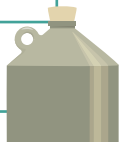
The lord of the castle has ordered his cook to plan a special feast for 50 people for the arrival of the king and queen. There will be 50 guests at the feast in the great hall.

Can you work out how much food the cook can give each person if it's divided up equally amongst the guests?

You can answer as grams, kilos, litres or items per person.



	Amount in larder	Amount per guest
Swans	2 (15 kg each)	
Chickens	10 (1 kg each)	
Salmon	3 (5 kg each)	
Eels	5 (3.5 kg each)	
Eggs	6 dozen	
Cheese	5 kg	
Bread	30 loaves (400 g each)	
Apples	100	
Wine	100 flagons (1 litre per flagon)	
Ale	1.5 barrels* (50 litres each)	



\*Weak ale was drunk by everyone – including children – as the water wasn't safe to drink.