



Story: [The Lion's Share](#)
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Illustrator: [Matther McElligott](#)

Teacher: [Alison Hogben](#)
Setting of the class / school: A mixed ability class in a primary school in Hull, UK
Age group: 9 -10 year olds (Year 5)
Number of children in the class: 30

Learning intention: To solve problems involving fractions
Key mathematical vocabularies: whole, part, numerator, denominator, equal, fraction
Resources needed: A copy of 'The Lion's Share' story picture book, Paper (at least A3 size), and felt tips

Synopsis by the publisher:

When Ant receives a special invitation to dine with Lion, she is ready to be on her best behaviour. During dessert, the other guests do not mind their manners, each one taking half of the remaining cake as it is passed around. By the time it reaches Ant, barely a crumb is left for her to share with the King!

DAY 1

Starter (10 minutes):

To start the lesson, I introduced the book and read up to the part where the ant receiving her piece of cake. We then discussed what had happened to the cake when each of the animals took turn to eat it i.e. that it was halved: Elephant ($\frac{1}{2}$) -> Hippo ($\frac{1}{4}$) -> Gorilla ($\frac{1}{8}$) -> Tortoise ($\frac{1}{16}$) -> Warthog ($\frac{1}{32}$) -> Macaw ($\frac{1}{64}$) -> Frog ($\frac{1}{128}$) -> Beetle ($\frac{1}{256}$) -> Ant ($\frac{1}{512}$), and whether the children thought this was a fair way to share the cake. (The book goes on to doubling in the second half of the story, but we only used the fraction part of the story for this lesson).

Main activity (25 minutes):

Next, I explained to the class that they were going to work out what fraction of the cake each animal in the story received, and discussed with the children how they thought that they could work that out. (Most pupils immediately suggested drawing it as they are very used to solving maths problems pictorially. A couple of children were hoping that I would produce a cake to try it with!) The children were then asked to produce a visual representation of how the cake had been shared. They used large pieces of paper (A3) to do this. Each section was labelled with the corresponding animal (see Figure 1). It was useful for pupils to have a list of the animals displayed in the order that they appeared in the story.

The children were then asked to use their visual representation to work out how much of the cake each animal ate, which most pupils were able to do so independently. (For those few pupils who needed more support, I helped them to make another paper version through folding and shading to see the number of parts each time the cake was shared to calculate the fraction.) Once they had done this, they recorded in a chart the fraction of the whole cake each animal ate (see Figure 2). For those with greater understanding, I also asked them to find out how much of the cake was left each time.

Plenary (10 minutes):

At the end of the lesson, we studied the fractions of the whole cake eaten by each animal and discussed who had received the most/least amount of cake. I then asked what patterns the children noticed about the fractions in the story and what the relationships between them were. Their responses include "I have noticed that the denominator is doubling each time", "The numerator is always one and the denominators are always even" and "The fractions are getting smaller."

DAY 2

Starter (5 minutes):

To start the second lesson, the children recapped the story in pairs and talked through yesterday's visual representations to remind themselves of what was happening mathematically.



Main activity (30 minutes):

My aim for this lesson was to tackle common fraction misconceptions through assessing understanding, and to challenge thinking. This was achieved through the use of True or False statements for the children to work on individually, selecting which one they were most confident with first. For example:

- Tortoise says to Gorilla: "I got a $\frac{1}{16}$ and you got an $\frac{1}{8}$. 16 is bigger than 8 so I got a bigger piece than you."
- Frog says to Macaw: "My piece of cake is twice as big as yours." (Frog had $\frac{1}{128}$ and Macaw had $\frac{1}{64}$)

The children were then asked to prove/disprove the statements through written explanations. They could use any of their own additional pictorial representations to help with this and they needed to use correct vocabulary and to be concise (see Figures 3 and 4 for example responses). It helped to have appropriate vocabulary listed on the board.

Plenary (10 minutes):

Finally, the children were asked to write their own statements as a conversation between two of the animals and explain how they knew it was true or false.

Reflection:

The children quickly engaged in the simplicity of the story. The visual representations in the story also helped pupils to understand the concept. The use of True and False statements in the second lesson was good for addressing some of the common misconceptions in fractions and provided ample opportunity for mathematical discussion. I think that using stories for older children is as important as using them with younger ones as it provides an appealing hook and a meaningful context for mathematics learning which can span over a number of Mathematics lessons.

Figures:

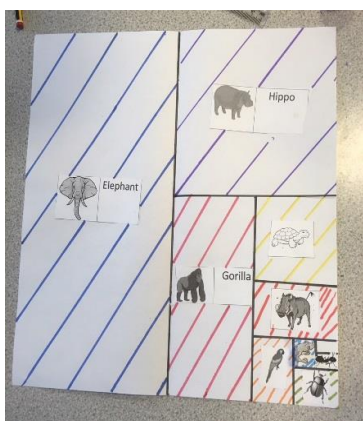


Figure 1: Visual representation of the fraction that each animal had

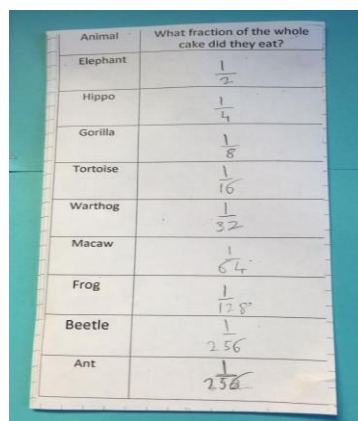


Figure 2: How much each animal had – looking at patterns

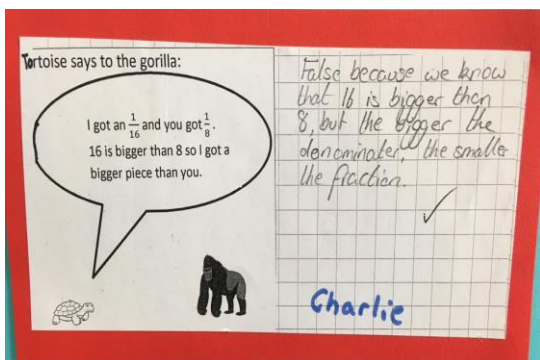


Figure 3: Example explanation

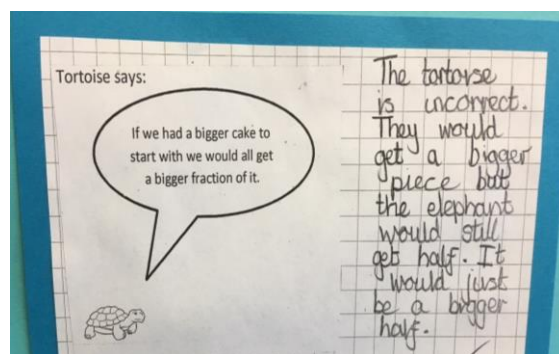


Figure 4: Example explanation