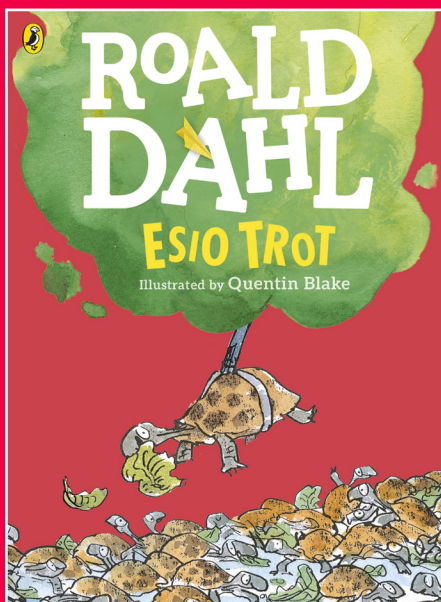


INVESTIGATIONS

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ESIO TROT

Read the short novella *Esio Trot* by Roald Dahl to your class, and engage in the following mathematical investigations (Years 3 and up).



PROBLEM 1: THE REAL ALFIE

It took the real Alfie 30 years to finally double in size. If he continued to grow at this rate, doubling every 30 years, how much would he weigh if he lived to be the oldest tortoise ever (about 240 years old)?

ENABLING PROMPT

Every 30 years Alfie doubled in size. If he is 13 ounces at the start of the book, how much did he weigh 30 years later? What about 60 years later?

EXTENDING PROMPT

Ounces (and pounds) are part of the imperial measurement system, but we actually use the metric system (grams and kilograms). If there are about 35 ounces in one kg, when was Alfie a kilogram? How many kg would he be

when he is 240 years old? What are some things that would be a similar weight to him at this age?

AN EXTRA CHALLENGE

Imagine humans doubled in height every 30 years! How tall would you be in 30 years time? Can you estimate your height at age 100? At what age would you be taller than the tallest person ever, who stood 2.72m?

PROBLEM 2: ALFIES ALL THE WAY DOWN

Mr Hoppy came up with a clever plan to make Mrs Silver's tortoise a little bit bigger each week without Mrs Silver noticing. Every week, he replaced Alfie with progressively heavier tortoises to give the impression that Alfie was growing. On page 38, Roald Dahl writes:

In the beginning, Alfie weighs 13 ounces...

End of first week, Tortoise Number 2 weighs 15 ounces...

End of second week, Tortoise Number 3 weighs 17 ounces...

End of third week, Tortoise Number 4 weighs 19 ounces...

End of fourth week, Tortoise Number 5 weighs 21 ounces...

End of fifth week, Tortoise Number 6 weighs 23 ounces...

End of sixth week, Tortoise Number 7 weighs 25 ounces...

End of seventh week, Tortoise Number 8 weighed 27 ounces...

Mr Hoppy stopped at Tortoise Number 8 because he had achieved his goal of making it look like Alfie had doubled his weight. But Mrs Silver's real dream was to ride on the back of her pet tortoise. She decided that, to ride on his back, Alfie would need to weigh at least as much as she did.

Mrs Silver weighs 69kg (about 2,434 ounces). How long would it have taken for her pet tortoise to weigh more than her?

ENABLING PROMPT

Using a calculator, can you work out approximately how many kilograms (or ounces) Mrs Silver's pet tortoise grows by each year? Then create a table to help you complete the problem.

EXTENDING PROMPT

The oldest known tortoise lived to be around 240 years old. Assuming that (somehow) Mr Hoppy (with the help of his great-great-great grandchildren) kept replacing tortoises, how much would Alfie's replacement weigh after this length of time? Do some online research: Would this make Alfie's replacement the heaviest tortoise that has ever lived?

AN EXTRA CHALLENGE

The largest animal to have ever existed is the Blue Whale, weighing 173 tonnes. How long would it take Alfie's replacement to weigh this much? (some students may wish to consider whether they can create an algebraic expression to describe the pet tortoises growth over time, and use this expression to help them solve the problem).