THE MATHEMATICAL
ASSOCIATION OF VICTORIA

INVESTIGATIONS

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FAIRY TALES

Fairy tales provide wonderful contexts for exploring a variety of important mathematical ideas. Read or retell one of these fairy tales to students and undertake the associated investigation. Afterwards, invite students to reflect on their own favourite fairy tale and then have a go at devising their own narrative-driven, mathematical inquiry.

CINDERELLA

EXPERIMENTAL AND THEORETICAL PROBABILITY

Coming home from the ball, Cinderella lost her glass slipper. The prince rode around town to find the owner by asking young women to try it on. There were 30 women in town with six different shoe sizes. Cinderella had the smallest feet (Size 1). How many women would you expect to have Cinderella's shoe size?

Roll a dice 30 times to represent each of the women's shoe size. How many women had each size of shoe? Compare your data with classmates. How many people ended up with a distribution of shoe sizes that would fit the fairy tale, where Cinderella was the only young woman in town with very small feet?

RAPUNZEL

MULTIPLICATION AND PROPORTIONAL REASONING

Rapunzel's hair was famously long. In the story, both the witch and the prince could use it as a rope to climb up the tower where Rapunzel was imprisoned. How long do you think Rapunzel's hair might be? How many times longer is her hair than your own? If you took every single strand of hair from your head and tied them together, do you think this mega-strand would be longer than Rapunzel's hair? How long do you think your mega-strand of hair might be?

PINOCCHIO

NUMBER PATTERNS

Pinocchio's nose grows longer each time he tells a lie. In the first version of the fairy tale, his nose grows by 5cm each time he lies. In the second version of the fairy tale, his nose doubles in length each time he lies. If his nose is 2cm long at the beginning of the story, how many lies would he need to tell for his nose to be approximately the same length in both versions of the fairy tale? How many lies would he need to tell in each version for his nose to be longer than one metre? How might you extend this further?

BILLY GOATS GRUFF

CONDITIONAL PROBABILITY

Imagine in the story that the troll was not so easy to persuade. Instead, depending on the trolls mood, he may or may not decide to eat each goat! When the first goat arrives, there was only a 50% chance he would let him pass and a 50% chance he decides to eat him. The same rule applied to the second and third goat. What are the chances the troll actually eats all three of the goats? What are the chances they all survive? What are the chances two of the goats get eaten but one survives?

Have you used fairy tales in your classroom? Our readers would love to hear your experiences of exploring mathematics through stories. You can share your ideas with us at primenumber@mav.vic.edu.au.