THE MATHEMATICAL
ASSOCIATION OF VICTORIA

INVESTIGATIONS

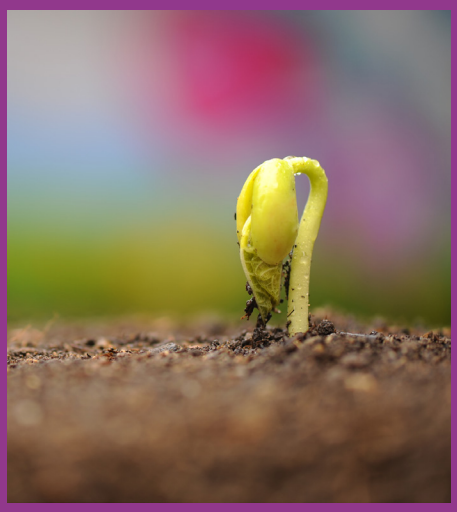
FAIRY TALES OR TALL TALES? by Lindy Sharkey

Have you ever stopped to investigate the reasonableness of the nursery rhymes and fairy tales that we have told our youth for hundreds, if not thousands of years? Could there be an element of truth to these stories or are they the result of an imagination running wild? Students could choose their own stories or use the examples given below.

RAPUNZEL

Rapunzel is locked in a tower. She lowers her hair for a person to climb.

- How tall is this tower? Could Rapunzel safely jump?
- Consider the growth rate of hair. How long would it take to grow the hair to the required length?
- Investigate the strength of human hair. Could it support the mass of a human?



JACK AND THE BEANSTALK

Jack trades a cow for some magic beans. The beans grow into a beanstalk that grows into the clouds. Jack climbs the beanstalk and retrieves a magic harp and a goose that lays golden eggs.

- How tall is the beanstalk if it reaches clouds? How long would it take to grow?
- Even if Jack climbed at world record pace, how long would it take to climb to the top of the beanstalk?
- Are the golden eggs hollow or solid? Using the density of gold, how heavy are the eggs? What would they be worth in Australian dollars?

HICKORY, DICKORY DOCK

A mouse runs up and down a grandfather clock on the hour every hour.

- How many times does the clock chime over the course of each day?
- How tall is this clock? How far does the mouse run at each chime of the clock? How long does it take? How many laps does the mouse run each day? What distance is covered each day?
- Over the course of each day, which is furthest, the distance travelled by the pendulum, the minute hand or the mouse?

CURRICULUM CONNECTIONS

Level 7: VCMNA249 Recognise and solve problems involving simple ratios.
VCMNA257 Investigate, interpret and analyse graphs from real life data, including consideration of domain and range.

Level 8: VCMNA277 Solve a range of problems involving rates and ratios, including distance-time problems for travel at a constant speed, with and without digital technologies.

Level 9: VCMNA301 Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems.

Level 10: VCMSP349 Determine quartiles and interquartile range and investigate the effect of individual data values, including outliers on the interquartile range.