THE MATHEMATICAL
ASSOCIATION OF VICTORIA

INVESTIGATIONS

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SHREK

Get your students to watch the film *Shrek* (or just the scenes 'highest room in the tallest tower' (https://youtu.be/iropsnsCEjA) and 'kill the ogre' https://youtu.be/aQqAUXKn7t4) and invite them to undertake the following mathematical investigations.

THE ODD COUPLE

Donkey and Dragon are the ultimate odd-couple. It's rare that animals of different species fall in love, let alone animals of such different sizes! How many times longer do you think the Dragon is than Donkey? How many times heavier? Use images from the film to justify your thinking.

Enabling prompt: Imagine the Donkey is exactly 1 metre long. How long would the dragon be? What makes you think this?

Extending the investigation: If an ant fell in love with a larger creature (that was proportionally the same size as the donkey was to the dragon), how long (or heavy) would it be? What creature might it be? What if an elephant fell in love with a proportionally smaller creature? Can you think of any other mis-sized love matches? Explain your thinking.

Imagine Donkey and Dragon's babies grew to the size that was half way between their parents. How long (or heavy) will these babies be? How many times longer (or heavier) are they than their dad? If they grew up to have their own children with a donkey, what would be the size of their children? What about the next generation?

CAN SHREK SURVIVE?

After Shrek and Donkey accidentally find themselves in a trial by combat, Lord Farquaad orders all 15 knights to attack Shrek, instead of fighting each other! Imagine the knights attack Shrek one at a time. For each knight attack, two 6-sided dice are rolled. If the sum of the dice is 2 (the 'poison number'), Shrek is defeated. If the dice add to any other number, Shrek survives. Do you think that it is unlikely or likely that Shrek will survive the attack by the 15 knights? Explain your reasoning. Now investigate using dice to find out.

Extending the investigation: How do the chances of Shrek surviving change if we choose a different 'poison' number for Shrek (e.g., 3 or 7)?

How do the chances of Shrek surviving change if we choose to roll two 10-sided dice instead, keeping 2 as the poison number? What about if we roll two 20-sided dice?

Can you design a Shrek combat challenge for a classmate to investigate? Can you ensure Shrek has an equal chance of winning and being defeated?

Image source: https://www.flickr.com/photos/pf1elcc/2828930581

Have you used movies in your classroom as a launch for mathematical exploration? Our readers would love to hear your experiences. You can share your ideas with us at primenumber@mav.vic.edu.au.