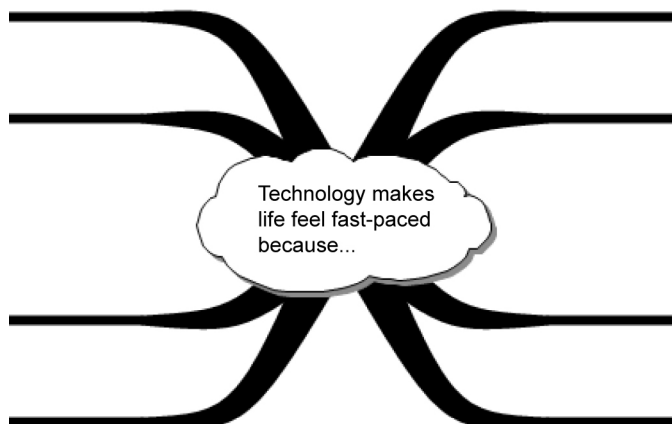# Section 8.2 Literacy Connect

Before Reading

Complete the mind-map to show the ways in which technology contributes to a feeling that today's society is fast-paced.

Technology makes life feel fast-paced because...

During Reading

While you read, think of why an investor needs qualities, such as commitment and patience, to benefit from compound interest.

After Reading

1. In your opinion, which story is a better tool for a personal finance consultant to use to teach about compound interest: the rice or the lily pads?

2. Make up your own story, supported by your own calculations, that would help a personal finance consultant explain how compound interest works in the short term and the long term.

The Power Of Doubling: Using Rice And Lily Pads To Explain Compound Interest And Personal Finance

Here is a story that shows the power of doubling.
Long ago, an Indian mathematician invents the game of chess for his emperor. The emperor is so happy, he grants him anything he wishes. So, the mathematician requests something very simple:

1	2	4	8	16	32	64	128
256	512						

- one grain of rice on the first square of the chessboard,
- two grains on the second square,
- four grains on the third square,
- eight grains on the fourth square,

and so on, each time doubling the number of grains of rice that were on the previous square.

2^{63}

The emperor thinks this is very reasonable, and so he grants the wish. But the emperor never studied the power of doubling. The wish is impossible to fulfill. After the 10th square, it does not look like the mathematician will receive very much rice. But on the 64th square, there will be exactly $2^{63} = 9\ 223\ 372\ 036\ 854\ 775\ 808$ grains of rice. This is more rice than the entire planet can produce!
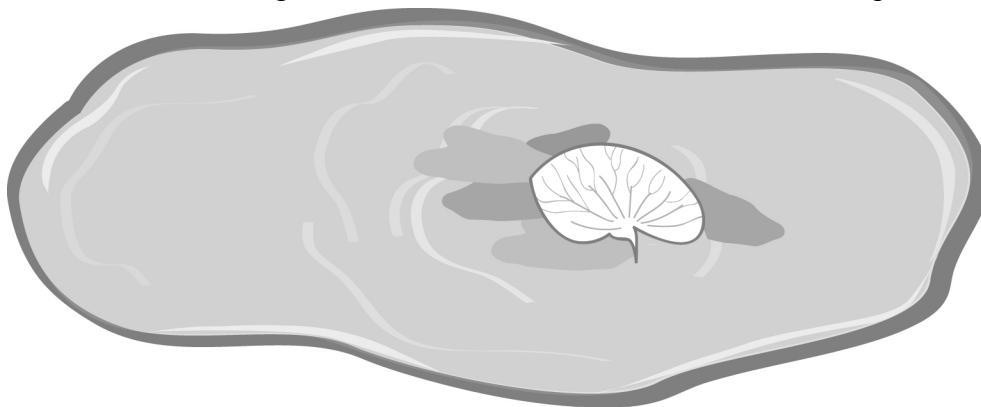
Lily pads offer another way to understand the power of doubling. Imagine a pond with one lily pad floating on the surface. Suppose that the lily pad can double every day, so there will be two lily pads the next day, and four lily pads the day after that. Eventually the lily pads will completely cover the pond. Suppose it takes 29 days for the lily pads to cover half the pond. How long will you have to wait until the second half of the pond is covered? The answer is not another 29 days. Since the lily pads are all doubling, the answer is only one day. As much growth will take place in the 30th day as on all the preceding 29 days. This illustrates the power of compound growth.

Now, put yourself in the shoes of a personal finance consultant working with someone who does not understand compound interest. Your client just does not see the benefit of saving on a regular basis. The compound interest over the first few years does not seem like very much money. But you know the power of exponential growth from your studies of rice and lily pads.

So compound interest is like the doubling lily pads. The main benefit of saving is not noticeable until after a long time. But then suddenly, in a very short period of time, the compound interest accumulated over the years can be huge. This is why starting a savings plan early, and saving regularly, can earn you a significant amount of money later on.