

## 4

## Renaming Numbers

## You will need

- a place value chart

**Goal** Rename numbers using place value concepts.

An MP3 player uses compressed sound files so that they can be stored easily. Tom just got a new MP3 player. He is downloading songs for his sister.

The sizes of sound files are given in three different units:

- bytes
- kilobytes (kB, 1000 bytes)
- megabytes (MB, 1 000 000 bytes)

? Which song file will use the most space?

*A Whole New World* —  
3.68 MB

*Skip to My Lou* —  
233 848 bytes

*Under The Sea* —  
1 431 430 bytes

*Star Trek Theme* —  
1427.72 kB

*I'm a Believer* —  
3132.5 kB



## Tom's Comparisons

To compare the file sizes, I have to compare values using the same units. I could use bytes, kilobytes, or megabytes.

- I know that if the value is in bytes, the ones digit should be in the ones place of the place value chart.
- If the value is in kilobytes, the ones digit should be in the one thousands place of the chart.
- If the value is in megabytes, the ones digit should be in the one millions place of the chart.

I'll put in the missing zeros to write the full numbers.

*A Whole New World* will use the most space.  
3.68 million bytes is  
3 680 000 bytes.  
The next biggest file is  
3132.5 thousand bytes.  
That's the same as  
3 132 500 bytes,  
so it's less.

Millions			Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
			2	3	3	8	4	8
		1	4	3	1	4	3	0
		3	6	8	0	0	0	0
		1	4	2	7	7	2	0
		3	1	3	2	5	0	0

## Reflecting

1. Why could Tom have described the file sizes as 0.2 MB, 1.43 MB, 3.7 MB, 1.43 MB, and 3.1 MB to compare them?
2. Why did Tom put in zeros at the end of the numbers for the last three songs?
3. How else could you write the file sizes to compare them?

## Checking

4. Three other music files were these sizes:  
1.43 MB      0.58 MB      3.12 MB
  - a) Write each file size using byte measurements.
  - b) Which file is less than 1 000 000 bytes?
5. Write each number in another form.
  - a) 3.2 million = ■ ones
  - b) 0.47 million = ■ thousands
  - c) 0.32 million = ■ ones

## Practising

6. Sarah downloaded some digital pictures. The file sizes were:  
285 kB      15 000 bytes      1.1 MB      371 245 bytes
  - a) Write the first and third file sizes as a number of bytes.
  - b) Estimate each file size except for the third one as millions of bytes, or megabytes.
  - c) Which photo uses the most bytes?
7. Copy and complete Kayla's work:
  - a) 3 145 276 is about ■ millions
  - b) 3 145 276 is about ■ thousands
  - c) 224 137 is about ■ millions
8. Explain why 0.1 million has to be 100 000.
9. Canadians ate 2296.8 million kilograms of fruit in 2002.
  - a) About how many tonnes of fruit is this?
  - b) There are about 30 million Canadians. Did a typical Canadian eat closer to 1 tonne, 0.1 tonnes, or 0.01 tonnes of fruit? Explain.

