


**EXAMPLE 4** Comparing Hard Drive Storage

You are buying a computer. For an additional \$80, you can get 1 terabyte of storage instead of 100 gigabytes of storage.

- How much more storage is that?
- A typical movie uses 1 gigabyte of storage. How many movies could you store with 1 terabyte of storage?

**Computer Storage**

<p>1 megabyte = <math>10^6</math> bytes</p> <p>1 gigabyte = <math>10^9</math> bytes</p> <p>1 terabyte = <math>10^{12}</math> bytes</p> <p>1 petabyte = <math>10^{15}</math> bytes</p> <p>1 exabyte = <math>10^{18}</math> bytes</p> <p>1 zettabyte = <math>10^{21}</math> bytes</p> <p>1 yottabyte = <math>10^{24}</math> bytes</p> <p>1 brontobyte = <math>10^{27}</math> bytes</p> <p>1 geopbyte = <math>10^{30}</math> bytes</p>	
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**SOLUTION**

- a. 100 gigabytes of storage is

$$100 \times 10^9 = 100,000,000,000 \text{ bytes.} \quad \text{100 billion bytes}$$

1 terabyte of storage is

$$10^{12} = 1,000,000,000,000 \text{ bytes.} \quad \text{1 trillion bytes}$$

1 trillion is 10 times more than 100 billion. So, the additional \$80 will give you 10 times the amount of storage.

- b. A terabyte is 1000 gigabytes. So, you could store about 1000 movies with 1 terabyte of storage.

 **Checkpoint**

Help at [Math.andYOU.com](http://Math.andYOU.com)

Use the information in the paragraph below to find the storage of an Apple iPad.

**Hello Zettabytes**

The so-called digital universe has grown to 800,000 petabytes, or 0.8 zettabyte. That is equivalent to all the information that can be stored on 50 billion Apple iPads.

