Name: Class:

# Task 1

# One lossless compression technique is to look for patterns in original source text to find repeating strings and then create a dictionary of these strings with a binary (or in this simpler example, a denary) code to represent them.

**Hickory, dickory, dock,
The mouse ran up the clock.
The clock struck one,
The mouse ran down,
Hickory, dickory, dock.**

Using this popular nursery rhyme and the dictionary below, complete the encoded and compressed version using the empty table underneath. The first part has been completed for you.

|  |  |  |  |
| --- | --- | --- | --- |
| **Code** | **Text** | **Code** | **Text** |
| 0 | New Line | 8 | ran\_ |
| 1 | H | 9 | up\_ |
| 2 | ickory,\_ | 10 | the\_ |
| 3 | d | 11 | cl |
| 4 | ock | 12 | . |
| 5 | , | 13 | \_struck\_ |
| 6 | The\_ | 14 | one, |
| 7 | mouse\_ | 15 | down, |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **2** | **3** | **4** |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1. If one byte was given to represent each code, what is the file size of the compressed text, excluding the codes themselves?
2. The original rhyme is 117 characters including spaces. Calculate the reduction in file size as a percentage.

# Task 2

# ABBA’s Dancing Queen is 39.79MB recorded at CD quality.

# When compressed using the MP3 compression format, this becomes 3.6MB

1. Calculate the Internet download time for each file using a 24Mbps home connection and a 3G mobile connection. Use this [**website**](http://www.download-time.com/) to help you. www.download-time.com

|  |  |  |
| --- | --- | --- |
| **Quality** | **Download time at 24Mbps** | **Download time over 3G** |
| **CD** |  |  |
| **MP3** |  |  |

1. Give **two** advantages of using a compressed music format for streaming music over an Internet data connection.

# Task 3

# For each of the scenarios below, suggest whether lossy or lossless compression should be used.

|  |  |  |
| --- | --- | --- |
| **Use** | **Lossy / Lossless** | **Reason** |
| **A music track** |  |  |
| **A text document** |  |  |
| **A video clip** |  |  |
| **A web image** |  |  |
| **A software application** |  |  |
| **A database** |  |  |