



**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

### **Design Brief: Scientist**

Your task is to discover the unique features that have made the CN Tower one of the Wonders of the Modern World. With this knowledge you must be able to create a structure that stands just as strong and tall as the CN Tower. You will choose from five jobs: Industrial Designer, Architect, Engineer, Builder, and Scientist.

As the **Scientist**, it is your job to design the overall structure of the next Wonder of the Modern World. Once you have completed your research, you can explore the other jobs to help you flesh out the final design and construction of your own structure.

#### **Questions:**

1. Why did the CN Tower need to be the tallest unobstructed building in Toronto?

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2. Why was it important to test the effects that natural forces would have on the CN Tower?

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3. How many times a year does lightning hit the tip of the CN Tower?

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4. The CN Tower is symmetrical; when standing outside looking at the Tower, regardless of where you are standing, all sides look the same (the size, form and arrangement of the CN Towers parts on one side correspond to those on another side). Explain why symmetry is important to the design and construction of the CN Tower.

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5. The primary function of the CN Tower was to provide visitors with wonderful views of the city.

True or False?

6. What is housed in the Radome?

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7. What type of material was used to make the Radome? Explain why this type of material was used.

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8. If you were to design and build a structure that resembled the CN Tower using household objects, what would you use to make your accurate representation? Describe what objects you would use and explain why you would choose those materials.

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9. The CN Tower is \_\_\_\_\_ tall

- a. 553.3 m
- b. 30,000 m
- c. 1,533.33 m

The Glass Floor level is at 342 metres. What is the distance (in metres) between the Glass Floor Level and the top of the CN Tower?

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10. Using the picture below as reference, locate the same view from the top of the CN Tower, through our webcams or the CN Tower Viewfinder App. The land in this area of Toronto is used for a wide variety of things. Using the list below, identify each area by placing the appropriate letter on the correct location of the picture.



- A. High density housing
- B. Business
- C. Entertainment
- D. Transportation
- E. Housing Community

Structures come in many different shapes and sizes, each with its own unique purpose or function. The form of a structure is dependent on its function. Forces acting on the structure and a structures impact on the environment must also be taken into consideration during the planning and design phase. Looking at the city from the webcams at the top of the CN Tower or the Viewfinder App, identify 3 different types of structure that you can see and complete the chart below.

Type of Structure	Function	Probable forces to be considered	Impact on society, environment, economy	Form
Bus	Transporting large number of people in one vehicle	Wind, rain, weight, weight distribution, etc	Less cars on the road means energy conservation, provides public with a means of getting around	Low centre of gravity, long, narrow