Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Nanotechnology Student Worksheet

### Station 1 - Hydrophobic and Hydrophilic Properties

### *Nano-Fabric*

Explain what is happening on a molecular level when the water droplets gather on hydrophobic material.

Draw an example of a hydrophobic molecule and an example of a hydrophilic molecule, and explain what makes each example molecule hydrophobic/philic.

Brainstorm as a group applications for hydrophobic materials in their everyday lives. Write some down here.

### *Magic Sand*

Which sand is hydrophobic? Which is hydrophilic?

Brainstorm ideas for hydrophobic building materials in industry.

### Station 3 - Build a Nano-Soccer Ball

*Pre-Construction Assessment*

\_\_\_\_\_\_\_\_ internal angle of a pentagon

\_\_\_\_\_\_\_\_ internal angle of a hexagon

\_\_\_\_\_\_\_\_ carbon atoms (pieces)

*Post-Construction Assessment*

Determine what type of bonds are holding the carbon atoms together. What is the definition of a covalent bond?

How many valence electrons does a carbon atom have? How many bonds are formed? What is the molecular geometry of each atom in this structure?

What are some possible uses for C60 molecules?

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### Station 4 - Build a Nanotube

The nanotube you built had:

\_\_\_\_\_\_\_\_ carbon atoms (pieces)

\_\_\_\_\_\_\_\_ atomic bonds (straws)

\_\_\_\_\_\_\_\_ hexagons

How many valence electrons does a carbon atom have? How many bonds are formed? What is the molecular geometry of each atom in this structure?

What are some possible uses for nanotube molecules?