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

CC GEOMETRY TROICI

**MINI-LESSON #6: SOLID GEOMETRY**

**DEFINITIONS**

|  |  |  |
| --- | --- | --- |
| **WORD** | **DEFINITION** | **IMAGE** |
| Solid Figure |  | Image result for 3D shapes |
| Cross Section |  |  |
| Area |  | Image result for area |
| Surface Area |  | Image result for surface area |
| Volume  |  | Image result for volume |
| Height |  | Image result for height of a pyramid |
| Slant Height |  | Image result for height of a cone |
| Density |  | Image result for density |
| Population Density |  | Image result for population density geometry |

**FORMULAS**

|  |  |
| --- | --- |
| **WHAT YOU NEED TO KNOW** | **WHAT IS GIVEN TO YOU** |
| 1. Area of a Rectangle/Square =
2. SA of a Rectangular Prism =
3. SA of a Cylinder =
4. SA of a Sphere =
5. SA of a Cone =
6. SA of a Pyramid =
7. Density =
8. Population Density =
 | 1. Area of a Triangle = $\frac{1}{2}bh$
2. Area of a Parallelogram = $bh$
3. Area of a Circle = $πr^{2}$
4. Circumference of a Circle = $πd or 2πr$
5. Volume of General Prisms = $Bh$
6. Volume of a Cylinder = $πr^{2}h$
7. Volume of a Sphere = $\frac{4}{3}πr^{3}$
8. Volume of a Cone = $\frac{1}{3}πr^{2}h$
9. Volume of a Pyramid = $\frac{1}{3}Bh$
10. Pythagorean Theorem = $a^{2}+b^{2}=c^{2}$
 |

**NOTATION**

|  |  |
| --- | --- |
| **LETTER** | **MEANING** |
| B |  |
| $$l$$ |  |
| $$w$$ |  |
| $$h$$ |  |
| $$l$$ |  |
| $$r$$ |  |
| $$C$$ |  |
| $$A$$ |  |
| $$V$$ |  |

**TOPIC 1: CROSS SECTIONS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  1 The cross section of a regular pyramid contains the altitude of the pyramid. The shape of this cross section is a

|  |  |
| --- | --- |
| 1) | circle |
| 2) | square |
| 3) | triangle |
| 4) | rectangle |

 |  2 Which figure can have the same cross section as a sphere?

|  |  |
| --- | --- |
| 1) |  |
| 2) |  |
| 3) |  |
| 4) |  |

 |
| 3 If t If the rectangle below is continuously rotated about side *w*, which solid figure is formed?

|  |  |
| --- | --- |
| 1) | pyramid |
| 2) | rectangular prism |
| 3) | cone |
| 4) | cylinder |

 |  4 Which object is formed when right triangle *RST* shown below is rotated around leg ?

|  |  |
| --- | --- |
| 1) | a pyramid with a square base |
| 2) | an isosceles triangle |
| 3) | a right triangle |
| 4) | a cone |

 |

**TOPIC 2: VOLUME**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  1 In the diagram below, a right circular cone has a diameter of 8 inches and a height of 12 inches.What is the volume of the cone to the *nearest cubic inch*?

|  |  |
| --- | --- |
| 1) | 201 |
| 2) | 481 |
| 3) | 603 |
| 4) | 804 |

 |  4 A block of wood is 5 inches long, 2 inches wide, and 3 inches high. What is the volume of this block of wood?

|  |  |
| --- | --- |
| 1) |  |
| 2) |  |
| 3) |  |
| 4) |  |

 |
| The di  The diameter of a sphere is 15 inches. What is the volume of the sphere, to the *nearest tenth of a cubic inch*?

|  |  |
| --- | --- |
| 1) | 706.9 |
| 2) | 1767.1 |
| 3) | 2827.4 |
| 4) | 14,137.2 |

 | A pac A packing carton in the shape of a triangular prism is shown in the diagram below.What is the volume, in cubic inches, of this carton?

|  |  |
| --- | --- |
| 1) | 20 |
| 2) | 60 |
| 3) | 120 |
| 4) | 240 |

 |
| A re A regular pyramid has a height of 12 centimeters and a square base. If the volume of the pyramid is 256 cubic centimeters, how many centimeters are in the length of one side of its base?

|  |  |
| --- | --- |
| 1) | 8 |
| 2) | 16 |
| 3) | 32 |
| 4) | 64 |

 | The v The volume of a cylindrical can in  cubic inches. If the height of the can is 2 inches, what is its radius, in inches?

|  |  |
| --- | --- |
| 1) | 8 |
| 2) | 2 |
| 3) | 16 |
| 4) | 4 |
|  |  |

 |

**TOPIC 3: SURFACE AREA**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The r The rectangular prism shown below has a length of 3.0 cm, a width of 2.2 cm, and a height of 7.5 cm.What is the surface area, in square centimeters?

|  |  |
| --- | --- |
| 1) | 45.6 |
| 2) | 49.5 |
| 3) | 78.0 |
| 4) | 91.2 |

 | The b The base of a closed right circular cylinder has a diameter of 5 cm. If the height of the cylinder is 8 cm, what is the surface area of the cylinder, to the *nearest square centimeter*?

|  |  |
| --- | --- |
| 1) | 157 |
| 2) | 165 |
| 3) | 408 |
| 4) | 628 |

 |
| Find the surface area of the sphere below: | Find the surface area of the cone below: |

**TOPIC 4: DENSITY**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The d The density of the American white oak tree is 752 kilograms per cubic meter. If the trunk of an American white oak tree has a circumference of 4.5 meters and the height of the trunk is 8 meters, what is the approximate number of kilograms of the trunk?

|  |  |
| --- | --- |
| 1) | 13 |
| 2) | 9694 |
| 3) | 13,536 |
| 4) | 30,456 |

 | Molly Molloy wishes to make a lawn ornament in the form of a solid sphere. The clay being used to make the sphere weighs .075 pound per cubic inch. If the sphere's radius is 4 inches, what is the weight of the sphere, to the *nearest pound*?

|  |  |
| --- | --- |
| 1) | 34 |
| 2) | 20 |
| 3) | 15 |
| 4) | 4 |

 |
|  A hemispherical tank is filled with water and has a diameter of 10 feet. If water weighs 62.4 pounds per cubic foot, what is the total weight of the water in a full tank, to the *nearest pound*?

|  |  |
| --- | --- |
| 1) | 16,336 |
| 2) | 32,673 |
| 3) | 130,690 |
| 4) | 261,381 |

 |  A wooden cube has an edge length of 6 centimeters and a mass of 137.8 grams. Determine the density of the cube, to the *nearest thousandth*. State which type of wood the cube is made of, using the density table below. |