Determining Volume

|  |  |
| --- | --- |
| **To solve volume, you must first identify your shape and the formulas that you need. For every 3D shape except spheres, you will also need to identify the base shape and its area formula. Then, plug the information in and solve.** | Base Area Formulas |
|  | Circle | $$A=πr^{2}$$ |
| Volume Formulas  |  | Triangle | $$A=\frac{bh}{2} $$ |
| or | Prism or Cylinder | $$V=(Base Area)(Height)$$ |  | Rectangle/ Parallelogram | $$A=bh$$ |
| or | Pyramid or Cone | $$V=\frac{(Base Area)(Height)}{3}$$ |  | Trapezoid | $$A=\frac{\left(b\_{1}+b\_{2}\right)h}{2}$$ |
|  | Sphere | $$V=\frac{4πr^{3}}{3}$$ |  | Rhombus or Kite | $$A=\frac{d\_{1}d\_{2}}{2}$$ |
|  |  |  |  | Regular Polygon | $$A=\frac{aP}{2}$$ |

Write the formulas that you will use for each figure. Identify the needed parts, plug them into the formulas and solve.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Information** | **Volume** |  |  |  |
| 1. | Formula: |  | 2. | Formula: |
| Base information *(b, h, d, r, a, P)*3-D Information*(H, l, r)* | Solution: |  | Base information *(b, h, d, r, a, P)*3-D Information*(H, l, r)* | Solution: |
| 3. | Formula: |  | 4. | Formula: |
| Base information *(b, h, d, r, a, P)*3-D Information*(H, l, r)* | Solution: |  | Base information *(b, h, d, r, a, P)*3-D Information*(H, l, r)* | Solution: |
| 5. | Formula: |  | 6. | Formula: |
| Base information *(b, h, d, r, a, P)*3-D Information*(H, l, r)* | Solution: |  | Base information *(b, h, d, r, a, P)*3-D Information*(H, l, r)* | Solution: |

e

|  |  |  |
| --- | --- | --- |
| 7. Determine the volume of a right cone with a height of 12 and a radius of 5. Leave your answer in terms of $π$. | 8. Determine the volume of a sphere with a diameter of 24 ft. Leave your answer in terms of pi. | 9. Determine the volume of a rectangular prism with height 10 cm, length 8 cm, and width 7 cm. |
| 10. Determine the volume of a rectangular pyramid with a height of 8 in, a length of 6 in, and a width of 2 in. | 11. Determine the volume of a right trapezoidal prism with height from trapezoid to trapezoid of 8 cm, base sides 2 cm and 5 cm, and base height of 3 cm. | 12. Determine the volume of a sphere with a diameter of 6 ft. Leave your answer in terms of pi. |