**Density and Statistics Practice Sheet Answer Key**

1. A block of wood has a mass of 12 g and a volume of 50 cm3. Calculate the density

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| **Given** |  | **Picture and Process**Draw picture, count, calculate |
| **Unknowns** |  |
| **Equation(s)** |  |
| **Solution** |  |

**object = block
mass = 12 g
volume = 50 cm3**

**density**

**density = mass/volume = 12 g / 50 cm3**

**0.24 g/cm3**

1. A block of metal has a mass of 23 g and a volume of 17 cm3. Calculate the density.

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| **Given** |  | **Picture and Process** |
| **Unknowns** |  |
| **Equation(s)** |  |
| **Solution** |  |

**object = block, mass = 23 g, vol = 17 cm3**

**density**

**density = mass/volume = 23 g / 17 cm3**

**1.4 g/cm3**

1. A cube of plastic has a mass of 17 g and a side length of 3 cm. Calculate the density.

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| **Given****object = cube, mass = 17 g, side length = 3 cm****volume, density****volume = length3 = (3 cm)3 = 27 cm3****density = mass/volume = 17 g / 27 cm3****0.63 g/cm3** |  | **Picture and Process** |
| **Unknowns** |  |
| **Equation(s)** |  |
| **Solution** |  |

1. A cube of glass has a mass of 35 g and a side length of 7 cm. Calculate the density.

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| **Given****object = cube, mass = 35 g, side length = 7 cm****volume, density****volume = length3 = (7 cm) 3 = 343 cm3****density = mass/volume = 35 g /343 cm3****0.10 g/cm3** |  | **Picture and Process** |
| **Unknowns** |  |
| **Equation(s)** |  |
| **Solution** |  |

1. A rectangular prism has a mass of 80 g and a side lengths of 7 cm, 13 cm and19 cm. Calculate the density.

**object = rectangular prism, mass = 80 g,
side lengths = 7 cm, 13 cm, 19 cm**

**volume, density**

**vol = l x w x h = 7 cm x 13 cm x 19 cm = 1,729 cm3**

**density = mass/volume = 80 g /1,729 cm3**

**0.10 g/cm3**

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| **Given** |  | **Picture and Process** |
| **Unknowns** |  |
| **Equation(s)** |  |
| **Solution** |  |

1. A right triangular prism has a mass of 103 g, leg lengths of 4 cm and 9 cm, and a length of 17 cm. Calculate the density.

**object = right triangular prism, mass = 103 g,
leg lengths of 4 cm and 9 cm, and a length of 17 cm**

**volume, density**

**vol = length x ½ (base x height) = 17 cm x ½ (4 cm x 9 cm) = 306 cm3**

**density = mass/volume = 103 g /306 cm3**

**0.337 g/cm3**

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| **Given** |  | **Picture and Process** |
| **Unknowns** |  |
| **Equation(s)** |  |
| **Solution** |  |

1. Measurements of 0.43, 0.44, 0.42. 0.42, 0.43, 0.41, 0.41 cm are collected. Calculate the mean, median, mode and standard deviation for this data set.

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| **Given** | **measurements of 0.43, 0.44, 0.42. 0.42, 0.43, 0.41, 0.41 cm** |
| **Unknowns** | **mean, median, mode, standard deviation** |
| **Equation(s)** | **mean** = $\frac{\sum\_{}^{}x\_{i}}{n}$ = (0.43 cm + 0.44 cm + 0.42 cm + 0.42 cm + 0.43 cm + 0.41 cm + 0.41 cm) / 7 **median** = middle number of: 0.41, 0.41, 0.42, **0.42**, 0.43, 0.43, 0.44**mode** = number that occurs that most, 0.41, 0.42, 0.43 all occur twice, the mean of these is 0.42**standard** **deviation** = $√(\frac{\sum\_{}^{}\left(\overline{x}-x\_{i}\right)}{n})$ = $√(\frac{\left(0.42-0.43\right)^{2}+ \left(0.42-0.44\right)^{2}+ \left(0.42-0.42\right)^{2} + \left(0.42-0.42\right)^{2}+ \left(0.42-0.43\right)^{2}+ \left(0.42-0.41\right)^{2}+ \left(0.42-0.41\right)^{2})}{7})$ = $√\frac{0.0001+0.0004+0+0+0.0001+0.0001+0.0001)}{7}$ = $√(\frac{0.0008}{7})$  |
| **Solution** | **mean ≈ 0.42 cm****median = 0.42 cm****mode = 0.42 cm****standard deviation ≈ 0.01** |

1. Measurements of 0.061, 0.019, 0.021. 0.022, 0.018, 0.018, 0.019 cm are collected. Calculate the mean, median, mode and standard deviation for this data set.

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| **Given** | **measurements of 0.061, 0.019, 0.021, 0.022, 0.018, 0.018, 0.019 cm** |
| **Unknowns** | **mean, median, mode, standard deviation** |
| **Equation(s)** | **mean =** $\frac{\sum\_{}^{}x\_{i}}{n}$ **= (0.061 cm + 0.019 cm + 0.021 cm + 0.022 cm + 0.018 cm + 0.018 cm + 0.019 cm) / 7** **median = middle number of: 0.018, 0.018, 0.019, 0.019, 0.021, 0.022, 0.061****mode = number that occurs that most, 0.018 and 0.019 all occur twice, the mean of these is 0.0185, or ≈ 0.019****standard deviation** = $√(\frac{\sum\_{}^{}\left(\overline{x}-x\_{i}\right)}{n})$ = $√(\frac{\left(0.025-0.061\right)^{2}+ \left(0.025-0.019\right)^{2}+ \left(0.025-0.021\right)^{2} + \left(0.025-0.022\right)^{2}+ \left(0.025-0.018\right)^{2}+ \left(0.025-0.018\right)^{2}+ \left(0.025-0.019\right)^{2})}{7})$ = $√\frac{0.001296+0+0.000036+0.000016+0.000009+0.000049+0.000049+0.000036)}{7}$ = $√(\frac{0.001491}{7})$  |
| **Solution** | **mean ≈ 0.025 cm****median = 0.019 cm****mode = 0.019 cm****standard deviation ≈ 0.015 cm** |