

Name: _____ Date: _____ Period: _____

Chapter 10 Tiered Problems

Show all Work!

Objectives

- B.N.RN.A.1. Use rational and irrational numbers in calculations and in real-world context.
1. (18 points) From a viewing height of h feet, the approximate distance d to the horizon, in miles, is given by the equation $d = \sqrt{\frac{3}{2}h}$.
 - a. To the nearest mile, what is the distance to the horizon from a height of 150 feet.
 - b. If the distance to the horizon is 24 feet, how high is the balloon?
 2. (14 points) The ratio of the diffusion rates of two gases is given by the formula $\frac{r_1}{r_2} = \frac{\sqrt{m_1}}{\sqrt{m_2}}$, where m_1 and m_2 are the masses of the molecules of the gases. Find $\frac{r_1}{r_2}$ if $m_1 = 12$ units and $m_2 = 30$ units. Write your answer in simplified radical form
 3. (18 points) The formula $r = \sqrt{\frac{A}{P}} - 1$ gives the interest rate r , expressed as a decimal, that will allow principal P to grow into amount A in 2 years, when the interest is compounded annually.
 - a. If you invest \$10000 and want to make \$2000 in interest over 2 years, what amount do you want in the account after 2 years?
 - b. If you invest \$10000 and want to make \$2000 in interest over 2 years, what interest rate do you need? Round your answer to the nearest tenth of a percentage point.
 - c. Write the interest rate as a simplified radical expression.