This document provides scaffolded questions to help students prepare for questions 13 through 16 of the enVision Algebra 2 Progress Monitoring Assessment Form C. Each question includes four scaffolded steps to build understanding from basic concepts to the level required by the assessment.

Question 13: Population Density and Radius

The original question involves finding the delivery radius for a pizza restaurant to reach 30,000 people in a town with a population density of 1200 people per square mile. The following questions build understanding of area and radius calculations.

13.1 **Area of a Circle**: The area of a circle is given by $A = \pi r^2$. If a circular park has a radius of 3 miles, calculate its area (use $\pi \approx 3.14$).

13.2 **Population from Density**: A town has a population density of 1000 people per square mile. If a circular region has an area of 4 square miles, how many people live in that region? Use the formula:

$$\text{Population} = \text{Density} \times \text{Area}.$$

13.3 **Solving for Radius**: A circular delivery area needs to serve 12,000 people, and the population density is 1500 people per square mile. Find the area needed, then solve for the radius using $A = \pi r^2$ (use $\pi \approx 3.14$).

13.4 **Applying to the Original Problem**: A pizza restaurant wants to deliver to 30,000 people in a town with a population density of 1200 people per square mile. Calculate the necessary area, then find the radius of the delivery area. Round to one decimal place and compare to the choices: 2.8 miles, 5.0 miles, 1.6 miles, 8.0 miles.

Question 14: Simplifying Radicals and Exponents

The original question asks to simplify $\sqrt{8} + \sqrt{32} - 2^{\frac{3}{2}}$. The following questions build skills in simplifying radicals and exponential expressions.

14.1 **Simplifying a Single Radical**: Simplify $\sqrt{18}$ by factoring the number under the square root into its prime factors and taking out pairs of factors.

14.2 **Combining Like Radicals**: Simplify the expression $\sqrt{12} + \sqrt{48}$. First, simplify each square root, then combine like terms.

14.3 **Understanding Exponents**: Evaluate $3^{\frac{3}{2}}$. Rewrite the expression using the property $a^{\frac{m}{n}} = \sqrt[n]{a^m}$, and compute the value.

14.4 **Applying to the Original Expression**: Simplify $\sqrt{8} + \sqrt{32} - 2^{\frac{3}{2}}$. Simplify each term: rewrite $\sqrt{8}$ and $\sqrt{32}$ in terms of $\sqrt{2}$, compute $2^{\frac{3}{2}}$, and combine the results. Compare to the choices: $-2\sqrt{2} - \sqrt[3]{2}$, $8\sqrt{2}$, $4\sqrt{2}$, 0.

Question 15: Inverse Variation

The original question involves inverse variation where M varies inversely with x, with $M = 2$ when $x = 10$, and asks for M when $x = 5$. The following questions build understanding of inverse variation.

15.1 **Understanding Inverse Variation**: If y varies inversely with x, the relationship is $y = \frac{k}{x}$. If $y = 6$ when $x = 4$, find the constant of variation k.

15.2 **Finding a New Value**: Using the relationship $y = \frac{k}{x}$, with $k = 12$, calculate y when $x = 3$.

15.3 **Setting Up the Equation**: If M varies inversely with x, and $M = 5$ when $x = 8$, write the inverse variation equation by finding k. Then, find M when $x = 4$.

15.4 **Applying to the Original Problem**: Given M varies inversely with x, and $M = 2$ when $x = 10$, find the constant k. Then, calculate M when $x = 5$.

Question 16: Solving Logarithmic Equations

The original question asks to solve $-2\ln(3x) = 5$. The following questions build skills in solving equations involving natural logarithms.

16.1 **Understanding Logarithms**: If $\ln(y) = 2$, find y. Use the fact that $\ln(y) = c$ means $y = e^c$.

16.2 **Solving a Simple Log Equation**: Solve the equation $\ln(x) = 3$. Write the equation in exponential form and compute x.

16.3 **Handling Coefficients**: Solve the equation $2\ln(x) = 4$. First, isolate the logarithm by dividing both sides, then convert to exponential form to find x.

16.4 **Applying to the Original Equation**: Solve $-2\ln(3x) = 5$. Divide both sides to isolate the logarithm, convert to exponential form, and solve for x. Compare to the choices: 0.082, 0.027, 4.061, 36.547.