



Math Olympiad and Problem Solving Programs
E220 - Intermediate Math Competitions
Problem Set 29.2 - Lever and Ratio

Name:

Date:

1. We need $weight_1 \times distance_1 = weight_2 \times distance_2$. Let the unknown weight be w . Then we have $105 \times 4 = 6w$, and we have $w = \boxed{70 \text{ lb}}$
2. $\boxed{4:3}$
3. $\boxed{10 \text{ ft}}$
4. If you have D dollars, then you have $100D$ cents. Then the ratio is $100D : 34$ which simplifies to $\boxed{50D : 17}$
5. Let x be the distance the fulcrum is from the 3,000 pound weight. Then we set up the equation (with the formula in problem 1) $3000x = 300(22 - x) \Rightarrow 3000x = 6600 - 300x \Rightarrow 3300x = 6600 \Rightarrow x = 2$. So the fulcrum should be $\boxed{2 \text{ ft from the 3,000 lb weight}}$.
6. $\boxed{5:9}$
7. $\boxed{900 \text{ lb}}$
8. The ratio is $15,000,000 : 70,000,000,000 \Rightarrow 15 : 70,000 \Rightarrow \boxed{3:14,000}$
9. $\boxed{3.6 \text{ h}}$
10. $\boxed{8\frac{4}{7} \text{ h}}$