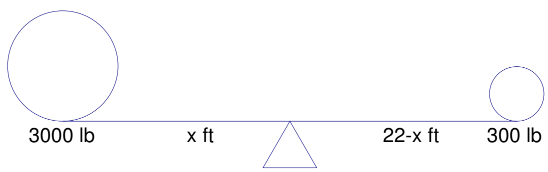
1. $\boxed{\text{70 lb}}$

2. $\boxed{\text{4:3}}$

3. $\boxed{\text{10 ft}}$

4. The most common mistake here was to express the ratio as $\frac{D}{34}$. We must convert to the same units so D dollars is actually $100D$ cents. Then the ratio is $\frac{100D}{34} = \boxed{\frac{50D}{17}}$.

5. If we let the distance from the fulcrum to the 3,000-pound weight be x, then the distance from the fulcrum to the 300-pound weight must be $22 - x$.



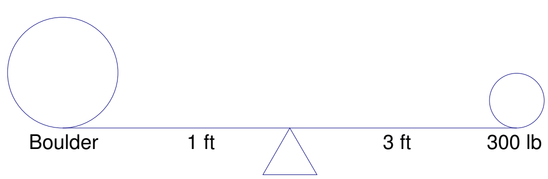
Then this gives us the following equation:

$$\begin{aligned} 3000x &= 300(22 - x) \\ 3000x &= 6600 - 300x \\ 3300x &= 6600 \\ x &= \boxed{\text{2 ft from the 3,000 lb weight}} \end{aligned}$$

6. $\boxed{\text{5:9}}$

7. If the weight of the boulder is x, then we get the following equation:

$$\begin{aligned} 1x &= 300 \cdot 3 \\ x &= \boxed{\text{900 lb}} \end{aligned}$$



8. The common mistake was to let the ratio be $15 : 70$. But we have to convert the units. 70 billion $= 70,000$ million so our ratio is $15 : 70,000 = \boxed{3 : 14,000}$.

9. We first find the rates at which Pete and his helper work. Pete completes 1 job in 6 hours or $\frac{1}{6}$ of a job every hour. His helper can do the same job in 9 hours or $\frac{1}{9}$ of the job in 1 hour. If they work together, they can complete $\frac{1}{6} + \frac{1}{9} = \frac{5}{18}$ of the job in 1 hour. If they both work together to complete the job, they will take $1 \div \frac{5}{18} = \frac{18}{5} = \boxed{3.6 \text{ hours}}$.

10. We first find the rates at which the three pipes can fill the tank. The first two pipes fill $\frac{1}{10}$ and $\frac{1}{12}$ of a tank in 1 hour respectively. The third pipe can drain $\frac{1}{15}$ of a tank in 1 hour.
If all three pipes are open, the tank will be filled at a rate of $\frac{1}{10} + \frac{1}{12} - \frac{1}{15} = \frac{7}{60}$ of the tank every hour. This means that to fill one tank, it will take $1 \div \frac{7}{60} = \boxed{\frac{60}{7} \approx 8.57 \text{ hours}}$.