The following question have been popular in office hours and quiz section, so I offer a few hints to get you started:

**Problem 1.6:** The book does similar problems in one step. I would do it in two. Here’s how to do part of the problem:

1. First note that \( \text{density} = \frac{\text{mass}}{\text{volume}} \), so \( \text{volume} = \frac{\text{mass}}{\text{density}} \). So we have

   - density of lead = \( 11.34 \frac{g}{cm^3} \) and mass = 50 kg = 50,000 g.
   - Therefore, \( \text{volume} = \frac{50000}{11.34} = 4409.1710758377 \text{ cm}^3 \)

2. Second, recall that \( \text{volume of a sphere} = \frac{4}{3} \pi r^3 \). So

   - \( 4409.1710758377 = \frac{4}{3} \pi r^3 \), which gives
   - \( \frac{4409.1710758377}{(\frac{4}{3} \pi)} = r^3 \)
   - \( 1052.612057486 = r^3 \)
   - \( r = \sqrt[3]{1052.612057486} = 10.1723847975 \) (cube root and 1/3 power give the same value)
   - \( r = 10.17 \text{ cm} \)

**Problem 2.3:** Perhaps it is more clear to introduce two variables as follows:

1. Let \( t_1 = \) ‘the time since 6 AM’ and let \( t_2 = \) ‘the time since 8 AM’.
2. Steve’s Distance = (3 miles/hour)(\( t_1 \) hours) = 3\( t_1 \) miles and so Steve’s Location = (0, 3\( t_1 \))
3. Elsie’s Distance = (3.5 miles/hour)(\( t_2 \) hours) = 3.5\( t_2 \) miles and so Elsie’s Location = (−3.5\( t_2 \), 0)
4. Distance between = \( \sqrt{(0 - (−3.5t_2))^2 + (3t_1 - 0)^2} = 25 \text{ miles} \)
5. Finally, note that \( t_1 = t_2 + 2 \), so \( \sqrt{(0 - (−3.5t_2))^2 + (3(t_2 + 2) - 0)^2} = 25 \text{ miles} \), solve for \( t_2 \) (which will give you the time since 8 AM).