Word Problems - Worksheet

Translate each statement into a differential equation. Specify the variables.

1. The population of Shmoopsville is increasing at a rate 0.231.

2. Mary is driving at a speed of 55 mph.

3. The temperature (T) of a cup of coffee decreases at a rate prportional to the difference between the ambient temperature (A) and that of the cup.

4. Gas is being pumped into a spherical balloon at a rate $5\text{cm}^3/\text{min}$.

5. The rate at which perfume if evaporating from a open bottle is inversely proportional to the square root of the volume remaining.

6. The rate at which a radioactive element decays is proportion to the quantity.

7. A rumor spreads through Shmoopsville with population P, at a rate proportional to the number of people who have not heard the rumor.

8. The weight change of a cell , shaped like a cube, is proportional to the area of its surface area. Note that weight is proportional to volume.

9. Ben throws a ball straight upward from a height 10ft with an initial velocity 25ft/s. Note that gravitaional force is 32 ft/s^2.
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10. A population of bugs grows at a rate of 9%. Due to the effect of pesticide 100 bugs die in 2 hours.
