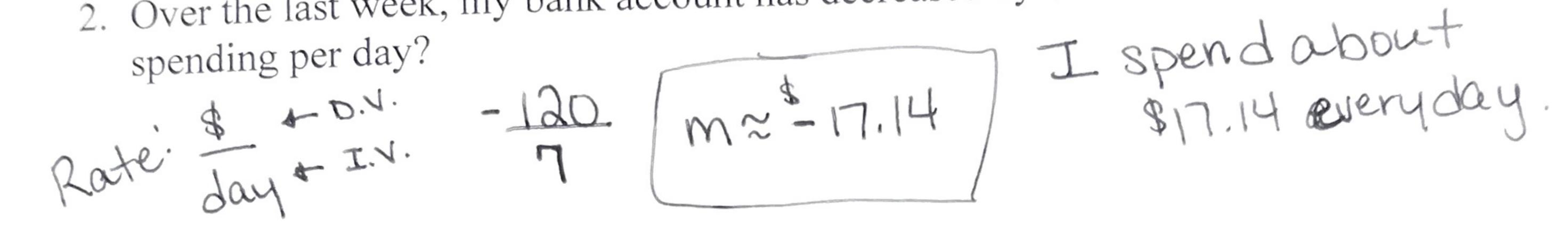# Unit 3a Day 8: Interpreting Rate of Change in Context

Focus Question: How do I find and interpret a rate of change in a word problem?

A. For each situation below, give the independent and dependent variable. Then, give the rate and explain what it means.

1. I drive 100 miles to Silver Dollar City in 2 hours. What is my average speed?

Rate: $\dfrac{\text{miles} \leftarrow \text{D.V.} \Delta y}{\text{hour} \leftarrow \text{I.V.} \Delta x}$ $\dfrac{100}{2}$ $\boxed{m = 50}$ I average 50 miles every hour.

2. Over the last week, my bank account has decreased by $120. What is my average spending per day?

Rate: $\dfrac{\$ \leftarrow \text{D.V.}}{\text{day} \leftarrow \text{I.V.}}$ $\dfrac{-120}{7}$ $\boxed{m \approx -17.14}$ I spend about $17.14 everyday.

B. Finding a rate, different problem types

1. Matthew is charged $50 to rent a motorbike and an additional $0.15 per mile that he drives the motorbike. Find and explain the rate, then identify the IV, and DV?

$\dfrac{\$ \leftarrow \text{D.V.}}{\text{mile} \leftarrow \text{I.V.}}$ $\boxed{15 ¢ \text{ per mile}}$

2. Joseph's weight is 65 kg but he wants to wrestle up a class so he needs to gain weight. After 5 weeks he is at 75kg weight. Find and explain his rate of weight gain, then identify the IV, and DV?

$\dfrac{\text{Kg} \leftarrow \text{D.V.}}{\text{WK} \leftarrow \text{I.V.}}$ $\dfrac{75 - 65}{5} = \dfrac{10}{5}$ $\boxed{m = 2}$ Joseph gained 2kg every week.

3. A scuba diver is 30 feet below the surface of the water 10 seconds into his dive. He is 100 feet below the surface after 40 seconds? Find and explain the rate at which the scuba diver's depth is changing, then identify the IV, and DV?

$\dfrac{\text{feet} \leftarrow \text{D.V.}}{\text{sec} \leftarrow \text{I.V.}}$ $\dfrac{-100 - -30}{40 - 10} = \dfrac{-70 \div 10}{30 \div 10}$ $\boxed{m = \dfrac{-7}{3}}$ He descends further into the ocean 7 feet every 3 sec.