2. [10 points] Jada has a new job, selling candy to the elves.
Below is a chart that shows how much money, D, in dollars, Jada has in her cash register h
hours after she starts selling candy.

h	3	5	6
D	16	25	?

a. [2 points] What assumption needs to be made about the situation in order for it to be
reasonable to model D using a **linear** function of h?

Solution: We need to assume that the amount of money in Jada's cash register changes at
a constant rate per hour—that is, that she takes in the same amount each hour.

b. [1 point] If D can be modeled as a linear function of h, how much money, in dollars, will
Jada have after 6 hours?

Answer: _____**29.5**_____

c. [4 points] Find both the slope and vertical intercept of the linear function. Then, for each
quantity, write a sentence interpreting that quantity in the context of the problem.

Answer: Slope: _____**4.5**_____

Interpretation:

Solution: The amount of money in Jada's cash register increases by \$4.5 each hour.

Answer: Vertical intercept: _____**2.5**_____

Interpretation:

Solution: Jada starts with \$2.50 in her cash register.

d. [3 points] Jada is selling both chocolate bars for \$0.20 each and lollipops for \$0.05 each.
Suppose that Jada makes exactly \$8 one day selling B chocolate bars and P lollipops. Let
f be the function such that $B = f(P)$ in this case. Find a formula for f.

Solution: Based on the information given, we can set up the equation $0.2B + 0.05P = 8$.
Then, in order to find B as a function of P, we need to solve the equation for B, giving us a
formula in terms of P. We do this by subtracting $0.05P$ from both sides, and then dividing
both sides by 0.2.

Answer: $f(P) =$ _____$\dfrac{8 - 0.05P}{0.2} = 40 - 0.25P$_____