1. Perloff, third edition: question 3 page 179
An indifference curve shows all combinations of goods that result in the same level of utility; an isoquant shows all the combinations of inputs that result in a given level of output.

2. Perloff, third edition: question 5 page 179

![Figure 1](image)

3. Perloff, third edition: question 14 page 180
Melissa views eggs and toast as perfect complements. When the price increases, but her utility level is restored using the compensation, she will purchase the same bundle as before. In Figure 2 below, the indifference curves are “L-shaped to indicate the lack of substitutability. When the price increases, the budget line swings in from BC to BC'. To restore income, the budget line is shifted out to B'C*. The change represents an income effect, because with perfect complements, there is no substitution effect.

The profit function rises then falls, as described in the question. With convex indifference curves, the utility-maximizing quantity of vacation \( (V^*) \) occurs at a quantity higher than that which would maximize profits (see Figure 3).

5. Write the equation for the marginal product of capital for each of the following production functions:

a. \( MP_K = 3 \)
b. \( MP_K = 2K^{-0.5}L \)

c. \( MP_K = \frac{5}{7}K^{-0.5}L \)

6. Draw a graph showing a set of isoquants that depict capital and labor to be perfect complements (not substitutable at all) in a production function that exhibits constant return to scale. Be sure to label the input and output levels on the isoquants.

The isoquants are “L” shaped, indicating perfect complementarity, and for every doubling of inputs, output also doubles. See Figure 4.

![Figure 4](image-url)