

Name: _____

Show all work clearly and in order. Please box your answers. 10 minutes.

1. You have a rare stamp collection worth \$8,000 today and the value is increasing \$350 every year.

(a) Write an equation for the value of your stamp collection after x years.

$$\text{stamp collection value} = 8000 + 350x$$

- (b) Using your equation, find the value of your stamp collection 10 years from now.

substitute $x = 10$:

$$8000 + 350(10) = 8000 + 3500 = \boxed{\$11,500}$$

2. Orange inc. is a local company operating in a purely competitive market with the following monthly financial information:

Fixed Cost = \$5000

Variable Cost (per unit) = \$60 per unit

Revenue (per unit) = \$110 per unit

- (a) Write an equation for the monthly total cost for x units.

$$\text{Total Cost} = \text{Fixed Cost} + \text{Variable Cost} = \boxed{5000 + 60x}$$

- (b) Use (a) to determine the total cost for 100 units.

$$5000 + 60(100) = 5000 + 6000 = \boxed{\$11,000}$$

- (c) Write an equation for the monthly total revenue for x units.

$$\text{Total revenue} = \boxed{110x}$$

- (d) Use (c) to determine the total revenue for 100 units.

$$110(100) = \boxed{\$11,000}$$

- (e) Write an equation for the monthly profit for x units.

$$\begin{aligned} \text{profit} &= \text{revenue} - \text{total cost} = 110x - (5000 + 60x) \\ &= 110x - 5000 - 60x \\ &= \boxed{50x - 5000} \end{aligned}$$

- (f) Use (e) to determine to the total profit for 100 units.

$$50(100) - 5000 = \boxed{\$0}$$