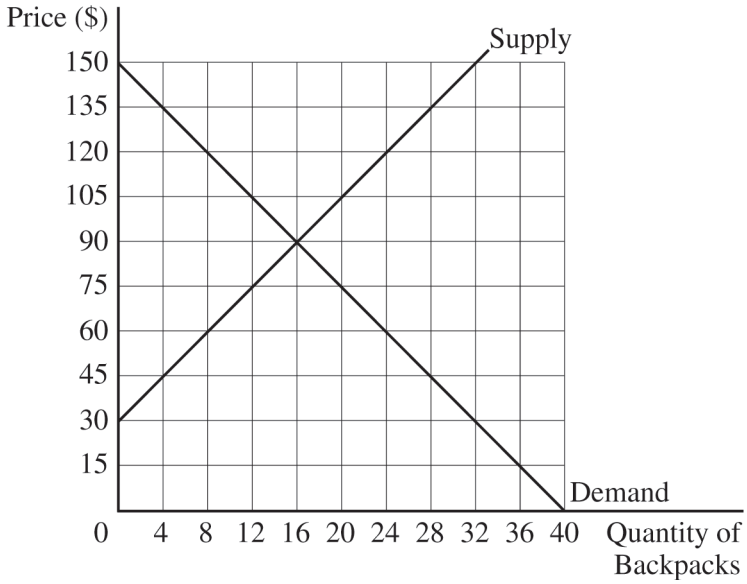
3. Backpacks are produced in a perfectly competitive market that has no externalities. The provided graph shows the market supply and demand curves for backpacks in the country of Jambo.



(a) Calculate total economic surplus at the market equilibrium. Show your work.

(b) To decrease the price of backpacks for students, the government of Jambo has decided to set a price ceiling of $60 per backpack. Compared to the market equilibrium, will the quantity of backpacks purchased increase, decrease, or not change as a result of the price ceiling? Explain.

(c) Suppose instead the government of Jambo provides a per-unit subsidy of $30 to the sellers of backpacks.

(i) Identify the price paid by consumers per backpack after the per-unit subsidy is implemented.
(ii) Calculate the total cost of the subsidy to the government. Show your work.
(iii) Does the per-unit subsidy cause deadweight loss to increase, decrease, or remain the same compared to the market equilibrium in part (a)? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

GO ON TO THE NEXT PAGE.

Question 3: Short — 5 points

(a)	Calculate the total economic surplus as \$960 and show the work. $\text{Total Economic Surplus} = \frac{1}{2} \times (\$150 - \$30) \times (16 - 0) = \frac{1}{2} \times \$120 \times 16 = \$960$	**1 point**
(b)	State that the quantity of backpacks purchased will decrease and explain that the price ceiling causes a decrease in the quantity supplied of backpacks and the quantity purchased in the market will be limited by the quantity supplied (8), which is less than the equilibrium quantity (16).	**1 point**
(c) (i)	State the price consumers pay per backpack after the per-unit subsidy is \$75.	**1 point**
(ii)	Calculate the total cost of the subsidy to the government as \$600 and show the work. $\text{Total Cost of Subsidy to the Government} = \text{Per-unit Subsidy} \times \text{Quantity of Backpacks}$ $\text{Total Cost of Subsidy to the Government} = \$30 \times 20 = \$600$	**1 point**
(iii)	State the deadweight loss will increase and explain with **ONE** of the following. • The per-unit subsidy causes the new equilibrium quantity (20 backpacks) to be greater than the allocatively efficient quantity (16 backpacks). • The per-unit subsidy causes the marginal cost (\$105) to be greater than the marginal benefit (\$75) at the new equilibrium quantity (20 backpacks).	**1 point**
	Total for part (c)	**3 points**
	Total for question 3	**5 points**