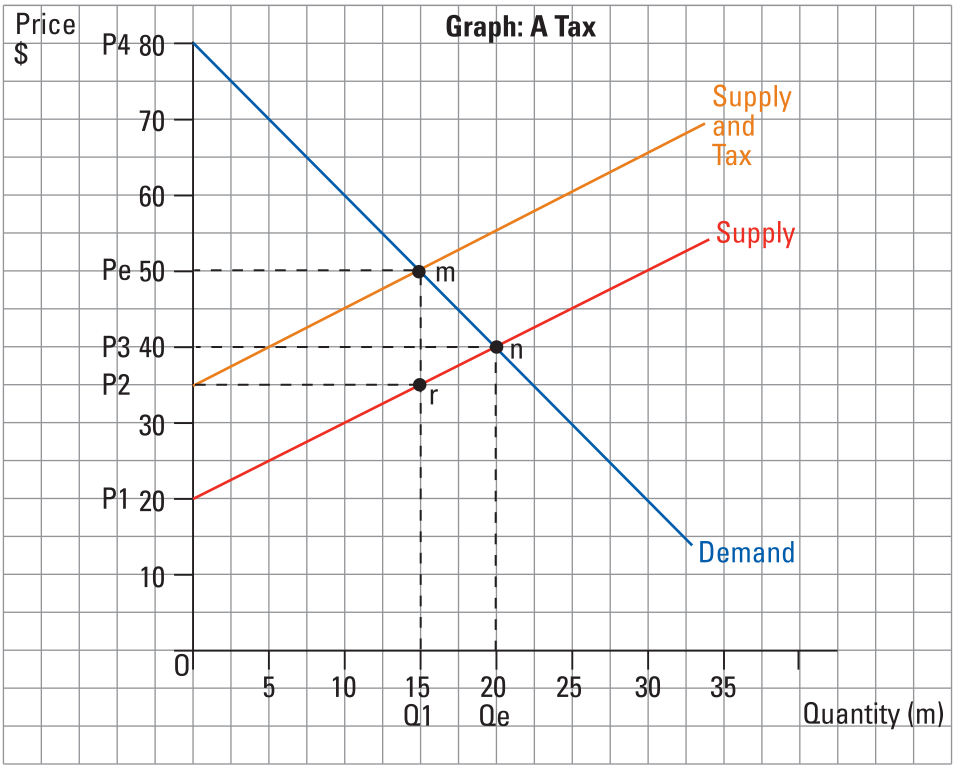
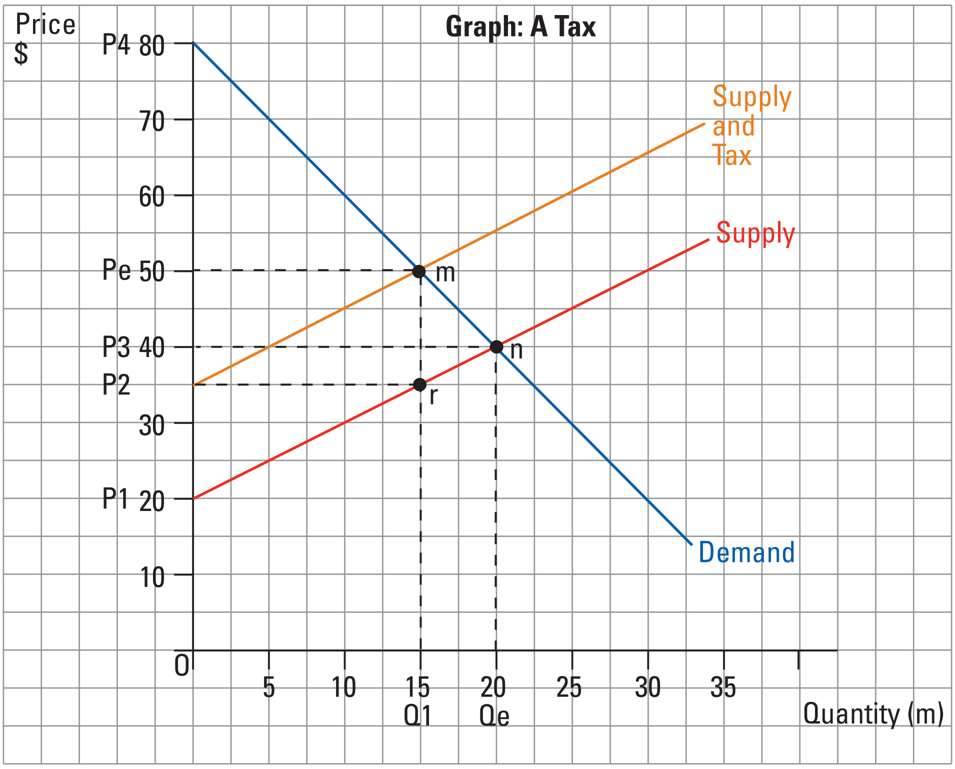
Student response

(a) Explain, using figures, the changes to consumer surplus, producer surplus and allocative efficiency as the result of the government imposing a tax.



Solutions

(a) Explain, using figures, the changes to consumer surplus, producer surplus and allocative efficiency as the result of the government imposing a tax.



An indirect tax is a payment to the government that is added to the price of the good or service. The tax adds to the costs of production and as a result firms will decrease supply. The supply curve shifts vertically upwards to Supply and Tax, the firm is able to pass on part of the tax of $15 per unit to the consumer, in this instance $10 and must absorb the rest ($5).

Consumer surplus (CS) is the difference between what a consumer is prepared to pay for consuming a good or service and the price actually paid. The original consumer surplus is $400m, while the new consumer surplus is $225m. There is a loss in consumer surplus of $175m because consumers pay a higher price ($50) and consume less.

Producer surplus (PS) is the difference between the total earnings of suppliers for a certain quantity sold and the total costs required to put that quantity on the market. At the original price the value of the producer surplus is $200m, while the new producer surplus is $112.5m which is a loss of producer surplus of $87.5m. There is a loss in producer surplus from the tax because producers receive a lower price ($35) and sell less (15m rather than 20m).

The government collects revenue from the tax of $225m, which is equal to the tax per unit ($15) multiplied by the quantity sold (15m). When the government imposes an indirect tax, part of the original consumer surplus and producer surplus is not being picked up, therefore causing a loss to society. This loss of allocative efficiency is termed a deadweight loss (DWL), which is a loss of welfare by an individual or group that is not offset by welfare gain to some other individual or group. In this instance it is a loss of $37.5m.

eLearneconomics: Consumer/Producer Surplus – Tax (2)

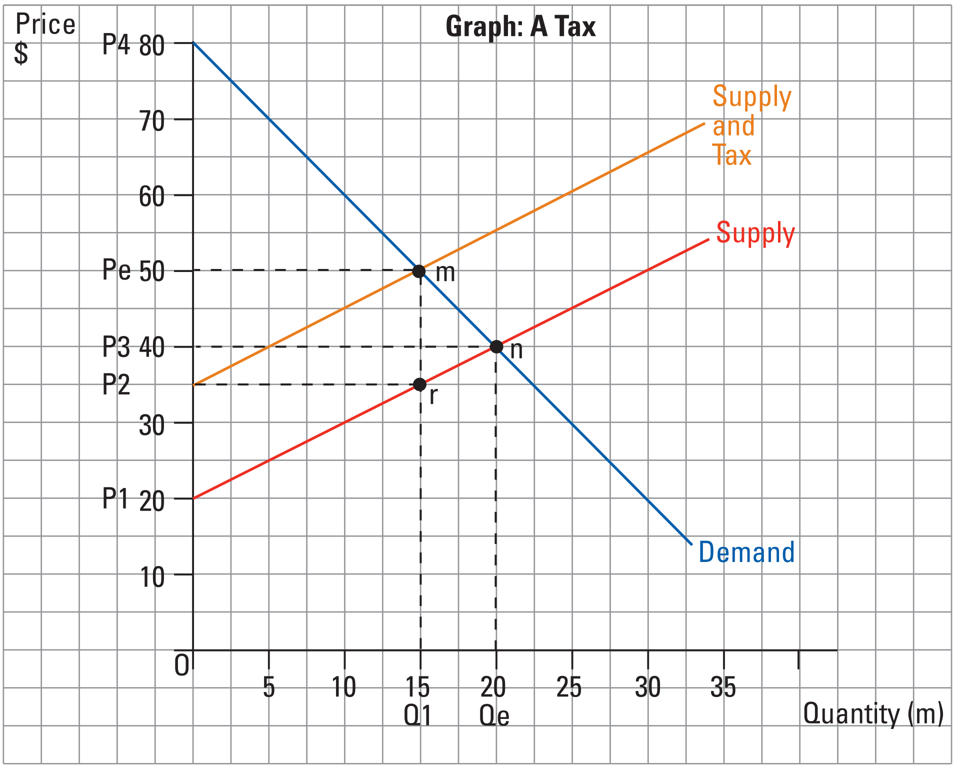
Student response

(a) Show the effects of the government imposing a tax on the market by:

(i) shading the new consumer surplus

(ii) shading the new producer surplus

(iii) shading any loss of allocative efficiency



(b) Complete the table.

	Labels from the graph
Original consumer surplus	
New consumer surplus	
Original producer surplus	
New producer surplus	
Deadweight loss	

eLearneconomics: Consumer/Producer Surplus – Tax (2a)

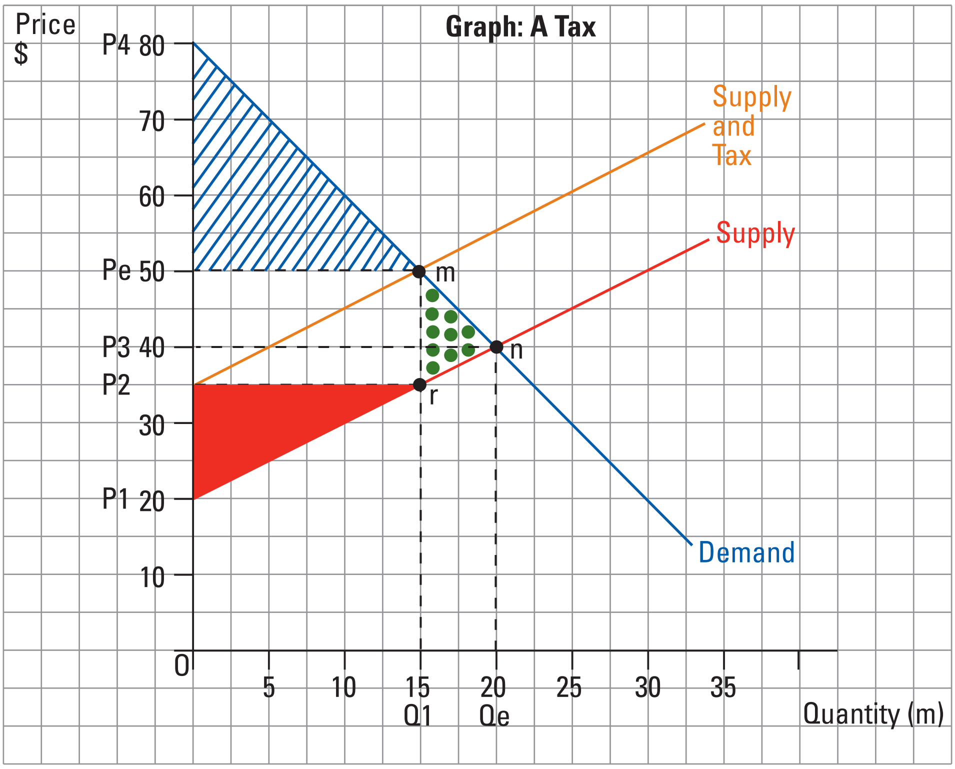
Solutions

(a) Show the effects of the government imposing a tax on the market by:

(i) shading the new consumer surplus

(ii) shading the new producer surplus

(iii) shading any loss of allocative efficiency



(b) Complete the table.

	Labels from the graph
Original consumer surplus	P3 n P4
New consumer surplus	Pe m P4
Original producer surplus	P3 n P1
New producer surplus	P2 r P1
Deadweight loss	m n r