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# 3

91399



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## Level 3 Economics, 2015

### 91399 Demonstrate understanding of the efficiency of market equilibrium

2.00 p.m. Wednesday 18 November 2015

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of the efficiency of market equilibrium.	Demonstrate in-depth understanding of the efficiency of market equilibrium.	Demonstrate comprehensive understanding of the efficiency of market equilibrium.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

**You should attempt ALL the questions in this booklet.**

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–11 in the correct order and that none of these pages is blank.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

**Excellence**

**TOTAL**

**21**

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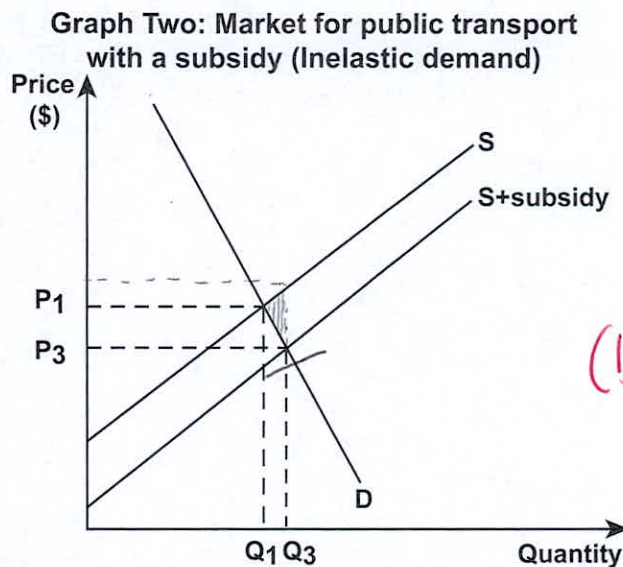
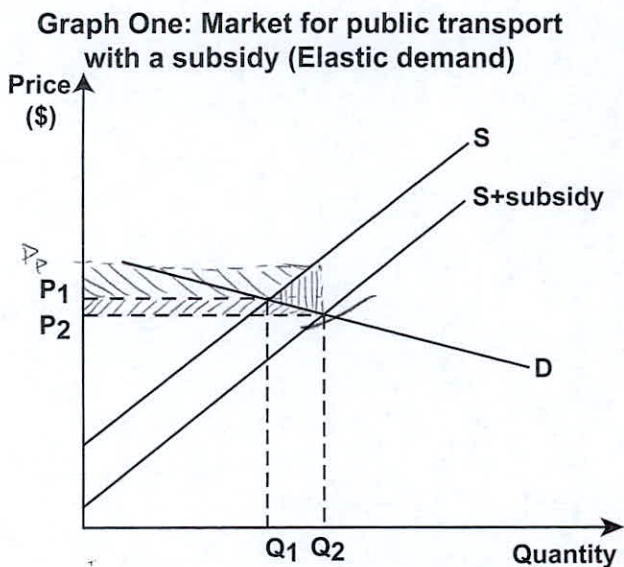
**QUESTION ONE: IMPACT OF A SUBSIDY**

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"Increasing congestion on urban roads presents a serious threat to the economic growth and liveability of our city regions."


Source: <http://www.transportworks.org/about-transport-works/reducing-congestion>

One possible policy to reduce traffic congestion is to increase subsidies on public transport. The effectiveness of this policy is determined by the price elasticity of demand for public transport.



- (a) (i) On Graph One, clearly shade and label the following:
- the change in consumer surplus as a result of the subsidy
  - the change in producer surplus as a result of the subsidy.
- (ii) Explain in detail the change in consumer surplus and the change in producer surplus. In your answer, refer to Graph One.

CS increase:  Consumers now pay a lower price ( $P_2$ ) and are consuming more public transport services ( $Q_2$ ) as they can afford to purchase more. This has increased consumer surplus (CS) by the shaded area in graph

PS increase:  Producers now receive a higher price  $P_1$  and are selling more public transport, which has increased their producer surplus (PS) by the second shaded area


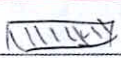
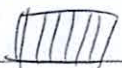
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(b) Compare and contrast the impact of subsidies on public transport when demand is elastic with when demand is inelastic.

In your answer:

- on BOTH graphs show the loss of allocative efficiency (deadweight loss) as a result of the subsidy
- explain in detail, for Graph One, why there is a loss of allocative efficiency
- explain in detail whether subsidies on public transport will be more effective in reducing traffic congestion if demand is elastic or inelastic
- refer to Graph One and Graph Two.

There is a loss in allocative efficiency because the gain in CS and PS of the  and  areas is lower (3) than the loss of Govt revenue of the area  $(P_1 - P_2)Q_2$  spent on the subsidy, which means the Govt now has less money to spend on things like healthcare and infrastructure. This has led to a deadweight loss of the area  in both graphs. //

(graph one)  
When demand is elastic consumers are able to be very responsive ~~to~~ to a price change, which can be seen by the large increase in Quantity of public transport ~~to~~ ~~from~~ sold from  $Q_1$  to  $Q_2^*$ , while if demand is inelastic, ~~the price decrease where~~ ~~consumers are inelastic~~ consumers are just responsive to a price change, and cannot easily adjust their consumption so the subsidy will cause a larger decrease in price  $P_1$  to  $P_3$  and a smaller increase in quantity  $Q_1 \rightarrow Q_3$ . A higher increase in public transport consumed means fewer people driving their own cars and therefore less congestion. therefore subsidies on public transport when demand is elastic (graph one) is more effective at reducing congestion (5)

\* and a small price fall from  $P_1$  to  $P_2$  //

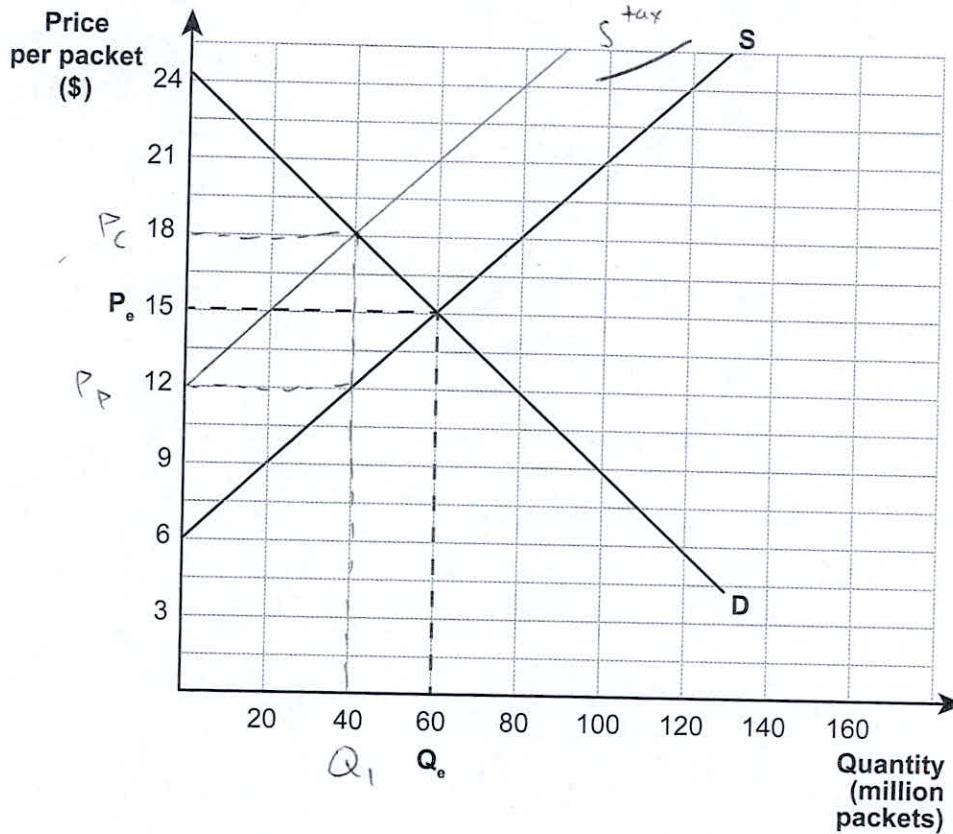


**QUESTION TWO: GOVERNMENT INTERVENTION AND EFFICIENCY OF THE MARKET**

Smokers thinking about making a new year resolution to quit smoking have been given some extra motivation with a tax increase that will significantly increase the average price of a pack of cigarettes.

Source (adapted): <http://www.stuff.co.nz/national/politics/9569478/Cigarette-taxes-jump-10-per-cent>

**Graph Three: New Zealand market for a packet of cigarettes**



- (a) (i) On Graph Three, show an indirect tax which results in a price of \$18 for a packet of cigarettes.
- (ii) Complete Table One by calculating the relevant values from Graph Three.

**Table One**

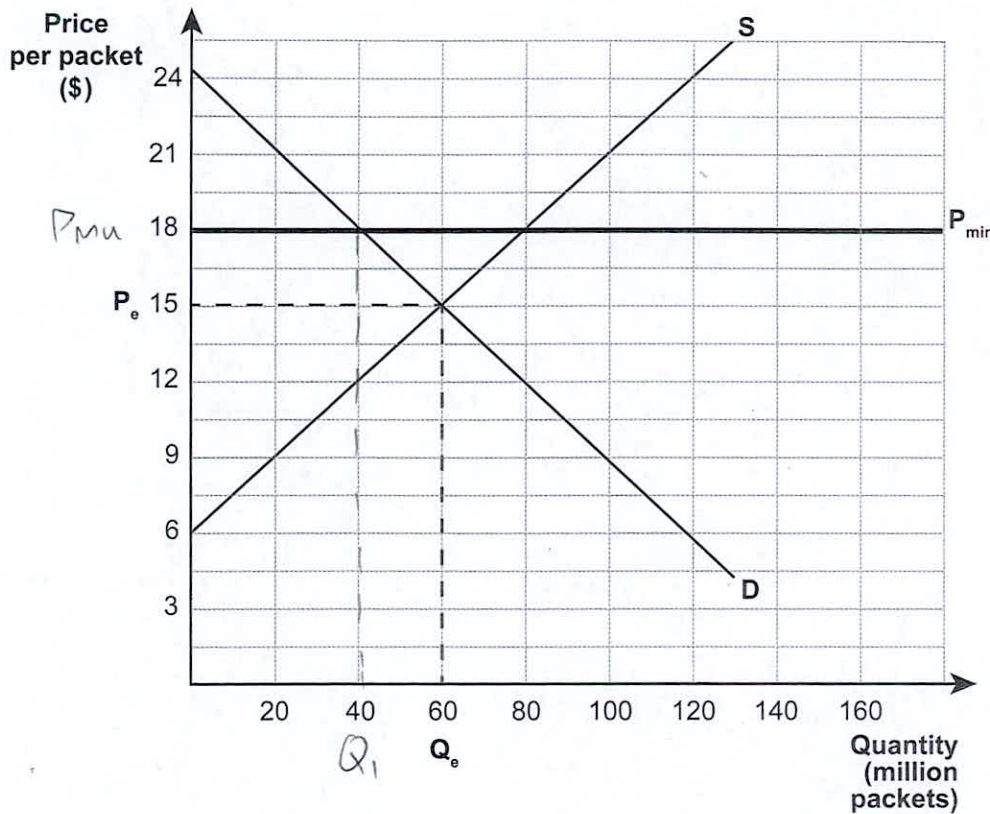
	Value from Graph Three (\$)
Change in consumer surplus	$-\left((18-15)40 + \frac{1}{2}(3 \times 20)\right) = -\$150 \text{ million}$
Change in producer surplus	$-\$150 \text{ million}$
Tax revenue for the Government	$(18-12)40 + \$240 \text{ million}$

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Another policy which would increase the price of cigarettes to \$18 is imposing a minimum price of \$18.

**Graph Four: New Zealand market for a packet of cigarettes with a minimum price of \$18**



(b) Complete Table Two by calculating the relevant values from Graph Four.

**Table Two**

	Value from Graph Four (\$)
Change in consumer surplus	$-\$150$ million
Change in producer surplus	$(18-15)40 - \frac{1}{2}(3 \times 20) + \$90$ million
Change in consumer spending	$-60 \times 15 + 40 \times 18 = \$180$ million

(c) Compare and contrast the two policies – an indirect tax and a minimum price.

In your answer:

- explain in detail the impact on consumer surplus of each of the two policies
- explain in detail the impact on producer surplus of each of the two policies
- explain in detail the impact on the Government of each of the two policies
- use relevant calculations from Table One and Table Two and refer to Graph Three and Graph Four.

For both policies, (subsidy and minimum price) consumers are now paying a higher price ( $\$18(P_{\min})$  from  $\$15(P_e)$ ) and are (6)



consuming less cigarettes ( $Q_e$ ) (60 million to 40 million). This has led to a decrease of CS by \$150 million for both ~~of~~ policies. //

For a subsidy, the producers are now receiving a lower price (~~\$15 from \$18~~ \$12 from \$15) and for cigarettes and are also selling a lower amount (40 million from 60 million), which has led to a decrease in PS of \$150 million.

For a maximum price control, producers (7) are receiving a higher price ( $P_{min} = \$18$ ) for cigarettes which ~~has~~ increases PS, however this is partially offset by the fact that there is a loss in the quantity of cigarettes sold (60 million to 40 million), but because the increased price has a larger effect there is an overall net increase in PS of \$90 million //

The government receives \$240 million in tax revenue from the <sup>indirect</sup> tax to spend on things like healthcare and infrastructure ~~which~~ which for a maximum price control .. didn't earn (8) any thing. //

There has also been an overall decrease in consumer spending of \$180 million in cigarettes in both cases //

MG ← IV



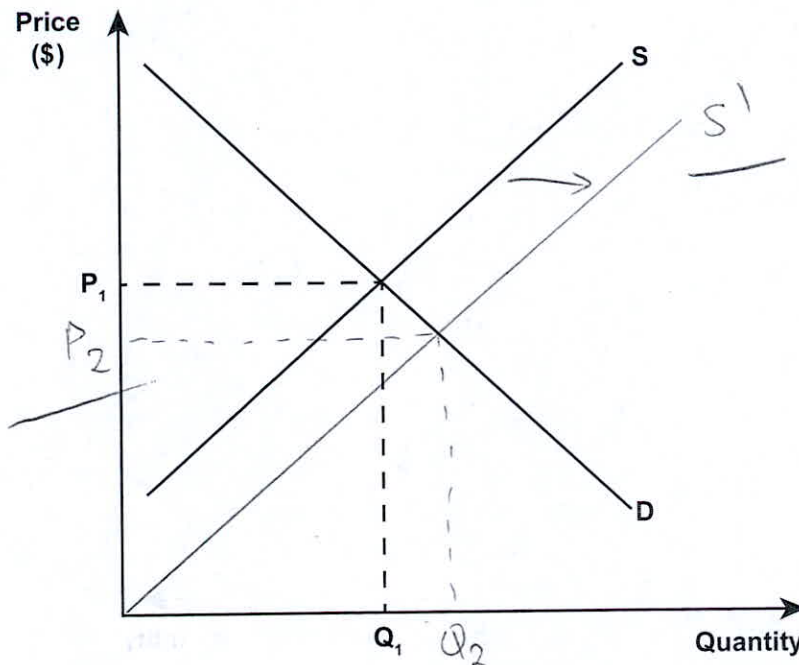
### QUESTION THREE: GOVERNMENT INTERVENTION IN THE HOUSING MARKET

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Tariffs on most building materials will be suspended in a move the Government says will bring the average cost of building a house down by about \$3500.

Source (adapted): <http://www.stuff.co.nz/business/budget-2014/10048621/Building-material-import-tax-held>

Graph Five: The New Zealand housing market



- (a) (i) On Graph Five, show the impact on the New Zealand housing market if there is a reduction in the cost of building houses. Clearly label the new equilibrium price ( $P_2$ ) and quantity ( $Q_2$ ).
- (ii) Explain in detail, using market forces, the change in the market equilibrium. In your answer, refer to Graph Five.

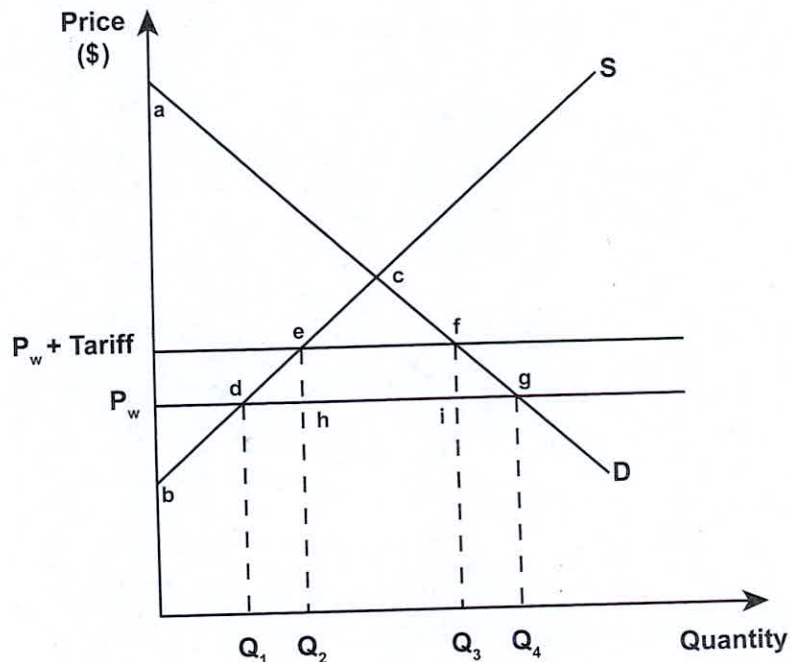
The decrease in costs for building materials means lower cost of production for housebuilding firms, as they can now afford to produce more houses at the same price. Supply of houses in the housing market will ~~not~~ increase from  $S$  to  $S_1$ . Now at the price of  $P_1$  there is a surplus as  $Q_s > Q_d$ , so housing firms will decrease the price of their houses to try to eliminate excess ~~to~~ stock of houses, causing  $Q_s$  to decrease and  $Q_d$  to increase, which continues until  $Q_s = Q_d$  and there is a new equilibrium established at  $P_2$  and  $Q_2$ .

\* supported by the prediction that it will lower costs of building a house by \$3500

However, Finance Minister Bill English said the cuts to tariffs on building materials were only temporary and would need to be reintroduced due to the technicalities in the legislation.

Source (adapted): <http://www.stuff.co.nz/business/budget-2014/10048621/Building-material-import-tax-held>

**Graph Six: New Zealand market for building materials with a tariff**



(b) Complete Table Three below.

**Table Three**

	Labels from Graph Six
Change in consumer surplus	$-(P_{w+tariff})_2 fg P_w$
Change in producer surplus	$+ (P_{w+tariff})_1 de P_w$
Tariff revenue for the Government	$ehif$
Deadweight loss	$edh + fhg$

(c) Compare and contrast the impact of the tariff on consumers and producers of building materials, the Government, and allocative efficiency.

In your answer:

- explain in detail the impact on consumer surplus and producer surplus
- explain in detail the impact on the Government
- explain in detail the impact on allocative efficiency
- refer to Graph Six and Table Three.

The tariff <sup>( $P_w$  to  $P_w + tariff$ )</sup> was caused domestic consumption to decrease from  $Q_4$  to  $Q_2$  as consumers can't



no longer afford to purchase as many building materials, and domestic production of building materials to increase from  $Q_1$  and  $Q_2$  as producers can find it easier to compete with the relatively more expensive imported building materials. (at  $P_w + \text{tariff}$ ) //

Before the tariff, CS was area  $agP_w$ , now it is  $af(P_w + \text{tariff})$ , which means there is a loss in CS of  $(P_w + \text{tariff})fgP_w$ .

~~Before~~ Before the tariff, PS. was  $P_w db$ , now it ~~is~~ is  $(P_w + \text{tariff})eb$ , which means there is a gain in PS of  $(P_w + \text{tariff})edP_w$  //

Before <sup>the tariff</sup>, the government was not earning <sup>additional</sup> revenue, now they receive  $ehif$  in tax revenue to spend on things like healthcare and ~~infra~~ infrastructure.

The gain in PS and Govt tax revenue of  $(P_w + \text{tariff})deP_w + ehif$  is smaller than the decrease in CS of  $(P_w + \text{tariff})fgP_w$ , which has led to a net loss in society's welfare of  $edh + fig$  (the deadweight loss). There has been a decrease in allocative efficiency, society would like to <sup>see the tariff removed</sup> ~~see~~ less resources allocated to the production of building materials, at  $Q_1$  and  $P_w$  where total surpluses are maximised //

Excellence exemplar for 91399 2015		Total score	21
Q	Grade score	Annotation	
1	E8	<p>This response clearly provides evidence of a comprehensive understanding of the material, fully integrating the economic models into their detailed explanations. It includes:</p> <ul style="list-style-type: none"> <li>(1) correct shadings and labels (key provided)</li> <li>(2) detailed explanations about the changes in CS and PS including reasons for their changes, with reference to Graph One</li> <li>(3) loss of AE explained in-depth (loss not all fully offset by gain leading to net welfare loss idea) with explicit reference to Graph One, and in context.</li> <li>(4) the effectiveness of the subsidy on elastic and inelastic demand compared and contrasted by referring to Graphs One and Two (<math>Q_1Q_2</math> being a greater increase than <math>Q_1Q_3</math>, greater than proportional increase in QD)</li> <li>(5) comprehensive explanation that is written in context and linked the greater increase in QD to fewer cars on the road which equals less traffic congestion.</li> </ul>	
2	M6	<p>This response gains an M6 because it includes:</p> <ul style="list-style-type: none"> <li>(6) all correct calculations and detailed explanations about the changes in CS for both policies including reasons for the changes, with reference to Graphs Three and Four and the correct figures from Tables One and Two</li> </ul> <p>This response is not E7 because of the errors in (7) and lack of a flow-on effect or additional information relating to how the minimum price affects the government (eg cost to police the minimum price regulation) (8).</p>	
3	E7	<p>This response clearly provides evidence of a comprehensive understanding of the material, fully comparing and contrasting the impact of a tariff on consumers, producers, government and allocative efficiency. It also integrates Graph Six and labels from Table Three into the detailed explanations. The weaker explanation on the price change affecting producers and consumers (9) (i.e. non-explicit reference to price increase) prevented this response from gaining an E8.</p>	