厦门大学《经济学原理》课程试卷

王亚南经济研究院2021年级经济学本科国际化试点班

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试卷类型：（B卷）

Principles of Economics

Midterm Examination

Part I
Multiple Choices (2 points each)

1. A direct or positive relationship exists between a country's
   (a) **productivity and its standard of living.**
   (b) amount of government spending and its productivity.
   (c) total population and its average citizen's income.
   (d) rate of population growth and the extent of its trade with other countries.

2. Inflation is defined as
   (a) a period of rising productivity in the economy.
   (b) a period of rising income in the economy.
   (c) an increase in the overall level of output in the economy.
   (d) **an increase in the overall level of prices in the economy.**

3. Large or persistent inflation is almost always caused by
   (a) excessive government spending.
   (b) **excessive growth in the quantity of money.**
   (c) foreign competition.
   (d) higher-than-normal levels of productivity.

4. If an electric power plant does not bear the entire cost of the pollution it emits, it will
   (a) not emit any pollution so as to avoid the entire cost of the pollution.
   (b) emit lower levels of pollution.
   (c) emit an acceptable level of pollution.
   (d) **emit too much pollution.**

5. Following the implementation of laws requiring automobiles to have seat belts, which of the following occurred?
   (a) An individual's probability of surviving an auto accident rose.
   (b) There was an increase in pedestrian deaths.
   (c) There was an increase in automobile accidents.
   (d) **All of the above are correct.**

6. Which of the following will shift the demand curve of gasoline to the left?

   (a) The OPEC (Organization of Petroleum Exporting Countries) decide to restrict their production so as to raise their total revenue.

   (b) The advancement of shale oil technology

   (c) The price of gasoline-powered automobiles decreases.

   (d) **Both the current price and the expected price of electricity decreases.**

7. Which of the following is true[1]?

   (a) When consumers' income increases, their demand for inferior goods shift to the right.

   (b) When consumers' income decreases, their demand for normal goods shift to the right.

   (c) **When consumers' income decreases, the price level of inferior goods increases.**

   (d) When consumers' income decreases, the price level of normal goods increases.

8. When theres is a binding price floor, which of the following statement is true?

   (a) There is a shortage.

   (b) **There is a surplus.**

   (c) The quantity demanded is larger than the quantity supplied.

   (d) The quantity demanded is the same as the quantity supplied.

9. On a perfectly competitive labor market with perfectly inelastic labor supply curve, increasing a binding minimum wage will

   (a) Increase unemployment

   (b) Decrease employment

   (c) Increase deadweight loss.

   (d) **All of the above**

10. Which of the following reflects a shortage?

    (a) Rationing

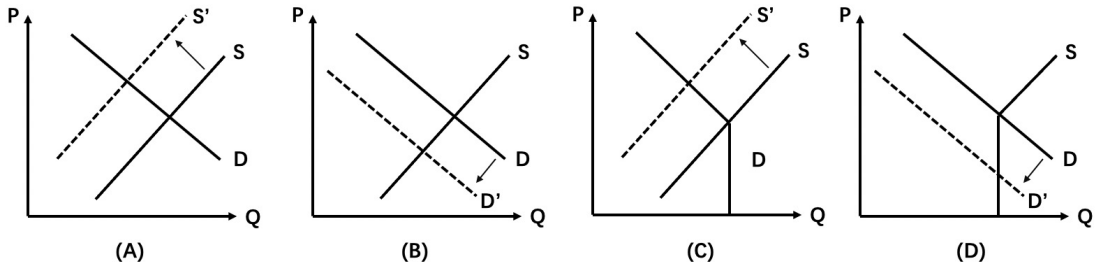
    (b) Long queues

    (c) Ticket Scalping

    (d) **All of the above**

[1] Assuming everything else being equal (Ceteris Paribus)

11. Which of the following best represents the housing market of a declining city where the income level is dropping and people are leaving[2]?



(a) A

(b) B

(c) C

(d) **D**

12. Demand for hard drugs can be highly inelastic due to the addictive nature of drugs. Therefore, when the government bans drug sales, suppose drug sellers decrease as a result but are not eliminated. In this case, drug price will __, the amount of drugs sold will __, and the total income earned by drug sellers will __.

(a) increase, increase, increase

(b) increase, increase, decrease

(c) **increase, decrease, increase**

(d) increase, decrease, decrease

(e) decrease, increase, increase

(f) decrease, decrease, increase

(g) decrease, decrease, decrease

13. Maria has decided always to spend one-third of her income on clothing. What is her price elasticities of clothing demand?

(a) 0.7

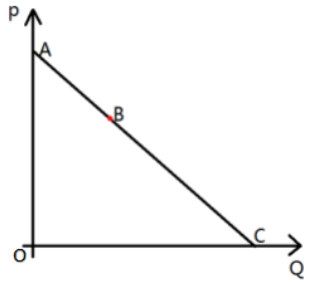
(b) **1**

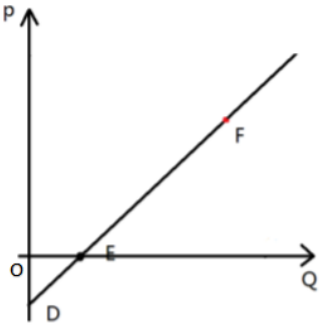
(c) 1.2

(d) 1.7

[2] S represents housing supply and D represents housing demand.

14. The price elasticity at point B and point F equal:





(a) AB/BC, DE/FD

(b) AB/BC, FD/EF

(c) **BC/AB, EF/DF**

(d) BC/AB, DE/EF

15. If the total revenues at 2 points on a linear demand curve are equal. Which of the following statements is correct?

(a) Let Q_1 and Q_2 be the quantity demanded at these two points. Let A be the point on the demand curve at which price elasticity is equal to 1. Let Q_A be the quantity demanded at A. Then $Q_A = \frac{1}{2}(Q_1 + Q_2)$.

(b) Demand is price elastic at one point and price inelastic at the other point.

(c) Let ϵ_1 and ϵ_2 be the price elasticity of demand at these two points. Then $\epsilon_1\epsilon_2 = 1$.

(d) **All of the above are correct.**

16. When a tax is placed on a product, the price paid by buyers

(a) Rises, and the price received by sellers rises.

(b) **Rises, and the price received by sellers falls.**

(c) Falls, and the price received by sellers rises.

(d) Falls, and the price received by sellers falls.

17. When a good is taxed,

    (a) **Both buyers and sellers of the good are made worse off.**

    (b) Only buyers are made worse off, because they ultimately bear the burden of the tax.

    (c) Only sellers are made worse off, because they ultimately bear the burden of the tax.

    (d) Neither buyers nor sellers are made worse off, since tax revenue is used to provide goods and services that would otherwise not be provided in a market economy.

18. Suppose a tax of $5 per unit is imposed on a good. The supply curve is a typical upward-sloping straight line, and the demand curve is a typical downward-sloping straight line. The tax decreases consumer surplus by $10,000 and decreases producer surplus by $15,000. The deadweight loss of the tax is $2,500. The tax decreased the equilibrium quantity of the good from

    (a) 6,500 to 5,500.

    (b) **5,500 to 4,500.**

    (c) 5,000 to 3,000.

    (d) 6,000 to 4,000.

19. The demand for chicken wings is more elastic than the demand for razor blades. Suppose the government levies an equivalent tax on chicken wings and razor blades. The deadweight loss would be larger in the market for

    (a) **Chicken wings than in the market for razor blades because the quantity of chicken wings would fall by more than the quantity of razor blades.**

    (b) Chicken wings than in the market for razor blades because the quantity of razor blades would fall by more than the quantity of chicken wings.

    (c) Razor blades than in the market for chicken wings because the quantity of chicken wings would fall by more than the quantity of razor blades.

    (d) Razor blades than in the market for chicken wings because the quantity of razor blades would fall by more than the quantity of chicken wings.

20. Which of the following statements correctly describes the relationship between the size of the deadweight loss and the amount of tax revenue as the size of a tax increases from a small tax to a medium tax and finally to a large tax?

    (a) Both the size of the deadweight loss and tax revenue increase.

    (b) The size of the deadweight loss increases, but the tax revenue decreases.

    (c) **The size of the deadweight loss increases, but the tax revenue first increases, then decreases.**

    (d) Both the size of the deadweight loss and tax revenue decrease.

Part II
Problems

Problem 1 (15 points)

The government has decided that the free-market wage of workers is too low.

1. Suppose the government imposes a binding price floor in the labor market (a minimum wage policy). Draw a supply-and-demand diagram to show the effect of this policy on the wage level of workers and the quantity of workers who get employed. Is there a shortage or a surplus of workers?

2. Do you think the shortage or the surplus will become more or less severe in the long run? Why?

Ans:

- The wage increases, and the quantity of workers who get employed decrease
- There is a surplus.
- More severe in the long run because the price elasticity of the supply (and/or demand) is bigger in the long run.

Problem 2 (15 points)

Suppose market demand is given by the equation

$$Q^D = 72 - 2P$$
$$Q^S = 2P$$

1. How much is total consumer surplus in this market at the equilibrium price?
2. How much is total producer surplus in this market at the equilibrium price?
3. Suppose demand shifts such that consumers wish to purchase 12 fewer units at every price. How much is total consumer surplus in this market at the new equilibrium price?
4. Suppose demand shifts such that consumers wish to purchase 12 fewer units at every price.

Ans:

1. **Total consumer surplus at the equilibrium price is $324.**
2. **Total producer surplus at the equilibrium price is $324.**
3. **Total consumer surplus at the new equilibrium price is $225.**
4. **Total surplus at the new equilibrium price is $450.**

Problem 3 (15 points)

Consider a labor market, where workers are on the supply side and firms are on the demand side. The price paid by firms to hire workers are called wages. The market demand and supply are given by, respectively, $Q_d = 400 - W$ and $Q_s = 3W$. To begin with, the market is free and has reached its equilibrium where the number of workers supplied equals to the number of workers demanded. "Employment" is the number of workers who are hired. "Unemployment" is the number of workers who are looking for a job at the on-going wage level but cannot find a job.

1. What are the equilibrium wage level and employment?
2. Suppose a per unit tax T is imposed on the firms. Would the tax cause unemployment in the labor market? What is the equilibrium wage level and employment after the per unit tax is imposed? (Hint: you may solve the wage level and the employment in terms of T.)
3. How much tax revenue will be collected?
4. What will be the dead weight loss from this per unit tax?

Ans:

1. $W = 100$ **and** $Q = 300$
2. **Would not cause unemployment;** $W = 100 - \frac{T}{4}$**,** $Q = 300 - \frac{3T}{4}$**.**
3. $300T - \frac{3T^2}{4}$
4. $\frac{3T^2}{8}$

Problem (15 Points)

Suppose the markets for high-skill labor (those with more than college education) and low-skill labor (those with less than college education) can be described by the following supply and demand equations:

$$\text{High-skill Demand: } Q_H^D = 85 - 2 \cdot w_H + \alpha_H \cdot w_L \tag{1}$$
$$\text{High-skill Supply: } Q_H^S = 10 + w_H \tag{2}$$
$$\text{Low-skill Demand: } Q_L^D = 80 - 4 \cdot w_L + \alpha_L \cdot w_H \tag{3}$$
$$\text{Low-skill Supply: } Q_L^S = 20 + 4 \cdot w_L \tag{4}$$

, where (w_H, w_L) are respectively the hourly wages of high-skill and low-skill labor, Q_D^H and Q_S^H are respectively the quantity demanded and supplied of high-skill labor (measured in number of hours), and Q_D^L and Q_S^L are respectively the quantity demanded and supplied of low-skill labor (measured in number of hours).

1. Let $\alpha_H = 1, \alpha_L = 1.5$. Solve for the equilibrium wage and hours worked of high-skill and low-skill labor.

$$w_H = 29.33, \;\; Q_H = 39.33$$
$$w_L = 13, \;\; Q_L = 72$$

2. In this case, are high-skill and low-skill labor substitutes, complements, or neither?

   `substitutes`

3. Calculate the demand and supply elasticities[3] of high-skill and low-skill labor at equilibrium.

$$\epsilon_H^D = 1.49, \;\; \epsilon_H^S = 0.75$$
$$\epsilon_L^D = 0.72, \;\; \epsilon_L^S = 0.72$$

[3] More precisely, the price elasticity of demand and the price elasticity of supply

4. Is high-skill labor demand elastic, unit elastic, or inelastic? Is high-skill labor supply elastic, unit elastic, or inelastic? Is low-skill labor demand elastic, unit elastic, or inelastic? Is low-skill labor supply elastic, unit elastic, or inelastic?

   ```
   high-skill labor demand:  elastic
   high-skill labor supply:  inelastic
   low-skill labor demand:  inelastic
   low-skill labor supply:  inelastic
   ```

5. Calculate the cross-price elasticity of high-skill labor demand with respect to low-skill wage[4] and the cross-price elasticity of low-skill labor demand with respect to high-skill wage[5] at equilibrium.

$$\epsilon_{Q_H^D, w_L} = 0.33$$
$$\epsilon_{Q_L^D, w_H} = 0.61$$

6. Suppose as a result of immigration, low-skill labor supply increased so that the new low-skill labor supply curve becomes

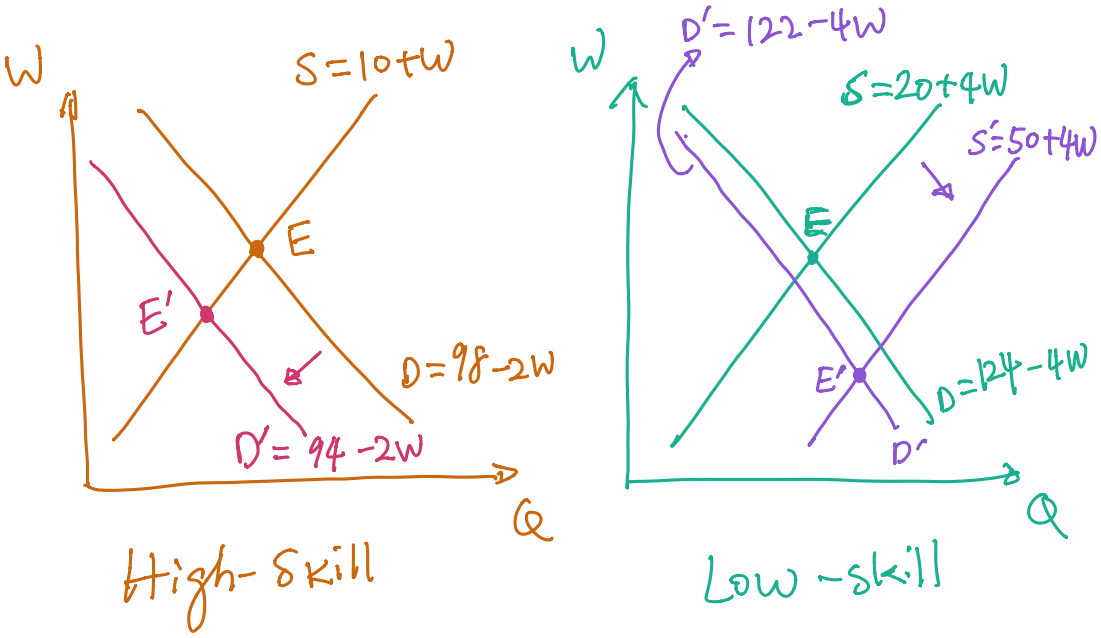
$$Q_S^L = 50 + 4 \cdot w_L \tag{5}$$

   Solve for the equilibrium wage and hours worked of high-skill and low-skill labor in this new labor market.

$$w_H = 28, \;\; Q_H = 38$$
$$w_L = 9, \;\; Q_L = 86$$

[4] i.e., how much high-skill labor demand changes in response to changes in low-skill wage.
[5] i.e., how much low-skill labor demand changes in response to changes in high-skill wage.

7. Draw supply and demand diagrams to show the impact of low-skill immigration on the labor market. Clearly label and write down the equation for each supply and demand curve on your graph.



8. Now suppose the labor market is still described by (1)−(4). Let let $\alpha_H = -1.5, \alpha_L = -1$. Solve for the equilibrium wage and hours worked of high-skill and low-skill labor.

$$w_H = 22.67, \;\; Q_H = 32.67$$
$$w_L = 4.67, \;\; Q_L = 38.67$$

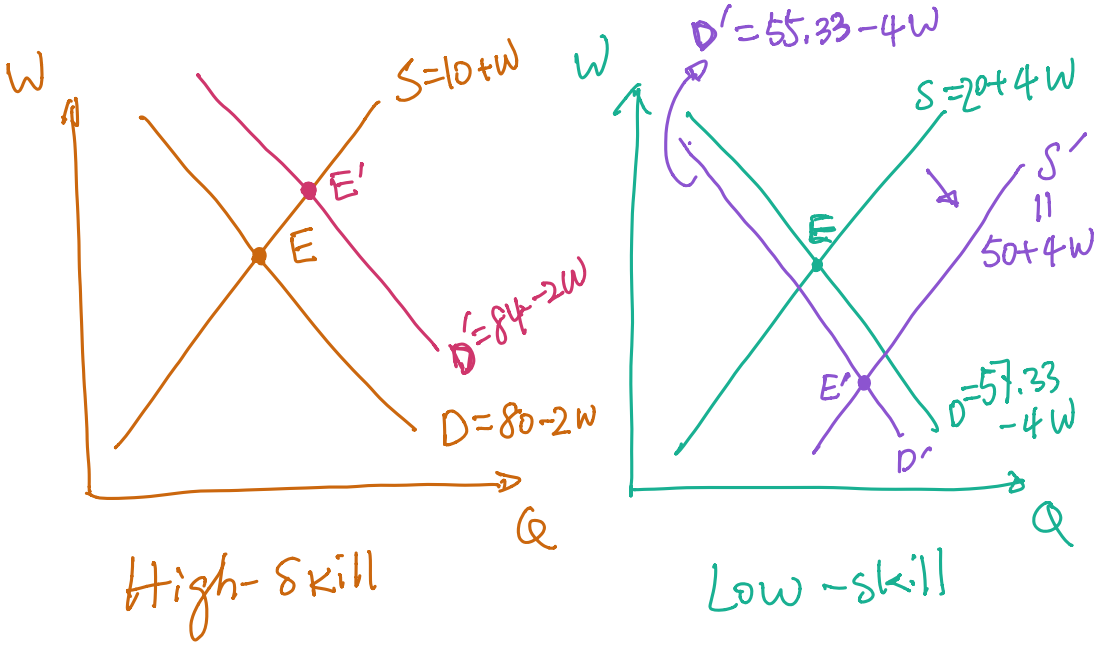
9. In this case, are high-skill and low-skill labor substitutes, complements, or neither?

   `Complements`

10. Now again suppose as a result of immigration, low-skill labor supply becomes (5). Solve for the equilibrium wage and hours worked of high-skill and low-skill labor.

$$w_H = 24.67, \;\; Q_H = 34.67$$
$$w_L = 0.67, \;\; Q_L = 52.67$$

11. Draw supply and demand diagrams to show the impact of low-skill immigration on the labor market in this case. Clearly label and write down the equation for each supply and demand curve on your graph.



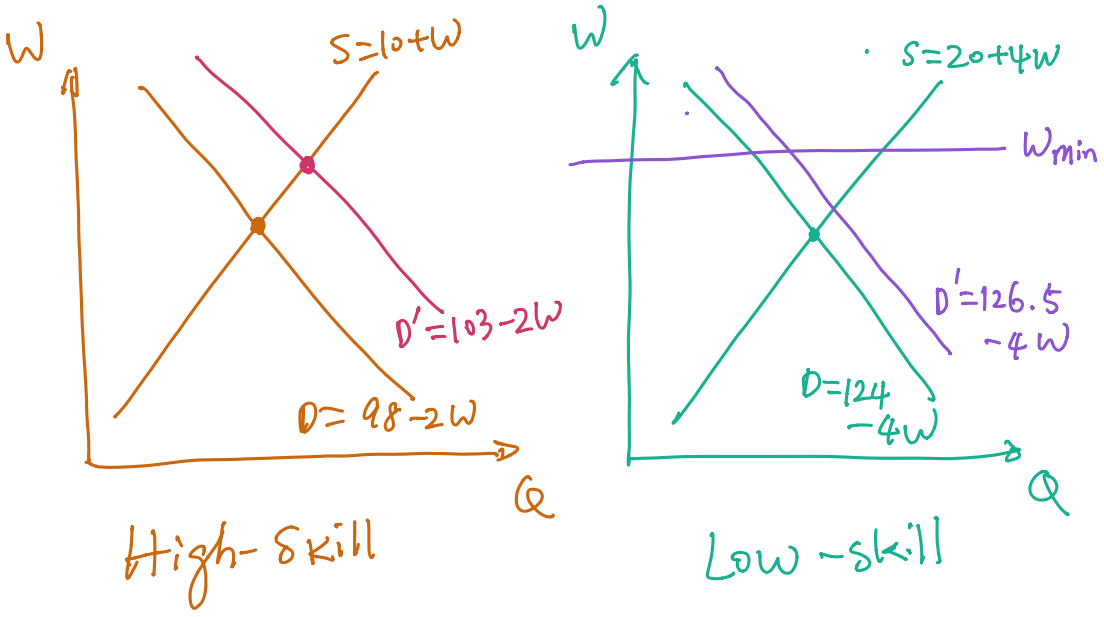
12. Compare your answers to (6) − (7), how do the effects of low-skill immigration differ? Why?

In both cases, low-skill immigration increases low-skill labor supplied and decreases low-skill wage. However, in the first case, low-skill immigration *decreases* high-skill wage and labor supplied. This is because low-skill and high-skill labor are substitutes so that more abundant low-skill labor would replace high-skill labor and decrease high-skill demand. In the second case, low-skill immigration *increases* high-skill wage and labor supplied. This is because the two kinds of labor are now complements, so that increase in the supply of one factor will stimulate demand for the other.

13. Now suppose the labor market is still described by (1)−(4) with $\alpha_H = 1, \alpha_L = 1.5$. In order to support low-skill workers, the government imposes a minimum hourly wage of $w_{\min} = 18$. Solve for the wage and hours worked of high-skill and low-skill labor after the imposition of this minimum wage.

$$w_H = 31, \quad Q_H = 41$$
$$w_L = 18, \quad Q_L = 54.5$$

14. Draw supply and demand diagrams to show the impact of minimum wage on the labor market. Clearly label and write down the equation for each supply and demand curve on your graph.



15. Now suppose instead of the minimum wage, the government taxes high-skill workers at \$5 per hour worked and distributes the collected tax dollars evenly to each low-skill worker (regardless of how much he or she works). Solve for the wages that high-skill and low-skill workers receive after tax[6], the wages high-skill and low-skill employers pay out-of-pocket, and the equilibrium hours worked.

`After tax on high-skill labor, the wage that firms pay for high-skill labor` (w_H^D) `is no longer the same as the wage received by high-skill workers` (w_H^S). `We have:`

$$\begin{aligned} Q_H^D &= 85 - 2 \cdot w_H^D + w_L \\ Q_H^S &= 10 + w_H^S \\ Q_L^D &= 80 - 4 \cdot w_L + 1.5 \cdot w_H^D \\ Q_L^S &= 20 + 4 \cdot w_L \\ w_H^S &= w_H^D - 5 \end{aligned}$$

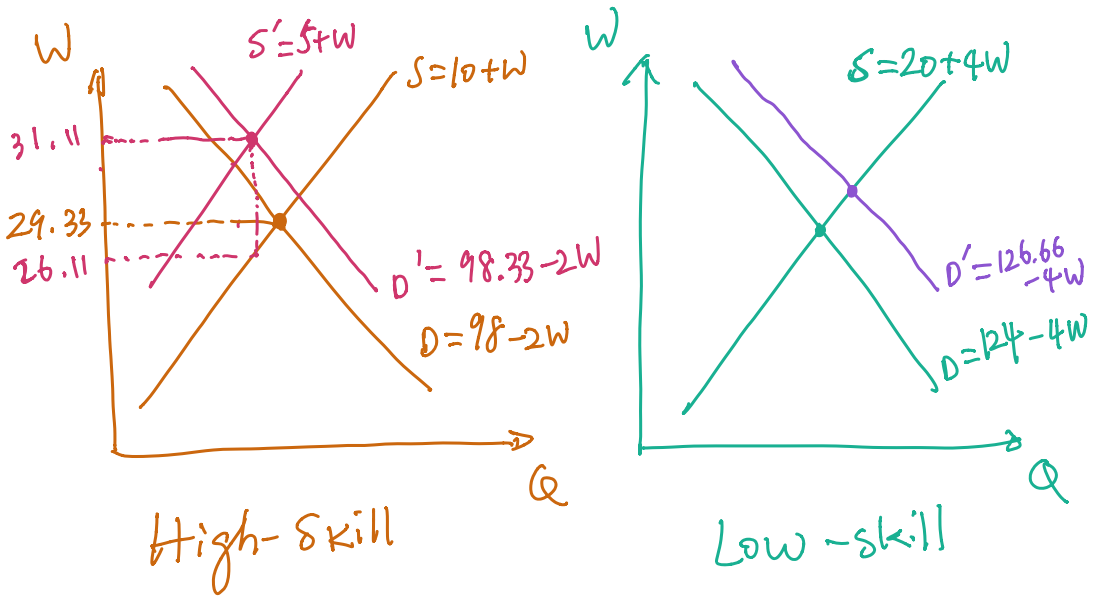
$\Rightarrow$

$$\begin{aligned} w_H^D = 31.11, \;\; w_H^S = 26.11, \;\; Q_H = 36.11 \\ w_L = 13.33, \;\; Q_L = 73.33 \end{aligned}$$

`Note that since the tax is levied on workers, the equilibrium high-skill wage after tax is` $w_H = w_H^D = 31.11$.

[6] but before redistribution.

16. Draw supply and demand diagrams to show the impact of minimum wage on the labor market. Clearly label and write down the equation for each supply and demand curve on your graph.



17. Discuss tax incidence. Out of the four groups of market participants – high-skill workers, low-skill workers, high-skill employers, low-skill employers – who would share the burden of this tax? Who would benefit from this tax?

    High-skill workers, high-skill employers, low-skill employers all share the tax burden. Low-skill workers benefit from this tax.

18. If the government's goal is to increase the total income of low-skill workers, which one is a better policy: (a) minimum wage or (b) high-skill taxation and redistribution?

    Total low-skill income under (a): 1158.04
    Total low-skill income under (b): 981
    Hence the minimum wage policy maximizes low-skill income in this case[7].

[7] Note that under the free-market equilibrium, total low-skill income is $936. Hence both policies increase total low-skill income.