

0455 sets short calculations and then asks what the number MEANS. That second half is where most of the marks are, and where most answers stop too early. Each solution below shows the formula, the substitution, the answer with its unit, and the sentence of economics that follows from it. 0455 的计算题很短, 但真正的分数在 “这个数字说明了什么” 上。

Elasticity and total revenue

I The price of a good rises from \$5 to \$6 and weekly sales fall from 200 to 170 units. Calculate the price elasticity of demand and explain what happens to the firm's revenue.

$PED = -0.75$. Demand is price INELASTIC because 0.75 is less than 1, so revenue RISES – from \$1000 to \$1020. The price rise more than makes up for the units lost.

$$\text{Percentage change in price} = (6 - 5) \div 5 \times 100 = +20\%$$

$$\text{Percentage change in quantity} = (170 - 200) \div 200 \times 100 = -15\%$$

$$PED = -15 \div 20 = -0.75$$

Ignore the minus sign when judging the SIZE, but write it down: it shows demand and price move in opposite directions.

$$\text{Revenue before} = 5 \times 200 = \$1000; \text{ after} = 6 \times 170 = \$1020$$

I The same 20% price rise causes producers to raise output from 500 to 560 units. Calculate the price elasticity of supply.

$PES = +0.6$: supply is inelastic, so producers cannot respond quickly to the higher price – perhaps because production takes time or spare capacity is limited.

$$\text{Percentage change in quantity supplied} = (560 - 500) \div 500 \times 100 = +12\%$$

$$PES = 12 \div 20 = +0.6$$

PES is POSITIVE, because supply and price move the same way. A negative answer here means a sign error.

Learn the revenue rule as one sentence: when demand is inelastic, revenue moves the SAME way as price; when it is elastic, revenue moves the OPPOSITE way. It is worth a mark on its own and it is always relevant.

需求缺乏弹性时, 收入与价格同向变动; 富有弹性时反向变动。

Prices, inflation and index numbers

I A basket has weights of 40 for food, 30 for transport and 30 for housing. Their price indices are 110, 104 and 120. Calculate the consumer price index.

$CPI = 111.2$, so prices are 11.2% above the base year.

$$\text{Multiply each index by its weight: } 40 \times 110 = 4400, 30 \times 104 = 3120, 30 \times 120 = 3600$$

$$\text{Add them: } 4400 + 3120 + 3600 = 11\,120$$

$$\text{Divide by the total weight: } 11\,120 \div 100 = 111.2$$

The weights show how much of a typical household's spending goes on each item – a change in a heavily weighted item moves the index much more.

| The CPI rises from 111.2 to 114.5 over a year. Calculate the rate of inflation.

Inflation is 3.0%. Note that prices are still rising – the index went UP – so this is inflation, not deflation.

$$\text{Inflation} = (114.5 - 111.2) \div 111.2 \times 100$$

$$= 3.3 \div 111.2 \times 100 = 3.0\%$$

Divide by the EARLIER index, not by 100.

A falling inflation RATE is not falling prices. If inflation goes from 5% to 3%, prices are still rising – just more slowly. That is disinflation; deflation needs a negative rate.

通胀率下降不等于物价下降。

Employment, output and living standards

| A country has 1.2 million people unemployed out of a labour force of 20 million. Calculate the unemployment rate and state one weakness of the figure.

The rate is 6%. It leaves out people who have given up looking for work, so it understates how much labour is really going unused.

$$\text{Unemployment rate} = 1.2 \div 20 \times 100 = 6\%$$

The denominator is the LABOUR FORCE – everyone working or looking for work – not the whole population.

| GDP is \$60 billion and the population is 12 million. Calculate GDP per head, and explain why it may be a poor measure of living standards.

GDP per head is \$5000. It is an average, so it hides how unequally income is shared; it also ignores unpaid work, pollution and the amount of leisure people have.

$$\text{GDP per head} = 60\,000\,000\,000 \div 12\,000\,000 = \$5000$$

Line up the zeros or convert both to the same unit – \$60 billion $\div$ 12 million is \$60 000 million $\div$ 12 million.

| A country has a birth rate of 22 per 1000 and a death rate of 9 per 1000. Calculate the natural increase and say what it implies.

Natural increase = 13 per 1000, i.e. 1.3% a year. The population is growing, so the country needs more schools, housing and jobs, and GDP must grow by more than 1.3% for GDP per head to rise at all.

$$\text{Natural increase} = \text{birth rate} - \text{death rate} = 22 - 9 = 13 \text{ per } 1000$$

$$\text{As a percentage} = 13 \div 1000 \times 100 = 1.3\%$$

Natural increase ignores migration; total population change also needs net migration.

Government, taxation and trade

| A country charges no tax on the first \$10\,000 of income, 20% on the next \$15\,000 and 30% above that. Find the tax paid on an income of \$30\,000, the average rate and the marginal rate. Is the system progressive?

Tax paid is \$4500, the average rate is 15% and the marginal rate is 30%. The system is PROGRESSIVE, because the average rate rises as income rises.

$$\text{First } \$10\,000 \text{ at } 0\% = \$0$$

$$\text{Next } \$15\,000 \text{ at } 20\% = \$3000$$

Remaining \$5000 at 30% = \$1500

Total = 0 + 3000 + 1500 = \$4500

Average rate = $4500 \div 30\,000 \times 100 = 15\%$

Marginal rate = the rate on the LAST dollar earned = 30%

Progressive means the AVERAGE rate rises with income – not simply that richer people pay more money.

I The exchange rate is \$1 = 7.2 yuan. A product costs 360 yuan in China. What is its price in dollars? A \$200 product is exported to China; what does it cost in yuan?

The Chinese product costs \$50. The exported product costs 1440 yuan.

Yuan to dollars: DIVIDE by 7.2, because 7.2 yuan make one dollar. $360 \div 7.2 = \$50$

Dollars to yuan: MULTIPLY by 7.2. $200 \times 7.2 = 1440$ yuan

Sketch the direction before touching the calculator. If the answer looks far too big or too small, you divided where you should have multiplied.

When a currency APPRECIATES, exports become dearer abroad and imports cheaper at home. Say which way the rate moved before explaining the effect, because the whole answer turns on it.

本币升值: 出口变贵, 进口变便宜。

What the examiner is actually marking

Show the formula, then the numbers. A method mark survives a slip on the calculator; a bare wrong number does not.

先写公式再代入数字。

Always write the unit, the currency symbol or the percent sign. “6” is not an unemployment rate.

答案必须带单位或百分号。

Divide by the ORIGINAL value for a percentage change, and by the LABOUR FORCE for unemployment. Wrong denominators lose more marks in this subject than wrong arithmetic.

百分比变化除以原值; 失业率除以劳动力人口。

Finish with one sentence of economics. The calculation is one mark; what it tells the government, the firm or the household is usually worth more.

最后用一句经济学语言解释结果。

Do not round part-way through. Carry the full figure and round only the final answer – normally to one decimal place for a percentage and two for money.

中间步骤不要四舍五入。