Problem 1. The supply of labor is the same thing as

(a) the total number of jobs available in the economy

(b) the labor force

(c) the number of vacant jobs in the economy

(d) the number of jobs firms offer to households

(e) none of the above

Answer 1: b. Those who are willing and able to work—the labor force—want to supply their labor in order to earn a wage.

Problem 2. Which of the following is correct?

(a) supply of labor = labor force participation rate $\times$ labor force

(b) supply of labor = labor force participation rate $\times$ employment

(c) supply of labor = labor force participation rate $\times$ (employed + unemployed)

(d) supply of labor = labor force participation rate $\times$ civilian population

(e) none of the above

Answer 2: d. This is basically just the definition of the labor force participation rate, i.e. the percentage of people in the civilian population who are able and willing to work. Or,

$$\text{labor force participation rate} = \frac{\text{labor force}}{\text{civilian population}} = \frac{\text{employed} + \text{unemployed}}{\text{civilian population}}.$$

Problem 3. At the macroeconomic level, demand for labor is

(a) the total number of filled and unfilled jobs available

(b) the total number of unfilled jobs available

(c) the total number of people who have jobs

(d) the total number of people who demand jobs from business firms

(e) none of the above

Answer 3: a. Firms demand labor since they need workers in order to actually produce stuff. The way they demand labor is through employment, i.e. firms want to hire a certain number of people to fill in job vacancies. Some of those vacancies will be filled, some won't.

Problem 4. In the labor market, the **substitution effect** refers to the notion that when the real wage increases,

(a) the opportunity cost of labor increases and, therefore, workers work less

(b) the opportunity cost of leisure increases and, therefore, workers work more

(c) workers feel they are richer and, therefore, they consume more and save less

(d) workers feel they are richer and, therefore, they save more and consume less

(e) none of the above

Answer 4. When the real wage increases, it means that working now gives more of a benefit to workers. So, compared to leisure, working is relatively more attractive than it was before. The substitution effect says that since working is now relatively more attractive than leisure, people will choose to work more—they will substitute their time away from leisure and into work. Another way of stating this is that the opportunity cost of leisure increases, so people want less of it.

This implies an upward sloping labor supply curve.

Problem 5. In the labor market, the **income effect** indicates that

(a) when real wage increases, workers' income increases and therefore they save more

(b) when real wage increases, workers need to work fewer hours to earn the same income as before

(c) when real wage increases, workers need to work fewer hours to earn the same income as before, so they work less

(d) when real wage increases, workers' income increases, and therefore they increase their demand for goods and services

(e) none of the above

Answer 5: c. Pretty self explanatory. If you earn a higher wage, then you make the same amount of money you did before by working fewer hours. So in a sense you have an incentive to work fewer hours—you can still pay the bills, but now you can spend a few extra hours each day playing Pokemon Go. This is the income effect.

This implies a downward sloping labor supply curve.

Substitution dominates the income effect in the data. For simplicity, we assume they cancel each other out exactly so that labor supply is completely vertical.

Problem 6.

Real Wage	Labor Demand	Labor Supply
6	700	300
8	600	400
10	500	500
12	400	600
14	300	700

The price level is $P = \$30$. What is the nominal wage?

Answer 6. The market is in equilibrium when labor demand equals labor supply. In this case, at $L = 500$, which means the real wage must be 10. Since the price level is 30, that means the nominal wage must be $30 \times 10 = \$300$.

Problem 7. If the nominal wage rate is $W = 5,000$ per worker and the price of the output is $P = 100$ per unit, the firm will want to employ _____ workers (using the marginal productivity rule discussed in the class). With this many workers, it will be able to produce _____ tons of output.

Total Number of Workers Hired (Persons)	Total Amount of Output Produced (Tons)
0	0
1	80
2	150
3	210
4	260
5	300
6	330
7	350
8	360

Answer 7. The real wage is $5000/100 = 50$. Hence the firm will hire up to the worker with $MPL = 50$, which happens to be the fourth worker. With four workers, 260 tons of output is produced.

Problem 8. Which of the following events could cause the demand for labor function to shift to the right?

(a) an increase in the amount of complementary capital

(b) an increase in the productivity of labor

(c) a labor-using technological progress

(d) all of the above

(e) none of the above

Answer 8: d. All of the first three choices will increase the MPL of workers, i.e. make them more produce more stuff. This shifts the labor demand curve up (i.e. to the right) by the increase in MPL, since the demand for labor curve essentially is the MPL curve. (Remember the profit maximizing conditions that firms use: $MPL = W/P$.)

Problem 9. Which of the following events could cause the supply of labor to shift to the right, all else equal?

(a) an increase in net immigration

(b) an increase in net birth

(c) an increase in the labor force participation rate

(d) all of the above

(e) none of the above

Answer 9: d. Recall that

$$\text{supply of labor} = \text{labor force participation rate} \times \text{civilian population}.$$

The first two increase the population, and the effect of option (c) is obvious. So any of these will mean a higher L for any level of the real wage for the supply curve.