1. a. Jessica has a job where she can earn $9 per hour. She has no non-employment income. Draw her budget line and label it AB.

2. How many hours per week will she work?

3. c. Suppose that Jessica got a raise to $15 per hour. Draw her budget line and label it CD.

4. d. How many hours per week will she work?

5. e. Suppose her wage was cut to $6 per hour. Draw her budget line and label it EF.

6. f. How many hours per week will she work?

7. g. In the space to the right draw her labor supply curve. **Carefully** number and label the axes.

8. h. Does Jessica have a backward bending supply curve of labor? How can you tell?

9. i. As her wage rate increased from $10 to $15, was the income or substitution effect larger? Explain how you could tell.
2. There are ten adults in Waldo. Last week their activities were:

Alex – worked 40 hours at Bologna-Is-Us (Emp. in Li)
Brenda – did not work, wants a job and read the want-ads in the paper about jobs
Charley – is 75 and totally disabled (Out of Li)
Deborah – is 35 and totally disabled (Out of Li)
Edgar – worked 10 hours at the feed store, but really wants to work 40 hours (Out of Li)
Francis – worked 40 hours at El Lardito’s but is looking for a new job (Unem in Li)
Gary – wants a job, but after looking for a year and not finding a job has given up (Unem in Li)
Helen – is on TANF, does not have a job, but asked Alex if Bologna-Is-Us is hiring (Unem in Li)
Igor – usually works 40 hours a week but is on vacation (Unem in Li)
Janice – was a waitress at Sam n’ Ella’s, but was laid off for a month two weeks ago. She is not currently working nor searching for another job.

a. Which of these people are in the labor force?

Alex, Edgar, Francis, Helen, Igor, Janice

b. What is the labor force participation rate equal to in Waldo?

60.2%

c. Which of these people are unemployed?

Helen & Janice

d. What is the unemployment rate in Waldo?

33.2%

e. Currently, in the United States, what is the labor force participation rate of females age twenty and above?

60.2%

f. Is this rate higher or lower than it was 50 years ago?

Higher

g. Cite three reasons for this change.

- Incr. incr. of women
- Increase level of educ
- Lower fertility
- More single women
3. Let us suppose that nails (the kind you hammer, not paint) are a perfectly competitive good. Their price is 40 cents a pound. The Acme Nail Company finds the following relationship between the number of workers and hourly nail production.

<table>
<thead>
<tr>
<th>No. of Workers</th>
<th>Pounds of Nails</th>
<th>Marginal Prod. of Labor</th>
<th>Marg. Rev. Prod. Of Labor</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>80</td>
<td>80</td>
<td>$32</td>
</tr>
<tr>
<td>2</td>
<td>140</td>
<td>60</td>
<td>$24</td>
</tr>
<tr>
<td>3</td>
<td>190</td>
<td>50</td>
<td>$20</td>
</tr>
<tr>
<td>4</td>
<td>230</td>
<td>40</td>
<td>$16</td>
</tr>
<tr>
<td>5</td>
<td>265</td>
<td>35</td>
<td>$14</td>
</tr>
</tbody>
</table>

a. Fill in the blank columns above.

b. In the space to the right, carefully draw Acme's demand for labor. Carefully number and label the axes.

c. How many workers would be hired at a wage rate of $20? Why is that the number that would be hired?

d. How many workers would be hired at a wage rate of $14?

e. Calculate Acme’s elasticity of demand for labor based on the information in c & d

\[
\frac{\% \Delta L}{\Delta w} = \frac{\frac{\Delta L}{\Delta w}}{w} = \frac{6}{20} = -3 \rightarrow \text{elasticity} = -3
\]

f. In general the elasticity of demand for labor tends to be inelastic in what circumstances? (Cite two things.)

- If labor is a small share of TC
- If demand for product is inelastic
- Few substitutes exist
- Substitutes are expensive
4. Let’s look at Whoopi Goldberg. Suppose that Whoopi did not have a movie career and worked as a hairdresser. (Something that actually was the case a long time back.)

   a. If her wage rate is $5, per hour. Draw her budget line and label it AB.
   b. Given the indifference curves for her, is she a member of the labor force? Explain what your answer is based on.
   c. Suppose she finds that if she doesn’t work, she can get welfare payment of $125 per week. Further, the implicit tax rate is 100%. Draw her budget line and show it by making a striped line, i.e., + + + + + + + + + +
   d. What is meant by the term implicit tax rate?
   e. Did Whoopi’s labor force status change? Explain how you can tell.
   f. In Ohio, approximately what is the numerical value of the implicit tax rate?

The following are true/false problems. One point each.

1 Truth be told, Whoopi Goldberg was on welfare 30 years ago when she arrived in California.
5. The institutional school of labor economics believes in the importance of market imperfections.

6. The fact that labor is embodied in the seller increases the importance that noneconomic factors such as working conditions have on exchange in the labor market.

7. An example of an institutional force in the labor market is custom and tradition.

8. Since 1950 there has occurred in the United States a relative increase in the number of white-collar and service jobs.

9. Over the 20th century weekly hours of work have declined, implying the substitution effect is greater than the income effect.

10. Assuming leisure is a normal good, a decrease in nonlabor income will cause an increase in work hours.

11. If a worker is paid a fixed salary regardless of how many hours are worked the slope of the budget constraint is zero.

12. An increase in the wage rate causes a parallel rightward shift in the budget constraint.

13. The bargaining model of family labor supply explains the increase in female labor force participation as the result of the desire of women for equality and economic independence in the family.

14. The added worker effect is caused by the increase in the size and availability of disability benefits.

15. One explanation for why black women have a higher labor force participation rate than white women is because their husbands have lower earnings relative to the husbands of white women.

16. If the cross-substitution effect is negative the husband will work less if the wife’s wage rate increases, other things equal.

17. In the area of diminishing returns in production total output declines with each additional unit of labor input.

18. An increase in the wage rate will shift the labor demand curve to the left.

19. If the labor demand curve is inelastic a fall in the wage will cause an increase in the wage bill.

20. A wage subsidy program will result in a relatively larger increase in employment the more elastic the labor demand curve.
21. Technological change will lead to a greater increase in employment the more price elastic the product demand curve.

22. Economic theory shows that technological change will cause the long-run demand for labor in an industry to always increase.

23. The substitution effect shows the impact of a change in non-employment income on labor, holding the wage rate constant.

24. Since 1980, the annual number of hours worked by Americans workers has risen.

25. Since 1980, the annual number of hours worked by Japanese workers has risen.

26. The labor force participation rate of teens is found to be higher when the teens themselves are surveyed rather than their parents.

27. The current unemployment rate in the United States is above eight percent.

28. The labor force participation rate of women became higher than that of men during the 1970s.

29. Parsons’s work showed that the labor force participation rate of older males fell due to an increase in the use of disability programs.

30. In economic terms, children are an inferior good.

31. In Europe, laws that make it difficult to fire workers have led to firms employing a greater number of workers.

32. Due to the Internet and technological change, the number of employees in retailing in the United States fell during the 1990s.