

## Logarithmic Regression

---

### Learning Objectives

- Perform a logarithmic regression with a calculator
- 

*Perform a logarithmic regression with a calculator*

1. A woodshop is developing a new design of table. They have only produced a dozen of the products and each time they produce a new copy of the design, they record the amount of time it takes their woodworkers to complete the table. The data is shown in the table below.

| <b>Unit<br/>Produced</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>8</b> | <b>9</b> | <b>10</b> | <b>11</b> | <b>12</b> |
|--------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|
| <i>Labor Hours</i>       | 30       | 25       | 19       | 20       | 15       | 13       | 15       | 13       | 13       | 12        | 9         | 13        |

Find a logarithmic regression model that best fits the data. Round your answer to three decimal places.

2. Assuming the model continues to hold, use the equation you found above to predict the amount of time that will be needed to produce the new table design after 24 tables have been produced (i.e. how long will it take to produce the 25<sup>th</sup> table?). Round your answer the nearest tenth of an hour. Do you think this is realistic? Why or why not?

Logarithmic Regression can't use any values of  $x$  that are 0 or negative. You may need to perform a transformation on the data or eliminate a zero point.

## ANSWER KEY

1.  $y = -7.711\ln(x) + 29.261$

2. 4.4 hours, answers will vary