

**Question 2: Does the Gestation variable has any effect on the baby birthweight?**

**glm\_model2 (Gestation as variable)**

```
glm_model2 <- birthweight_tbl %>%  
  mutate(binary_response = as.numeric(LowBirthWeight == "Normal")) %>%  
  ml_logistic_regression(binary_response ~ Gestation)  
glm_model2
```

**The following result is obtained:**

```
Formula: binary_response ~ Gestation  
Coefficients:  
(Intercept) Gestation  
31.3126582 -0.8773096
```

**Interpretation:**

Replacing the value -0.8773096 in the logistic regression formula, log odds decrease by  $(\exp(-0.8773096)-1)$  which is a value of 58.4% . This means that the risk of low birth weight decreases by 58.4% for the gestation variable. Thus, birth weight value being low is not influenced by a high gestation. That is why, the log odds decreases by 58.4%.

**Question 3: Do both the variables smoke and gestation have any effect on the baby birthweight?**

A third logistic model is formulated based on question 3 and is as follows:

```
glm_model3 <- birthweight_tbl %>%  
  mutate(binary_response = as.numeric(LowBirthWeight == "Normal")) %>%  
  ml_logistic_regression(binary_response ~ Gestation + smoker)
```

glm\_model3

**The following result is obtained:**

Formula: binary\_response ~ Gestation + smoker

Coefficients:

(Intercept) Gestation smoker

49.162036 -1.468332 5.484319