

**Practice Problem 1**

Month in 2024 ( $t$ )	Barrels of Gasoline produced per month (in millions)
2	8.28
3	8.46
4	8.84
5	8.82
6	9.11
7	9.24

The table gives the number of barrels of gasoline produced per month during the 2024 calendar year, where January is month 1, February is month 2, etc., and  $G(t)$  is the output of gasoline barrels per month in millions. A linear regression is used to model  $G$ . If this linear pattern continues, how many barrels will be produced in the month of September 2024?

- (a) 10.234 million barrels
- (b) 10.042 million barrels
- (c) 9.657 million barrels
- (d) 9.465 million barrels

**Practice Problem 2**

Using the same data from Problem 1, in what month will the number of barrels produced exceed 10 million?

- (a) August
- (b) September
- (c) October
- (d) December

**Practice Problem 1 Solution:**

(c) 9.657 million barrels

After finding the linear regression for  $G(t)$ , which was  $G(t) = 0.1922857 \dots t + 7.92638 \dots$ , substituting in 9 for  $t$  would result in a value of 9.65695... million barrels.

**Practice Problem 2 Solution:**

(c) October

Using the linear regression model found in Problem 1, set this equal to or greater than 10, and solve the equation (inequality). This will result in a value of approximately 10.784, therefore the production will exceed 10 million barrels in October.

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