

## Answer on Question 52123, Economics, Microeconomics

### Question:

Suzuki Motors has one fixed input, the long-term lease on its factory building for which the rent is \$5000 per production period. Use the data shown here to determine Average Cost, Average Variable Cost and Marginal Cost for each output rate shown:

Q	1	2	3	4	5
TVC	\$1000	\$2000	\$3000	\$4000	\$5000

### Solution:

Q	TFC	TVC	TC	AC	AVC	MC
1	\$5000	\$1000	\$6000	\$6000	\$1000	\$1000
2	\$5000	\$2000	\$7000	\$3500	\$1000	\$1000
3	\$5000	\$3000	\$8000	\$2667	\$1000	\$1000
4	\$5000	\$4000	\$9000	\$2250	\$1000	\$1000
5	\$5000	\$5000	\$10000	\$2000	\$1000	\$1000

By the definition, total cost is made up of total fixed cost plus total variable cost:

$$TC = TFC + TVC.$$

Total fixed cost are the total cost per period of time incurred by the firm for fixed inputs. From the condition of the task we know that Suzuki Motors has one fixed input, the long-term lease on its factory building for which the rent is \$5000 per production period. So,  $TFC = \$5000$ . Total variable cost are the total cost incurred by the firm for variable inputs. We also know  $TVC$  from the condition of the task.

Let's obtain the total cost:

$$TC_1 = TFC_1 + TVC_1 = \$5000 + \$1000 = \$6000,$$

$$TC_2 = TFC_2 + TVC_2 = \$5000 + \$2000 = \$7000,$$

$$TC_3 = TFC_3 + TVC_3 = \$5000 + \$3000 = \$8000,$$

$$TC_4 = TFC_4 + TVC_4 = \$5000 + \$4000 = \$9000,$$

$$TC_5 = TFC_5 + TVC_5 = \$5000 + \$5000 = \$10000.$$

By the definition average cost is equal to total cost divided by the output quantity  $Q$ :

$$AC_1 = \frac{TC_1}{Q_1} = \frac{\$6000}{1} = \$6000,$$

$$AC_2 = \frac{TC_2}{Q_2} = \frac{\$7000}{2} = \$3500,$$

$$AC_3 = \frac{TC_3}{Q_3} = \frac{\$8000}{3} = \$2667,$$

$$AC_4 = \frac{TC_4}{Q_4} = \frac{\$9000}{4} = \$2250,$$

$$AC_5 = \frac{TC_5}{Q_5} = \frac{\$10000}{5} = \$2000.$$

Average variable cost is a firm's total variable cost divided by the quantity of output produced:

$$AVC_1 = \frac{TVC_1}{Q_1} = \frac{\$1000}{1} = \$1000,$$

$$AVC_2 = \frac{TVC_2}{Q_2} = \frac{\$2000}{2} = \$1000,$$

$$AVC_3 = \frac{TVC_3}{Q_3} = \frac{\$3000}{3} = \$1000,$$

$$AVC_4 = \frac{TVC_4}{Q_4} = \frac{\$4000}{4} = \$1000,$$

$$AVC_5 = \frac{TVC_5}{Q_5} = \frac{\$5000}{5} = \$1000.$$

The marginal cost is defined as:

$$MC = \frac{\Delta TVC}{\Delta Q}.$$

And finally we can obtain the marginal cost:

$$MC_1 = \frac{TVC_1}{Q_1} = \frac{\$1000}{1} = \$1000,$$

$$MC_2 = \frac{TVC_2 - TVC_1}{Q_2 - Q_1} = \frac{\$2000 - \$1000}{2 - 1} = \$1000,$$

$$MC_3 = \frac{TVC_3 - TVC_2}{Q_3 - Q_2} = \frac{\$3000 - \$2000}{3 - 2} = \$1000,$$

$$MC_4 = \frac{TVC_4 - TVC_3}{Q_4 - Q_3} = \frac{\$4000 - \$3000}{4 - 3} = \$1000,$$

$$MC_5 = \frac{TVC_5 - TVC_4}{Q_5 - Q_4} = \frac{\$3000 - \$2000}{5 - 4} = \$1000.$$

**Answer:**

For convenience, all the data are summarized in the table below:

Q	TFC	TVC	TC	AC	AVC	MC
1	\$5000	\$1000	\$6000	\$6000	\$1000	\$1000
2	\$5000	\$2000	\$7000	\$3500	\$1000	\$1000
3	\$5000	\$3000	\$8000	\$2667	\$1000	\$1000
4	\$5000	\$4000	\$9000	\$2250	\$1000	\$1000
5	\$5000	\$5000	\$10000	\$2000	\$1000	\$1000