Every day Josephine buys coffee and a lottery ticket she has a budget of 12$. The coffee at the store she goes to costs 0.75$ and lottery tickets are 1.50 each. Graph Josephine's budget constraint by moving the endpoints of the line segment in the graph

A budget line is a downward sloping curve that shows the different combinations of goods that just exhaust the consumer's income. The budget constraint is stated as:

$$M = XPx + YPy$$

This is where:

- M is the consumer's income,
- Px is the price of good X and,
- Py is the price of good Y.

Let X represent coffee and Y represents lottery tickets.

Thus; the price of good coffee is $Px = \$0.75$ and the price of lottery tickets is $Py = \$1.5$. Given that Josephine's income is $M = \$12$, the budget constraint will be equal to:

$$12 = 0.75X + 1.5Y$$

To be able to plot the budget constraint, we will need two points.

Assume that Josephine spends all her income on Y. Then, she will consume 0 units of X and some units of Y. The amount of Y necessary to exhaust her income is equal to:

$$12 = 0.75Y + 1.5(0)$$

$$Y = \frac{12}{1.5} = 8 \; lottery \; tickets.$$

Thus, we have a point $A(X, Y) = (0, 8)$.

In the same way, let's assume that Josephine spends all her income on X. Then, she will consume 0 units of Y and some units of Y. The amount of Y necessary to exhaust all her income is equal to:
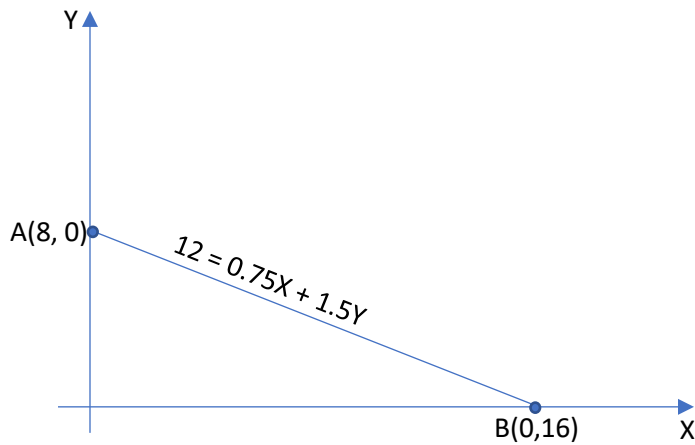
$$12 = 0.75X + 1.5Y(0)$$

$$X = \frac{12}{0.75} = 16 \; units \; of \; coffee.$$

Thus, we have another point:

$$B(X, Y) = (16, 0)$$

Plotting the two points, we have the budget line represented in the figure below.