1. Reebok is designing a new type of Crossfit shoe, the Nano XIX. The fixed cost for the production will be $24,000. The variable cost will be $18 per pair of shoes. The shoes will sell for $120 for each pair. Graph the cost and revenue functions and determine how many pairs of sneakers will have to be sold for the company to break even on this new line of shoes.

C(x) = mx + b; b = fixed cost, m = marginal/variable cost

b = $24,000

m =$18 per pair of shoes

R(x) = px; p = price per unit

p = $120 per pair of shoes

C(x) = 18x + 24,000

R(x) = 120x

Graph of C(x) and R(x) is shown below.

Break even quantity of sneakers is found when R(x) = C(x)

By this equation, the break-even quantity can be found graphically or algebraically.

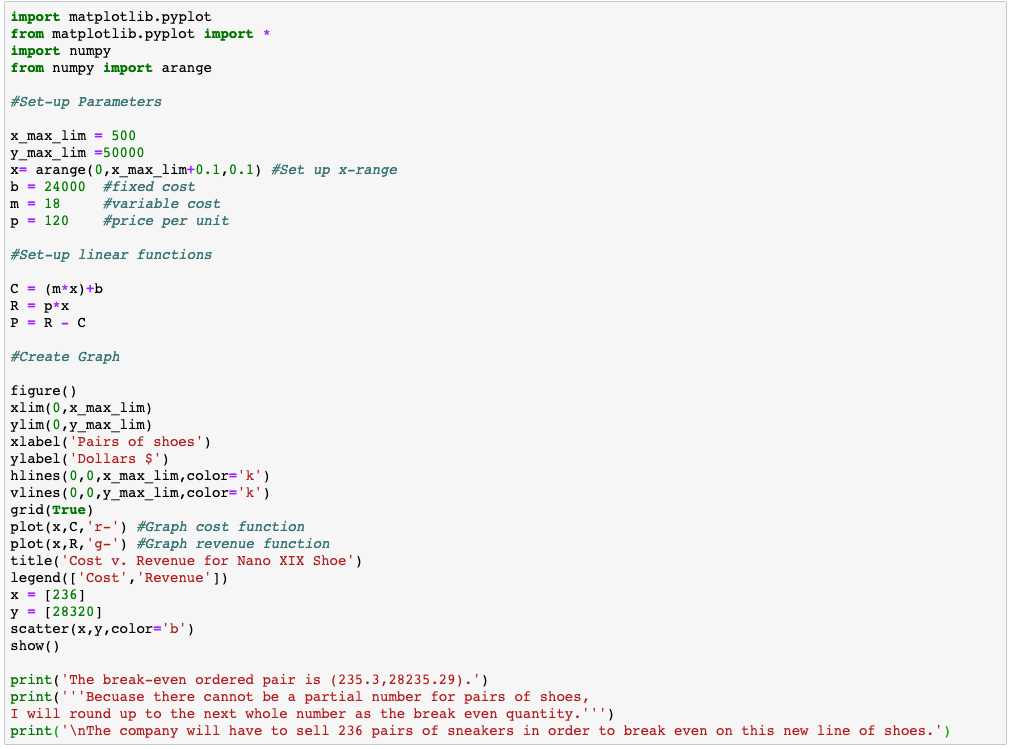
Via Algebra:

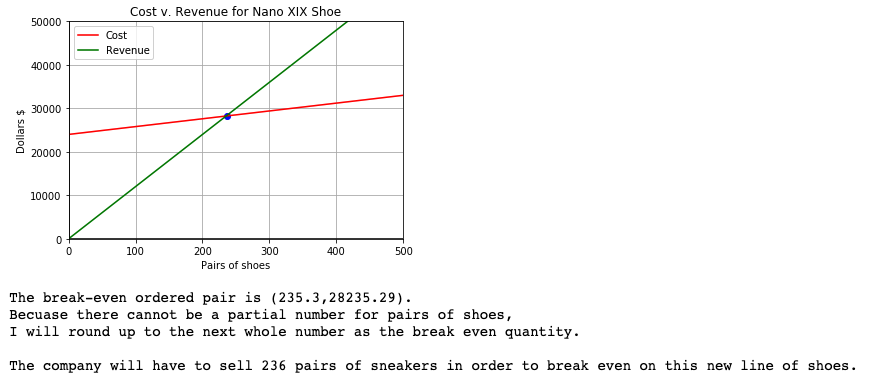
120x = 18x +24,000

102x = 24,000

x = 235.294 pairs of shoes. X must be a whole number. Cannot sell fraction of a pair of shoes. Therefore, will round up to the next whole pair of shoes as the break-even quantity.

**Break even quantity is 236 pairs of shoes.**

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