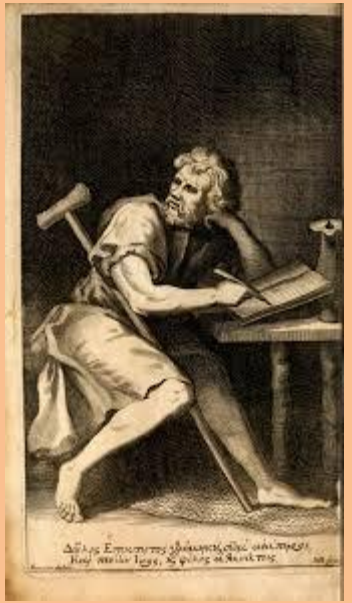
Developing character is a process, not a choice

It is difficulties which show what men are. Therefore when a difficulty falls upon you, remember that Zeus, like a trainer of wrestlers, has matched you with a rough young man. For what purpose? you may say. Why, that you may become an Olympic conqueror; but it is not accomplished without sweat.

—Epictetus (55-135 AD). *Discourses and Selected Writings.*



Thinking about average cost (AC)

Profits = revenues – costs

Revenues = $(P)(Q)$ where Q= output and P= output price

Profits = $(P)(Q)$ – costs

Multiply costs by a "fancy" one = $\frac{Q}{Q}$

Profits = $(P)(Q) - (costs)\frac{Q}{Q}$

Profits = $(P)(Q) - \left(\frac{costs}{Q}\right)(Q)$

Note that $\left(\frac{costs}{Q}\right)$ *equals average cost (AC)*

Thinking about average cost (AC)

Note that $\left(\frac{costs}{Q}\right)$ *equals average cost (AC)*

Remember: Profits = $(P)(Q) - \left(\frac{costs}{Q}\right)(Q)$

Profits = $(P)(Q) - (AC)(Q)$

Profits = $\left[P - (AC)\right](Q)$

So long as you can operate producing a level of Q where AC < P (where average cost is less than price) you can make a profit.

Thinking about average variable cost (AVC)

Profits = $(P)(Q)$ – costs

Costs = $variable\ costs + fixed\ costs$

Profits = $(P)(Q) - variable\ costs - fixed\ costs$

Profits = $(P)(Q) - VC - FC$

Multiply variable costs by a "fancy" one = $\frac{Q}{Q}$

Profits = $(P)(Q) - (VC)\frac{Q}{Q} - FC$

Profits = $(P)(Q) - \left(\frac{VC}{Q}\right)Q - FC$

Note that $\left(\frac{VC}{Q}\right)$ = average variable costs

Thinking about average variable cost (AVC)

Profits = $(P)(Q) - (AVC)\,Q - FC$

Profits = $[P - AVC](Q)$ - FC

So long as you can operate at a Q where average variable cost is less than price, you should produce something so that your profits will be greater than -FC (you won't lose more than fixed costs).

If there is no way you can make AVC less than price, you should not produce anything, because your highest possible profits are –FC.

Thinking about average variable cost (AVC)

Summary: If you can operate at a Q such that

P > AC (average cost less than price)

you will make profits. But regardless of whether profits are positive or negative, you should produce something if you can make

$P > AVC$ (average variable cost less than price)

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Average variable cost = variable cost / output = 60/23 = 2.61

Produce wheat?	Nitrogen (lbs / acre)	Wheat yield (bushels / acre)	Average variable Costs ($ / acre)	A…e)	Average revenues ($ / acre)	Private profits ($ / acre)
NO	0.00	0.00	------	------	------	$ (50.00)
Yes	-	23.00	$ 2.61	$ 4.78	$ 3.00	$ (41.00)
Yes	10.00	25.00	$ 2.44	$ 4.44	$ 3.00	$ (36.00)
Yes	20.00	30.50	$ 2.03	$ 3.67	$ 3.00	$ (20.50)
Yes	30.00	40.00	$ 1.58	$ 2.83	$ 3.00	$ 7.00
Yes	40.00	55.00	$ 1.16	$ 2.07	$ 3.00	$ 51.00
Yes	50.00	45.20	$ 1.44	$ 2.54	$ 3.00	$ 20.60
Yes	60.00	45.15	$ 1.46	$ 2.57	$ 3.00	$ 19.45

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Average cost = total cost / output = 110 /23 = 4.78

Produce wheat?	Nitrogen (lbs / acre)	Wheat yield (bushels / acre)	A variable ($ / acre)	Average total costs ($ / acre)	Average revenues ($ / acre)	Private profits ($ / acre)
NO	0.00	0.00	------	-----	------	$ (50.00)
Yes	-	23.00	$ 2.61	$ 4.78	$ 3.00	$ (41.00)
Yes	10.00	25.00	$ 2.44	$ 4.44	$ 3.00	$ (36.00)
Yes	20.00	30.50	$ 2.03	$ 3.67	$ 3.00	$ (20.50)
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Average revenue = total revenue / output =
(P)(Q)/(Q) = P, the price, always.

Produce wheat?	Nitrogen (lbs / acre)	Wheat yield (bushels / acre)	Averag variable Costs ($ / acre)	age total ($ /	Average revenues ($ / acre)	Private profits ($ / acre)
NO	0.00	0.00	------	------	---	$ (50.00)
Yes	-	23.00	$ 2.61	$ 4.78	$ 3.00	$ (41.00)
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Profits = (price – average cost)(output) = (3 – 4.78)(23) = -41
(but when you produce no wheat you have to just know profits = - fixed cost)

Produce wheat?	Nitrogen (lbs / acre)	Wheat yield (bushels / acre)	Average variable Costs ($ / acre)	Average to costs ($ / acre)	($ /	Private profits ($ / acre)
NO	0.00	0.00	------	------	------	$ (50.00)
Yes	-	23.00	$ 2.61	$ 4.78	$ 3.00	$ (41.00)
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