The Keynesian Multiplier[1]
In-Class Problem[2]

Think about an economy for which the GDP growth rate has slowed to less than 1% and the government has decided to offer a stimulus plan in an effort to increase economic growth and ward off a worsening recession. You're the nation's chief economic advisor and have been tasked with raising nominal GDP from $5 trillion to $5.25 trillion, and to maximize any potential increase employment at the same time. You've observed that the economy tends towards saving 40% of any increase in income.

a) Discuss the basics of the stimulus plan you might design

- Infrastructure, Defense, R&D, Capital Investment spending
- Social and transfer payment spending
- Some combination of the two

b) Based on what you know, what are the two basic forms of ΔGDP you'll need to consider and what is the Keynesian Multiplier each form yields?

Government Expenditure Form

$$\Delta GDP = \Delta AAS \; x \; \frac{1}{1-MPC}$$

Transfer Payment Form

$$\Delta GDP = \Delta AAS \; x \; \frac{MPC}{1-MPC}$$

c) Why are these multipliers so different?

Transfer payments miss the first round effect of the basic Keynesian Multiplier

[1] This In-Class Problem is intended to present an abbreviated discussion of the included economic concepts and is not intended to be a full or complete representation of them or the underlying economic foundations from which they are built.

[2] This problem was developed by Rick Haskell (rick.haskell@utah.edu), Ph.D. Student, Department of Economics, College of Social and Behavioral Sciences, The University of Utah, Salt Lake City, Utah (2014).

d) What would have to be the level of stimulus spending required to reach your goal under each of the two forms? (this will require two different calculations)

To do this you're going to have to start by determining the change in GDP, which is $.25 trillion, or $25 billion. Now plug this value into the each of the separate ΔGDP equations along with other values you've been given.

Government Expenditure Form

$$\Delta GDP = \Delta AAS \; x \; \frac{1}{1-MPC} \qquad (1)$$

$$\$250 = \Delta AAS \; x \; \frac{1}{1-.6}$$

$$\$250 = \Delta AAS \; x \; \frac{1}{.4}$$

$$\$250 \; x \; .4 = \Delta AAS$$

$$\$100 = \Delta AAS$$

Transfer Payment Form

$$\Delta GDP = \Delta AAS \; x \; \frac{MPC}{1-MPC} \qquad (2)$$

$$\$250 = \Delta AAS \; x \; \frac{.6}{1-.6}$$

$$\$250 = \Delta AAS \left(\frac{.6}{.4}\right)$$

$$\$250 \left(\frac{.4}{.6}\right) = \Delta AAS$$

$$\$166.66 = \Delta AAS$$

e) Show that the multiplier for each of the two ΔGDP forms is mathematically accurate (this will require forming and summing tables for each of the two forms).

Government Expenditure Form		**Transfer Payment Form**	
ΔAAS	100	ΔAAS	166.66
MPC	0.6	MPC	0.6
Round	Spending	Round	Spending
1	100.00	1	99.99
2	60.00	2	59.99
3	36.00	3	35.99
4	21.60	4	21.59
5	12.96	5	12.95

6	7.78	6	7.77
7	4.67	7	4.66
8	2.80	8	2.80
9	1.68	9	1.68
10	1.01	10	1.01
11	0.60	11	0.60
12	0.36	12	0.36
13	0.22	13	0.22
14	0.13	14	0.13
15	0.08	15	0.08
16	0.05	16	0.05
17	0.03	17	0.03
18	0.02	18	0.02
19	0.01	19	0.01
20	0.01	20	0.01
Total	249.99		249.89

It's worth noting that this looks very different from what we usually see when we compared two columns representing the two ΔGDP forms. This is because we normally are comparing the same ΔAAS in each column and coming up with two different impacts on GDP. In this case, we're comparing two different ΔAAS levels and coming up with the same impact on GDP.