**General Math Functions Pop Test**

**Part 1 - Can You Graph Linear Equations?**

1) y = -x + 6 2) 3x - y = 3  **3)** y = 5 - ¾ x

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**Part 2 - Use Your Skills to Figure out the Equations!**

1. (3, 8) and (4,-10)
2. Oliver has $7.95. He buys six newspapers and has $.85 left. If *x* represents the cost of the newspaper in cents, how much is each newspaper?

**Part 3 - How are you at Solving Unknowns?**

If y = 2 please solve for x.

1. 3x + 6y < 42
2. 5x – 20 ≥ 40y
3.  + 7y ≤ 2*x*

**Part 4 - Do You Remember How to Find the Non-Shaded Region?**

1. x ≤ 6
2. y > 3
3. -1 ≤ x < 2
4. -1 < y ≤ 0
5. y ≤ 2x – 1
6. 2x - y < 6

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**Part 5 - Simultaneous Equations**

The world is peril!

Gaia the spirit of the earth can no longer stand the terrible destruction plaguing our planet. She sent five magic rings to five special young people. When the five powers combine they summon earth greatest champion, CAPTAIN PLANET!

The evil villain Lutang Plunder has been polluting our suburb for some time now. There is now 100 000 pieces of rubbish in South Oakleigh as we speak and he continues to litter 250 pieces a day. Captain Planet is capable of cleaning up 650 pieces of rubbish a day.

How many days it would take for Captain Planet to clear the rubbish from South Oakleigh as Plunder continues to litter? How much rubbish would have Captain Planet cleared by then?

**Part 6 - Break Even Point**

Lady Kylah wants to become a local pie seller but wouldn’t be able to make her own pies even if her life depended on it. She would like to sell the very popular and exotic asparagus pie. She finds two pie suppliers on the internet, “Pie of Sun Yun Gai” and “Cutie Pies”. She calls them both and gathers the manufacturing information of each company.

Pie of Sun Yun Gai can manufacture asparagus pie at $3.5 per pie with an upfront setup fee of $50.

Cutie Pies can manufacture the pies at $2.5 with the upfront setup fee of $100.

Now Lady Kylah plans to sell the pies later for $5 per delicious asparagus pie.

1. Find the Break Even dollar amount of Pie of Sun Yun Gai.
2. Find the Break Even dollar amount of Cutie Pies.
3. How many pies would need to sell to break even with each of these companies?
4. Which company will be quicker to break even with?
5. Which company would you recommend to James and under what reason?

**Part 7 - Linear Programming**

Derek and Jade are skillful makeup artists who specialize in selling lush lipsticks. The two types they sell are “Tiara” and “Blue Steel”. Derek knows that he needs to hold at least 150 “Tiara”. Jade only requires a maximum of 350 “Blue Steel”. Between the two they can only hold a maximum of 900. They can sell “Tiara” for a profit of $2 each and the “Blue Steel” for $3 profit.

Their job is to find out the best amount of lipstick to stock that would maximize their profit.

1. Determine which items is x and which is y and set up all linear inequality constraints equations.
2. Draw the linear inequality equations and shade the “non-required” region.
3. Find all intersecting boundary points.
4. Set up the Profit Equation.
5. Which intersecting boundary point will maximize profit?