Name: _____ **Show work needed to justify your answer.** Date: _____

**HW: # 8b:** Math IBSL - Standard 8 - Linear Functions

5 points

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1. Find $f^{-1}(x)$ for each of the following linear functions. Give your answers in the form $f^{-1}(x) = mx + c$.

   **a** $f(x) = \frac{1}{2}x + 4$ **b** $f(x) = -3x + 9$

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2. A t-shirt company imprints logos on t-shirts. The company charges a one-time set-up fee of \$65 and \$10 per shirt. The total cost of $x$ shirts, in CAD, is given by $f(x) = 10x + 65$.

   **a** Find the total cost for 55 t-shirts.

   **b** Find $f^{-1}(x)$ and tell what $x$ and $f^{-1}(x)$ represent in this function.

   **c** Find the number of t-shirts in an order with a total cost of \$5065.

Name: _____ **Show work needed to justify your answer.** Date: _____

**HW: # 8b:** Math IBSL - Standard 8 - Linear Functions 5 points

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**3** A new fitness gym is offering two membership plans.

Plan A: A one-off enrollment fee of $79.99, and a further monthly fee of $9.99 per month

Plan B: no enrollment fee, and monthly fees of $20.00 per month

**a** Find a linear model for each plan, where total cost is a function of number of months. Identify the variables you use.

After a certain number of months, Plan A becomes more cost-effective than Plan B.

**b** Use the models from part **a** to determine how many months a person needs to be a member before Plan A becomes more cost-effective than Plan B.