Some guidelines for your first assignment

- You must read and attempt the problems before meeting with your team. Even if you aren’t able to obtain all the answers, being prepared during the team meetings helps your group work more efficiently during the meeting.

- Don’t be discouraged if you cannot solve most of the problems on your own — this is perfectly normal. This is part of why you are being assigned to work on these assignments as a group; make sure to discuss your questions and ideas with your teammates.

- If your team is having trouble with a particular problem, try visiting the Math Lab (our math tutoring center in EH B860) with your teammates to get help.

- Make sure everyone is involved and no-one feels excluded during the meetings. If you notice someone is shy, actively encourage them to contribute to the group!

- Ask your teammates to explain their reasoning behind their answers if you don’t understand it. Remember that all members of the team are responsible for this assignment, and everyone should be on board with what the team turns in.

- Write up your final solutions neatly, and make sure your explanations are clear and complete. Make sure you go over the Team Homework Tutorial on the course website:

  https://instruct.math.lsa.umich.edu/support/teamhomework/
1. The graph below shows the average monthly temperature in Ann Arbor over a twelve-month period, where January is month 1. Let $T = A(m)$ be the average monthly temperature (in degrees Fahrenheit) in Ann Arbor in month $m$.

![Graph of temperature vs. month]

(a) Evaluate and interpret $A(3)$.
(b) Solve the equation $A(m) = 80$ for $m$. What is the meaning of your solution in the context of this problem?
(c) What is the warmest month in Ann Arbor? What is the coldest month?
(d) On what interval(s) of months is the temperature increasing?

2. A shelter gets 3 new kittens: Rocky, Scout, and Daisy. Let $R$, $S$, and $D$ be the weight, in ounces, of Rocky, Scout, and Daisy, respectively. The weight measurements of each kitten $t$ days after arriving at the shelter is shown in the table below.

<table>
<thead>
<tr>
<th>$t$</th>
<th>2</th>
<th>4</th>
<th>7</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R$</td>
<td>30.25</td>
<td>32.50</td>
<td>34.75</td>
<td>37.00</td>
</tr>
<tr>
<td>$S$</td>
<td>33.02</td>
<td>34.13</td>
<td>35.93</td>
<td>34.13</td>
</tr>
<tr>
<td>$H$</td>
<td>31.30</td>
<td>32.60</td>
<td>34.55</td>
<td>35.85</td>
</tr>
</tbody>
</table>

(a) According to this data, could Rocky’s weight be a function of Scout’s weight?
(b) Could Scout’s weight be a function of Rocky’s weight?
(c) Find the average rate of change of the function $S$ on the interval $2 \leq t \leq 9$. Give a practical interpretation of this quantity. Include units.
(d) Which of $R$, $S$, or $H$ could be a linear function of $t$? For any that could be, find a formula.
3. Zander, a cat, is supposed to eat 250 calories a day. He receives a mixture of wet and dry food. His dry food has 391 calories per cup, while his wet food contains 418 calories in a 12.5-ounce can.

Another cat, Jasper, is on a special diet. He should be eating 300 calories a day, with a mixture of special dry food that has 541 calories per cup and special wet food that has 177 calories in a 5.5 ounce can.

(a) Let $w$ be the amount of wet food, in ounces, that Zander eats each day, and let $d$ be the amount of dry food, in cups, that he eats each day. Write an equation of the form $w = f(d)$ that expresses $w$ as a function of $d$. Draw a graph of this function.

(b) Give a practical interpretation of the slope and vertical intercept of the graph you found in part (a).

(c) Zander and Jasper’s person wants to make her life easier by feeding Zander and Jasper the same amount of their dry foods and the same amount of their wet foods each day. (In other words, however much dry food she feeds Zander, she wants to feed Jasper the same amount of special dry food.) Can she do this? If so, how much of each food should she give them? Give your answers rounded to the nearest hundredth, and be sure to include units.