1) Sketch a quality graph of the following equations.

a) \( y = 8 - \frac{5}{3}x \)

the gallons of gas left is a function of how many miles driven

\[
\begin{align*}
\text{y} &= 8 - \frac{5}{3}x \\
&= 6 \frac{1}{3} \\
&= (1, 6 \frac{1}{3})
\end{align*}
\]

b) \( 4x - 3y + 15 = 0 \)

\[
\begin{align*}
\text{let } x & = 0 \\
4(0) - 3y + 15 &= 0 \\
-3y &= -15 \\
y &= 5 \\
&= (0, 5)
\end{align*}
\]

\[
\begin{align*}
\text{let } y & = 0 \\
x &= \frac{15}{4} \\
&= (3.75, 0)
\end{align*}
\]

The height of a plant is a function of the days since Monday

\[
\begin{align*}
\text{days since Monday} & = \frac{\text{height of the plant}}{\text{cm}} \\
\text{days since Monday} & = \frac{5}{2} \\
\text{days since Monday} & = \frac{15}{3}
\end{align*}
\]

\[y = \frac{4}{3}x + 5\]

2) Find the equation of the line that passes through the given points:

a) \( A(2, 7) \quad B(5, -3\frac{1}{2}) \)

\[
\begin{align*}
\Delta y &= 7 - 3 \frac{1}{2} \\
&= \frac{10}{2} \\
&= -3 \frac{1}{2}
\end{align*}
\]

\[
\begin{align*}
\Delta x &= 5 - 2 \\
&= \frac{3}{2}
\end{align*}
\]

\[
\begin{align*}
\text{y} - 7 &= -3 \frac{1}{2} \times (x - 2) \\
y &= -3 \frac{1}{2}x + 14
\end{align*}
\]
b) A(4, 6)   B(4, -2)

The slope of the line is undefined
although the equation is
x = 4. The x value will
always be 4 in this graph.

3) Three lines \( l_1, l_2, \) and \( l_3 \) are graphed below. As you learned
in this unit, each line has an equation of the form \( y = c + dx \).

a. Describe the value of \( d \) in the equation of the line \( l_1 \).
Assume that the scale on the y-axis is the same as
the scale on the x-axis.

The slope is about a 45° angle
and therefore is \( \frac{\sqrt{2}}{2} \). The line
is increasing less than

b. Compare the value of \( d \) in the equation of \( l_1 \) to the
value of \( d \) in the equation of the line \( l_1 \).

The slope in \( l_3 \) is negative compared
to its positive slope in \( l_1 \). The slope
in \( l_3 \) is a negative number greater than \(-1\),

\( \) Opposite

(c) Determine the value of \( d \) in the equation of line \( l_2 \).

The slope in \( l_2 \) is \( 0 \). The line is horizontal and the

y value never changes.

d. Are the values of \( c \) equal in the equations of any two of the three lines \( l_1, l_2, \) and \( l_3 \)? Explain
your answer.

In lines \( l_1 \) and \( l_2 \), they intersect on the y-axis.
Therefore, they both have the same y-intercept.
4) Four minutes after turning an oven on to pre-heat it, Pat observed the oven temperature was 290°F. Two minutes after that, the temperature was 400°F. **Represent these data on a graph.**

a. Assuming the oven temperature increases at a constant rate, determine the rate of change in the temperature over time.
b. Using \( x \) to represent minutes since the oven was turned on, express the temperature of the oven, \( f(x) \), as a function of time.
c. Using your function equation, what was the temperature of the oven the moment it was turned on? Support your answer.
d. When Pat walked past the oven a while after turning it on, she noticed that the temperature read 482.5°F. Use your function equation to determine how long the oven has been on. Organize your work, and support everything graphically.

The oven temp. is a function of time

---

**Variables:**
- \( x \): minutes since oven was turned on
- \( f \): temp. of oven

**Data:**
- \( (4, 290) \)
- \( (6, 400) \)

**a.**
\[
\frac{\Delta f}{\Delta x} = \frac{400 - 290}{6 - 4} = \frac{110}{2} \text{ Temp. increase}
\]
\[
= 55 \text{ Temp. increase in temp. per min}
\]

**b.**
\[
y - 290 = 55(x - 4)
\]
\[
y - 290 = 55x - 220
\]
\[
\therefore y = 55x + 70
\]

**c.** The \( y \)-int \( = 70 \).
Therefore, as soon as the oven was turned on, it was 70°F.

**d.**
\[
482.5 = 55x + 70
\]
\[
\frac{412.5}{55} = x \quad \text{7:30 seconds after} \quad \text{about} \quad 7 \text{ min.}
\]
\[
\frac{412.5}{55} = 7\frac{1}{2} \text{ (not appro)}
\]

The temperature will equal 482.5 °F.
5a) Determine the equation of the line that passes through all points in this table.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
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<tbody>
<tr>
<td>-3</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>-4</td>
</tr>
<tr>
<td>15</td>
<td>-14</td>
</tr>
</tbody>
</table>

\[
\frac{\Delta y}{\Delta x} = \frac{16 - 6}{3 - 3} = \frac{10}{-6} = -\frac{5}{3}
\]

b) A line is parallel to the line described in part a, but it passes through the point (0, 5). What is the equation of that line?

c) Another line is perpendicular to the line in part a, and it also passes through the point (-3,5). What is the equation of that line?
<table>
<thead>
<tr>
<th>Written Work</th>
<th>My work is ORGANIZED and easy to follow.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>My work is correct and complete; includes support, multiple approaches, graph/table, whenever possible.</td>
</tr>
<tr>
<td></td>
<td>I used MATH NOTATION flawlessly.</td>
</tr>
<tr>
<td>Mathematical Methods</td>
<td>I used the appropriate mathematical method to answer this question. (I applied what was taught for this section.)</td>
</tr>
<tr>
<td></td>
<td>I SUCCESSFULLY used the appropriate mathematical method to answer this question. (I correctly applied what was taught for this section.)</td>
</tr>
<tr>
<td>Evidence of Comprehension</td>
<td>I attempted to support my work.</td>
</tr>
<tr>
<td></td>
<td>I correctly supported my work. If my answer was wrong, I may not have had a chance to change my answer, but I made it clear I knew I was wrong.</td>
</tr>
<tr>
<td>Preparation</td>
<td>I did work just like this for homework.</td>
</tr>
<tr>
<td></td>
<td>I did work like this for homework, and I checked it to make sure I was right.</td>
</tr>
<tr>
<td></td>
<td>I did work like this for homework, I checked it, AND I posted it to my homework file.</td>
</tr>
</tbody>
</table>

Copy and paste your goals from the previous assessment (unless this is the first assessment of the year) below:

I shouldn't waste my time doing things that aren't asked in the question until I have finished what is asked.

**Answer each question with “yes” or “not really”:**
I did what I said I would do in my previous goals. **yes**
Following through with my goals helped me improve. **yes**
What *specific* goals will you set to improve future work:
(“Do more homework”, “try harder”, and “ask more questions” are not specific goals.)

I need to improve on time management as well as thoroughly supporting my work with multiple approaches of checking it.

What did you do well? What should you continue to do to ensure repeated success?

I got all of the steps down on making quality graphs as well as understanding the formulas and being able to apply them in context.

- **Test Score 19-21** NDA Grade A+
  - All the qualities of excellence are demonstrated throughout the test
  - Student goes beyond the normal expectations to communicate a unique method
  - Difficult problems are solved correctly and justified clearly and logically

- **Test Score 16-18** NDA Grade A
  - Excellent work. Achieving the standard for all major topics assessed
  - All or mostly all work is clear, concise, and fully supported
  - Efficient and elegant mathematical methods are applied when appropriate
  - Clear evidence of deep levels of comprehension exists throughout
  - Notation is flawless.

- **Test Score 13-15** NDA Grade A-/B+
  - Very good work. Achieving the standard for almost all of the major topics assessed
  - Most work is clear and well supported, but in several cases limited or no support is provided
  - Efficient mathematical methods are applied through much of the paper
  - Routine and traditional-style math problems are correct.
  - Evidence of comprehension exists
  - Notation is relatively flawless

- **Test Score 10-12** NDA Grade B
  - Good work. Achieving the standard for the majority of major topics
  - Some work is clear and well supported, but in several cases limited or no support is provided
  - Efficient mathematical methods are applied through some of the paper
  - Routine and traditional-style math problems are mostly correct.
  - Some evidence of comprehension exists, but in some cases results were incorrect and the error went unnoticed (revealing potential lack of understanding)
  - Notation is good in some cases, but in some cases misapplied notation becomes a distraction

- **Test Score 7-9** NDA Grade C
  - Minimally achieving the standard/“In the ballpark” on some topics.
  - Work is often unsupported
  - Some mathematical methods applied, but it is clear that some of the methods being assessed were not learned or mastered at this point
  - Reasonable evidence of understanding in some places, gaps in comprehension exist, many errors went unnoticed
  - Communication is clear in some places, incomplete in others

- **Test Score 4-6** NDA Grade D
  - Routine/basic problems are not done correctly
Major gaps in logic and/or comprehension are clearly evident
Communication is lacking
Notation errors minimal/no attempt to apply conventions to written work

- Test Score 1-3
- NDA Grade F
- Forget to do it. Leave blank. Don’t try.

Student perception of score on a 1-21 scale____18______
(No partial points, please; 15.5 is not an acceptable score.)

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Rubric rating submitted on: 11/28/2018, 1:57:01 PM by dguyette@notredameacademy.com

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Comments: