The following is separated into 4 sections that cover the entire course. You are to complete only 1 question from each section for a total of 4 questions. Thinking and communication skills are being assessed throughout this assessment.

1) Linear Relations (SECTION 1) - Circle either a.) or b.)

a.)

This graph shows information about last year’s total cost for a banquet for \( n \) students.

\[
\begin{align*}
\text{Last year:} & \\
\text{Entry 1:} & \\
C_1 & = 500 \\
\text{Entry 2:} & \\
C_2 & = 1000 \\
\text{Entry 3:} & \\
C_3 & = 1500 \\
\text{Entry 4:} & \\
C_4 & = 2000 \\
\text{Entry 5:} & \\
C_5 & = 2500 \\
\text{Entry 6:} & \\
C_6 & = 3000 \\
\text{Entry 7:} & \\
C_7 & = 3500 \\
\text{Entry 8:} & \\
C_8 & = 4000 \\
\end{align*}
\]

\[
\begin{align*}
\text{This year:} & \\
\text{Entry 1:} & \\
C_9 & = 600 \\
\text{Entry 2:} & \\
C_{10} & = 1200 \\
\text{Entry 3:} & \\
C_{11} & = 1800 \\
\text{Entry 4:} & \\
C_{12} & = 2400 \\
\text{Entry 5:} & \\
C_{13} & = 3000 \\
\text{Entry 6:} & \\
C_{14} & = 3600 \\
\text{Entry 7:} & \\
C_{15} & = 4200 \\
\text{Entry 8:} & \\
C_{16} & = 4800 \\
\end{align*}
\]

This year the cost per person has decreased by $5, but the initial fee has doubled. Determine an equation to represent total cost, \( C \), for this year.

\[
C = 11n + 1200
\]

b.)

Maddie enrols in a fitness program. Her total cost is made up of a sign-up fee and a cost per class. The table below shows information about her total cost, \( C \), in dollars, when she attends \( n \) classes.

<table>
<thead>
<tr>
<th>Number of classes, ( n )</th>
<th>Total cost, ( C )</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>67</td>
</tr>
<tr>
<td>14</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What is the sign-up fee?

Sign-up fee: $25

Is the relationship between the number of classes Maddie attends and her total cost a partial variation or direct variation?

Circle one: Partial variation  Direct variation

Justify your answer.
2) **Number Sense and Algebra (SECTION 2) - Circle either a.) or b.)**

**a.**

**Walking Around the Park**

A park in the shape of a rectangle is pictured with algebraic expressions representing its length and width, in metres.

The perimeter of the park, \( P \), can be determined using the equation

\[ P = 2l + 2w \]

Determine an equation to represent the perimeter of the park using the given sides.

- \( P = 16x + 14 \)

The perimeter of the park is 380 m.

Determine the length of the park. Show your work.

The length of the park is \( \underline{113} \) m.

**b.**

**Floored Areas**

The diagram of the floor shown below has algebraic expressions for the lengths of its sides, in metres.

Determine an unsimplified expression for the total area of the floor, \( A \), in \( \text{m}^2 \).

\[ A = 26x^2 - 21 \]
3) **Measurement and Geometry (SECTION 3) - Circle either a.) or b.)**

**a.)**

A triangle is pictured below with the length of its base labelled.

![Diagram of a triangle with base labelled 15 cm]

The area of the triangle is 123 cm². Determine the height of the triangle. Show your work.

\[ A = \frac{bh}{2} \]

\[ 123 = \frac{15h}{2} \]

\[ 246 = 15h \]

\[ h = \frac{246}{15} = 16.4 \text{ cm} \]

**b.)**

Look at the following diagram.

![Diagram of a triangle with angle 44° and alternate angles labeled]

Complete the chart below with the values of \( x \) and \( y \). Justify your answers using geometric properties.

<table>
<thead>
<tr>
<th>Value</th>
<th>Justification using geometric properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>( x = \frac{180^\circ - 44^\circ}{2} )</td>
<td>( = 73^\circ ) SAT</td>
</tr>
<tr>
<td>( y = \frac{180^\circ - 44^\circ}{2} )</td>
<td>( = 68^\circ ) ITT</td>
</tr>
</tbody>
</table>
4) **Analytic Geometry (SECTION 4) - Circle either a.) or b.)**

a.) **Saving on Apples**

Janice and Irene buy apples at different stores. Both stores sell apples by the kilogram.

- Janice pays $6.00 for 3.75 kg of apples.
- Irene pays $5.25 for 3 kg of apples.

How much **more** will Irene pay than Janice if they each bought 9 kg of apples?

Show your work.

![Image of calculations]

b.) **Hamburgers and Hot Dogs**

At a local event, the ratio of hamburgers to hot dogs sold is 5:3.

The number of hamburgers sold is 275.

How many more hamburgers than hot dogs are sold?

Show your work.

There are __________ more hamburgers than hot dogs sold.

![Image of calculations]