winmath
Career Infused Capstone Projects

Name:

Green Space

After seeing the park you and your team designed, another city wants to hire you to design a park. The city officials have several questions they would like you to address before getting started.

Question 1

A triangular section of the park has side lengths of 50 m and 100 m.

Write an explanation for the client that shows the range of possible values for the length of the third side of the triangular section. To help you work, you might create a drawing on paper. Include the following in your explanation.

- What is the rule for side lengths of a triangle?
- How can you use the rule to determine the range for the missing side?
- Use an inequality to show that a value outside of the range will not work.

Question 2

Another triangular section of the park has angles of 35˚ and 75˚.

Write an explanation for the client that shows what the third angle measure would be. Include the following in your explanation:

- What is the rule for the sum of the measures of the interior angles of a triangle?
- What equation did you use to determine the measure of the missing angle?
- How can you have two different triangles with these angle measures that are not the same size?

Question 3

a) Write the formula to find the circumference of a circle.

b) Write the formula to find the area of a circle.

c) Fill in the table to show the circumference and area of a circle with a radius of 1 m, 2 m, and 4 m.

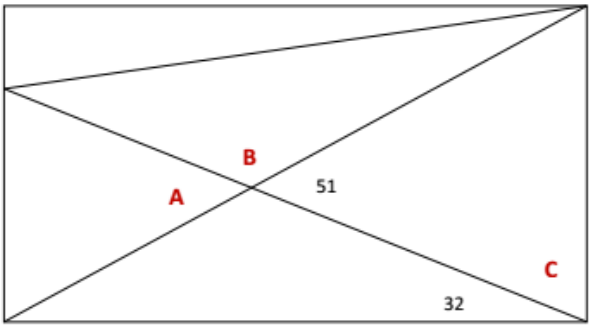
Radius	Circumference	Area
1m	m	m^2
2m	m	m^2
4m	m	m^2

d) Compare the relationship between the circumference and area for each of these circles. Write an explanation for the client that shows the relationship between various measurements in a circle. Include the following in your explanation:

- How does the circumference change when the radius is doubled?
- How does the area change when the radius is doubled?

Question 4

Use the diagram below to answer the following question.



Explain to your client how to solve for the measures of the three unknown angles. Be sure to use angle vocabulary such as complementary, supplementary, and vertical where appropriate. Include the equations you use for each of your calculations.

- Define each angle type.
- Explain how to use the definition to determine the missing measure. Explain or show how to determine the measures of missing angles.

Question 5

You provide the client with a chart that shows a cylinder, a cone, a rectangular prism, and a rectangular pyramid as possibilities for the three-dimensional design of the base. Complete the table by describing the shape of the resulting face if each of the shapes is sliced vertically and horizontally.

Three-Dimensional Shape	Shape of the Resulting Face After a Vertical Slice	Shape of the Resulting Face After a Horizontal Slice