GREEN SPACE

Rubric and Sample Responses

Question 1

RUBRIC

Score	Description
4	Response demonstrates thorough understanding of triangle construction. • Student gives the rule for side lengths of triangles. (1 point) • Student uses an inequality to determine the range of possible lengths for the third side. (2 points) • Student demonstrates how a value of the range does not follow the rule. (1 point)

SAMPLE RESPONSE

In order to form a triangle, the length of any two sides must be greater than the length of the third side. We can use the given side lengths of 50 m and 100 m to determine the range of values that the third side could be by setting up several inequalities.

50m + 100m > x

150m > *x*

50m + *x* > 100m

x > 50m

150m > *x* > 50m

The third side of the triangle must be longer than 50 m and short than 150 m. If we used a side length outside this range (such as 40 m), the inequality would not be true. 40 + 50 is NOT > 100.

Question 2

RUBRIC

Score	Description
4	Response demonstrates thorough understanding of triangle construction. • Student gives the rule for the measures of the interior angles of triangles. (1 point) • Student uses an equation to determine the measure of the missing angle. (2 points) • Student demonstrates that triangles with these angle measures can be different sizes. (1 point)

SAMPLE RESPONSE

The measures of the interior angles of a triangle always add up to 180°. The measures of these two given angles can be substituted into a formula to determine the measure of the missing angle.

$35° + 75° + x° = 180°$
$110° + x° = 180°$
$x = 70$

Question 3

RUBRIC

Score	Description
5	Response demonstrates thorough understanding of the relationship between circumference and area of a circle. • Student gives the formulas for determining circumference and area. (1 point) • Student completes a table that shows how the area and circumference change for circles with a radius of 1m, 2m, and 4m. (2 points) • Student explains what happens to the circumference when the radius is doubled. (1 point) • Student explains what happens to the area when the radius is doubled. (1 point)

SAMPLE RESPONSE

Formulas	$C = 2\pi r$	$A = \pi r^2$
Radius	**Circumference**	**Area**
1m	$C \approx 2 \times 3.14 \times 1m = 6.28m$	$A \approx 3.14 \times (1m)^2 = 3.14m^2$
2m	$C \approx 2 \times 3.14 \times 2m = 12.56m$	$A \approx 3.14 \times (2m)^2 = 12.56m^2$
4m	$C \approx 2 \times 3.14 \times 4m = 25.12m$	$A \approx 3.14 \times (4m)^2 = 50.24m^2$

When the radius of a circle doubles, the circumference of the circle also doubles. When the radius of a circle doubles, the area of the circle is four times as great as it was. Pi is the constant in both equations. For circumference, the radius is always multiplied by two. For area, the radius is always squared.

Question 4

RUBRIC

Score	Description
5	Response demonstrates thorough understanding of determining the value of an unknown angle in a figure. • Student explains that vertical angles are congruent. (1 point) • Student explains supplementary angles and uses an equation to demonstrate how to solve for the measure of angle B. (2 points) • Student explains complementary angles and uses an equation to demonstrate how to solve for the measure of angle C. (2 points)

SAMPLE RESPONSE

Angle A is a vertical angle to the given angle of 51°. Since the vertical angles are congruent, we know that the measure of angle A is also 51°.

Angle B and the given angle of 51° form a linear pair and are, therefore, supplementary angles. Supplementary angles have measures with a sum of 180°.

$51° + m\angle B = 180°$
$m\angle B = 180° - 51°$
$m\angle B = 129°$

The non-adjacent sides of angle C and the given angle of 32° form a right angle. Therefore, angle C and the given angle are complementary angles. Complementary angles have measures with a sum of 90°.

$32° + m\angle B = 90°$
$m\angle B = 90° - 32°$
$m\angle B = 58°$

Question 5

RUBRIC

Score	Description
4	Response demonstrates thorough understanding of two-dimensional faces that result from slicing a three-dimensional shape. • Student names the correct face that would result from slicing each of the three-dimensional shapes and vertically and horizontally. (4 points)

SAMPLE RESPONSE

	After a Vertical Slice	After a Horizontal Slice
	rectangle	circle
	triangle	circle
	square	rectangle
	triangle	rectangle