Fun with Geometry (Level 3)
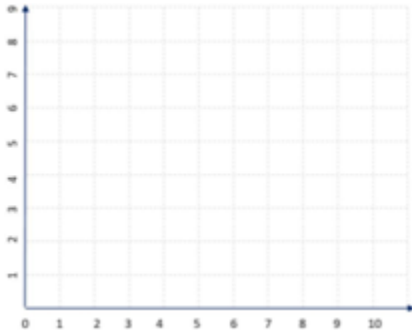## Assessment Questions

Patterns Everywhere

1. What are the two numbers that follow in the sequence: 1, 1, 2, 3, 5, 8, 13 ____, ____?

2. Choose the correct answer:

   a. _____ is what we do when we provide examples or details of an idea. (abstraction / specification)

   b. A _____ is an example of a pattern that repeats itself in different scales. (fractal / symmetrical)

3. What is phi?

4. Compose a song using three keys (a=clapping, b=stomp right foot, c=stomp left foot).

5. Explain to someone who is not familiar with the idea what a pattern is.

6. Do you believe that patterns are natural or artificial? Give two reasons to support your point.

Fun Drawing with Math

1. In the grid given above:
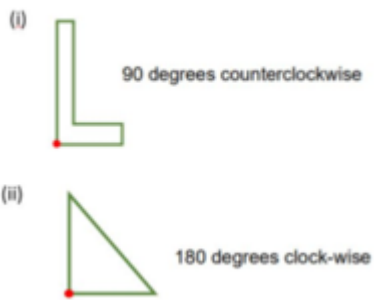

   a) Draw the points A (3,2), B (9,2), C (9,7), D (7,5), and E (3,9).

   b) Connect the points and calculate the area of the shape.

2. Which of the following shapes are symmetrical?

2.

1. Draw the rotated shape around the origin (red dot), and with the respective angle:

(i)

90 degrees counterclockwise
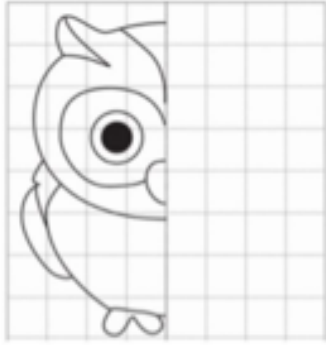
(ii)

180 degrees clock-wise

3.

4. If you are facing East (where the sun rises) and rotate 90-degrees clockwise, which direction would you be facing?

5. Read the following statements and write whether they are true or false:

a) While rotating an object, the size of the object stays exactly the same.

b) While rotating an object, the shape of the object changes.

c) The reflection of an image is smaller than the original image.

d) The letters 'A', 'B', 'H', and 'W' are not symmetric.

e) The letters 'L', 'Q', and 'P' are not symmetric.

6. In the image given below:

a) Draw the reflection of the picture on the other side. Which animal does the drawing show?

b) Identify the axis of symmetry.

Build your Dream House

1. Choose the right answer:

   a) A vertex is also known as a _____ (side, corner, edge, face)

   b) _____ are also known as sides (side, corner, edge, face)

   c) Faces are the _____ surfaces of each shape (pointy, flat)

2. How many vertices does a cylinder have?

3. Draw a cylinder and label the following on it:

   a) faces

   b) edges

4. Calculate the area of a rectangle with sides 9 cm and 12 cm.

5. Calculate the area of a circle with a radius of 14 cm.

6. Calculate the area of a rectangular prism with length 10 cm, width 6 cm, and height 4 cm.

7. Compare between 2D shapes and 3D shapes. List one difference and one similarity.

8. What is the difference between the slant of a cone and the height of a cylinder? Explain by drawing.

9. How many bedrooms of size 40 square meters can you fit in a house of 200 square meters? Assume that the rest of the parts (kitchen, bathroom, living room) take up 80 square meters.

10. The perimeter of a square is 4 x side. The perimeter of a rectangle is (2 x Length) + (2 x Width) or 2(L + W). Can we calculate the perimeter for both using the same formula? Why?
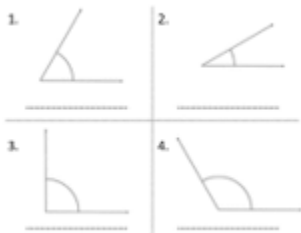
Draw and Calculate Like an Architect

1. Choose the correct answer: The area of a shape is the size of the floor surface _____ (inside, outside) the shape.

2. What is meant by the perimeter of a shape?

   a) how big the shape is

b) how long the shape is - the sum of all the sides of the shape

3. Find the area of a rectangle with length 15 digits and width 10 digits by drawing unit squares or dots. Do not use a calculator.

4. Find the perimeter of a rectangle with length 7 digits and width 3 digits by drawing squares or dots. Do not use a calculator.

5. What is 35 divided by 12?

6. Calculate the area of a rectangle with length 8 cm and width 10 cm.

7. Calculate the perimeter of a rectangle with dimensions 9 cm and 5 cm.

8. Find the answer:

   0.7 x 0.4

   0.44 ÷ 0.4

9. Imagine that you have a wooden toy box 30 cm long and 20 cm wide, and you have small square dice with a 3 cm side. How many dice would you need to fill your wooden box to the top cm and width 20 cm, and you have small square dice of 3 cm side? How many dice would you need to fill your wooden box to the top with dice?

10. Draw an example of a floor map of a house with one bedroom, one kitchen, living room, and bathroom.

11. What is a floor map?

   a) a map of the world with different countries

   b) a map of the different parts of one floor of a house

   c) a picture of the floor

12. What is the area of this rectangle? Show by counting and multiplication. Can you also find its perimeter?

Our Dream Hostel

1. List any three 2D shapes and write the number of sides and vertices for each.

2. Fill in the blanks: A cube has _____ faces, all of which are squares, _____ edges, and _____ vertices.

3. Classify the angles as obtuse, acute, or right angles.

4. True or False:

 - A cylinder has no vertices.

 - A cone has no vertices.

 - A cube and cuboid have the same number of faces, vertices, and edges.

5. Design a toy for small children using 3D shapes. Draw the toy and label the different shapes used.

6. Imagine you are designing the roof of your dream hostel. How would you decide on the angles to use for the roof, especially if your hostel is located in an area with heavy rainfall? Explain your reasoning with a drawing of the roof.

Animated Flipbook

1. What is a pattern?

 A) A random arrangement of objects

 B) A repeated design or sequence

 C) A single object

 D) An unrelated set of shapes

2. Describe two different kinds of patterns you can find in daily life and where you see them.

3. Fill in the blanks with the correct terms: A polygon is a _____ shape with at least _____ sides.

4. True or False: A regular polygon has all sides and angles equal.

5. Create a simple mathematical pattern using addition. Write the first five terms and the rule for your pattern.

6. Imagine you are making a flipbook with a shape that increases by 1 side on each page. Starting with a triangle, what will the first five shapes be in your flipbook?

7. Explain the Fibonacci sequence and give the first five terms.

8. Write a brief explanation of the features of polygons and give examples of regular and irregular polygons.

Design your own Furniture

1. What is a 2D shape?

 A) A shape with three dimensions

 B) A shape with two dimensions

 C) A shape with no dimensions

D) A shape with four dimensions

2. Draw and label a rectangle. Write down the number of sides and vertices.

3. Fill in the Blank: A cube has _____ faces, _____ edges, and _____ vertices.

4. True or False: A cylinder has no vertices.

5. Which of the following is a 3D shape?

   A) Square

   B) Triangle

   C) Cylinder

   D) Circle

6. List the 2D shapes you will use in your furniture design and explain why you chose them.

7. Why is it important to measure the dimensions of the space where your furniture will be placed?

8. Compare a square and a cube. How are they similar and how are they different?