

**Subject:** Design and Technology

**Topic:** A Guide on Good Design

**Level:** S.4

**Learning objectives:**

1. Content:

Students should be able to describe the patterns formed by using the times table.

Students should be able to state the relationship between the basic elements of design (e.g. lines and shapes) and mathematics.

2. Language:

Students should be able to state the relationship between a number sequence and a design pattern using the following sentence structure:

*The number sequence can be used to form a \_\_\_\_\_ pattern*

**S.4 Design and Technology**  
**A Guide on Good Design**  
**Worksheet 1**

Name: \_\_\_\_\_ No: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Activity One**



**Instruction:**

1. Complete the Times two table.
2. When the product is a two digit number, add the two digits together.
3. Write down the number sequence below the Times two table.

1	X	2	=	2								
2	X	2	=	4								
3	X	2	=	6								
4	X	2	=	8								
5	X	2	=	10	1	+	0	=	1			
6	X	2	=	12	1	+	2	=	3			
7	X	2	=			+		=				
8	X	2	=			+		=				
9	X	2	=			+		=				
10	X	2	=			+		=				
11	X	2	=			+		=				
12	X	2	=			+		=				

The sequence of numbers you can see in the Times two table is as follows: 2, 4, 6, 8, 1, 3, .....

If we use the numbers to represent a sequence of steps to move along the graph paper, with each step turning at an anti-clockwise direction, you will be able to see a pattern. The pattern will also end at the starting point.

Use the following sentence structure to describe the relationship between the pattern and the numbers:

***The number sequence can be used to form a  
\_\_\_\_\_ pattern.***

**Instruction:**

1. Pick any Times table and discover the pattern.
2. Study the Times \_\_\_\_ table below.
3. When the product is a two digit number, add the two digits together.
4. Write down the number sequence below the Times \_\_\_\_\_ table.

1	X		=								
2	X		=			+		=			
3	X		=			+		=			
4	X		=			+		=			
5	X		=			+		=			
6	X		=			+		=			
7	X		=			+		=			
8	X		=			+		=			
9	X		=			+		=			
10	X		=			+		=			
11	X		=			+		=			
12	X		=			+		=			

The sequence of numbers you can see in the Times \_\_\_\_ table is as follows:.....

If we use the numbers to represent a sequence of steps to move along the graph paper, with each step turning at an anti-clockwise direction, you will be able to see a pattern.

Write a few sentences to describe the findings. You may use the following vocabulary:

***at regular intervals, radiate outward from the centre, recur, repeat***

**Subject:** Design and Technology

**Topic:** A Guide on Good Design

**Level:** S4

**Learning objectives:**

1. Content:

Students should be able to appreciate the beauty of naturally occurring proportions in, for example, our body proportions.

Students should be able to describe the ratio of measurements of different body parts.

2. Language:

Students should be able to describe the ratio of measurements of different body parts using the following sentence structures:

*The ratio between the distance from the eye to the chin and the circumference of the head is \_\_\_\_\_.*

*The eye divides the head at \_\_\_\_\_.*

**S.4 Design and Technology**  
**A Guide on Good Design**  
**Worksheet 1**

Name: \_\_\_\_\_ No: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Activity One**



**Instruction:**

Work in pairs. Student A completes Task 1 and Student B completes Task 2.

Student A

**Task 1**

1. Take the measurements of your partner as indicated in the table below. Take the measurements in mm.
2. The measurements are in pairs numbered as 1a and 1b, 2a and 2b etc. Find the ratio between the first measurement and the second measurement in each pair.

<i>All measurement in mm</i>		<i>Ratio</i>
<i>1a. Distance from the eye to the chin</i>		
<i>1b. The circumference of the head</i>		
<i>2a. Distance from the elbow to the fingertip</i>		
<i>2b. The length of the arm</i>		
<i>3a. Distance from the navel to the feet</i>		
<i>3b. The height of your partner.</i>		

3. Now, work with your partner. Tell your partner about your findings. You can say:  
*The ratio between the distance from the eye to the chin and the circumference of the head is \_\_\_\_\_.*
4. Listen to the information your partner gives you. Compare the results with yours.
5. Write a few lines to conclude what your group has found. You can use the following sentence structure to help you.  
*The line divides the angle at the golden ratio.*

Group findings:

---

---

---

**S.4 Design and Technology**  
**A Guide on Good Design**  
**Worksheet 1**

Name: \_\_\_\_\_ No: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Activity One**



**Instruction:**

Student B

Task 2

1. Take the measurements of your partner as indicated in the table below. Take the measurements in mm.
2. The measurements are in pairs numbered as 1a and 1b, 2a and 2b etc. Find the ratio between the first measurement and the second measurement in each pair.

<i>All measurement in mm</i>		<i>Ratio</i>
<i>1a. Distance from the finger tip to the first joint of the index finger</i>		
<i>1b. Distance from the finger tip to the second joint of the index finger.</i>		
<i>2a. Distance from the first joint to the second joint of the index finger.</i>		
<i>2b. Distance from the first joint to the third joint of the finger.</i>		
<i>3a. Distance from the second joint to the third joint of the index finger.</i>		
<i>3b. Distance from the second joint to the bottom part of the index finger</i>		



3. Work with your partner. Listen to the information your partner gives you. Tell your partner about your findings. Compare the results.
4. Write a few lines to conclude what your group have concluded. You can use the following language patterns to help you.

*The eye divides the head at \_\_\_\_\_.*

Group findings:

---

---

---