REPEAT COMMAND IN LOGO

3

At the end of the chapter the student should be able to

- use REPEAT Command in his or her code.
- create polygons of different sizes in LOGO.
- create circles and curves in LOGO.
- create advance shapes using polygons, circles and curves.

I. REPEAT Command

Computers have a powerful ability to repeat a sequence of commands many times. Logo allows you to harness this power with the help of REPEAT command. The REPEAT command has the following syntax:

REPEAT n [instruction list]

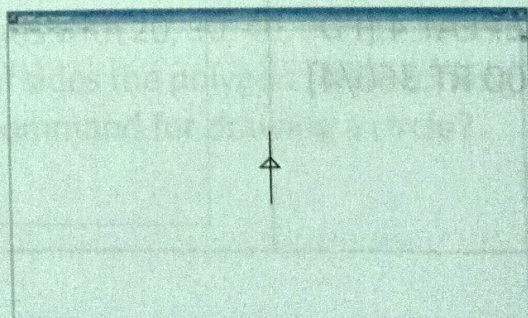Repeats the actions listed in the instruction list n number of times.

In the previous classes you learned about creating procedures. Now you will combine procedures with REPEAT command for drawing some shapes. First we will create a procedure for drawing a vertical line.
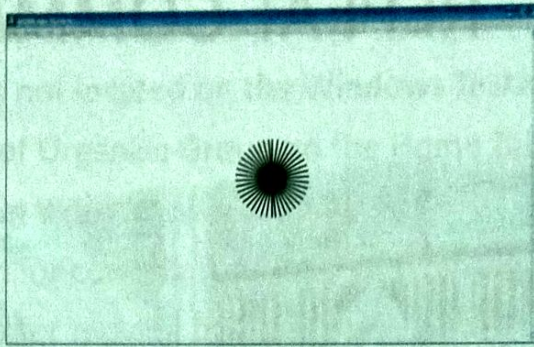
TO LINE

FD 60 BK 120 FD 60

END

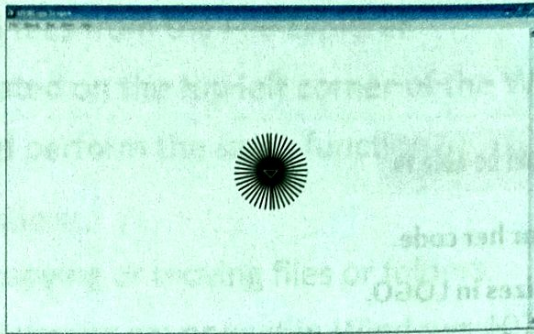Running the procedure will give the following output:

Now we will use Repeat command and see the output:
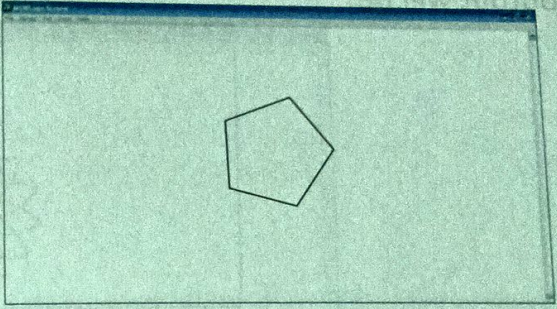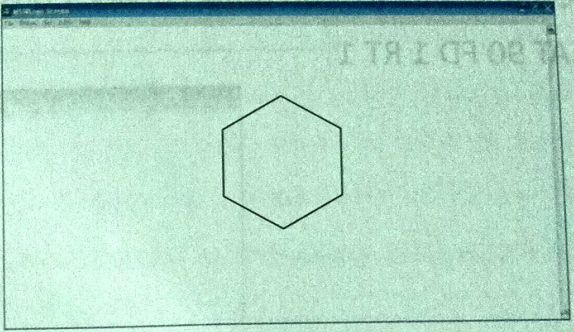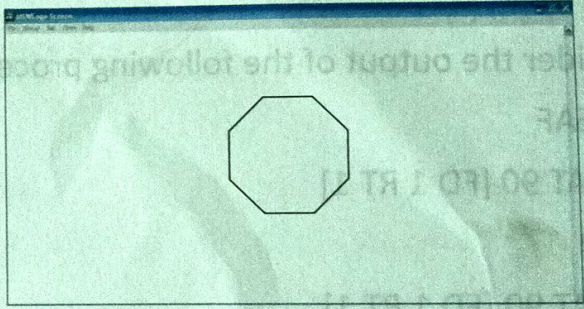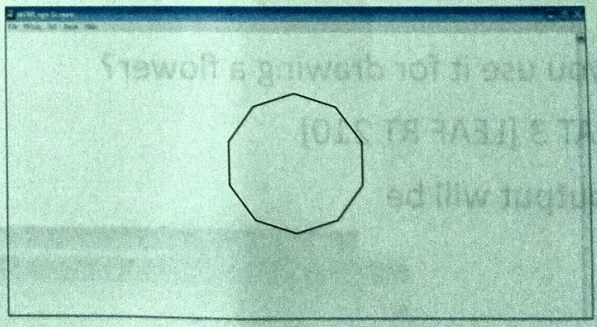
REPEAT 20 [LINE RT 9]

REPEAT 60 [LINE RT 3]

Change the values and see how the shape changes.

II. Drawing Advance Shapes

Repeat command makes drawing of complex shapes very easy. Let us look at examples of drawing some simple polygons:

Shape	Number of sides	Command	Output
Triangle	3	REPEAT 3 [FD 100 RT 360/3]	
Square	4	REPEAT 4 [FD 100 RT 360/4]	

|			
Pentagon	5	REPEAT 5 [FD 100 RT 360/5]	
Hexagon	6	REPEAT 6 [FD 100 RT 360/6]	
Octagon	8	REPEAT 8 [FD 100 RT 360/8]	
Decagon	10	REPEAT 10 [FD 100 RT 360/10]	

Why are we using 360 for drawing polygons? Because the sum of all the angles in polygons is equal to 360 degrees!

Experiment for creating polygons with 20, 30, 40, 60, 80, 100 sides. Notice something special? With the increase in number of sides the polygon starts coming closer to the shape of a circle! So than can you think of the command for drawing a circle?
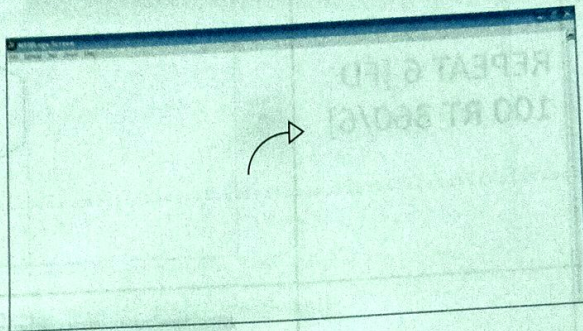
REPEAT 360 [FD 1 RT 1]

The output will be:
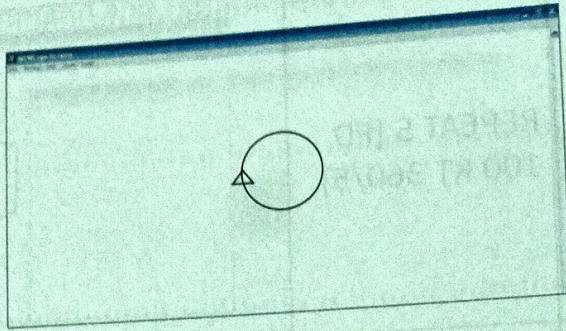
In the same way we can draw curves. Consider the following command:

REPEAT 90 FD 1 RT 1

Consider the output of the following procedure for drawing a leaf:

TO LEAF

REPEAT 90 [FD 1 RT 1]

RT 90

REPEAT 90 [FD 1 RT 1]

END

Can you use it for drawing a flower?

REPEAT 3 [LEAF RT 210]

The output will be
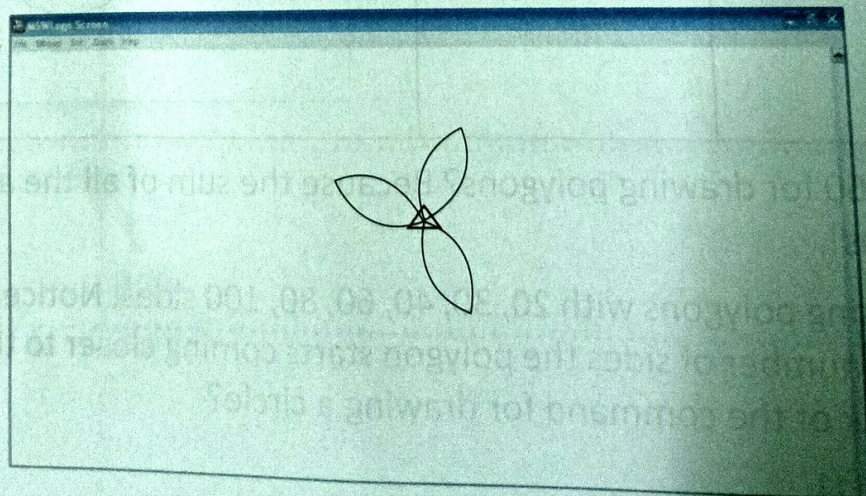
REPEAT 12 [LEAF RT 120]

This flower can be further improved by converting it into a plant!

For drawing the flower:

REPEAT 12 [LEAF RT 120]

For drawing the stem

BK 150

For drawing the leaves

LT 90 REPEAT 2 [LEAF LT 180]

For drawing the remaining stem:

LT 90 BK 50

Combining all of these:

REPEAT 12 [LEAF RT 120]

BK 75

LT 90 REPEAT 2 [LEAF LT 180]

LT 90 BK 50

The output will be

Keywords

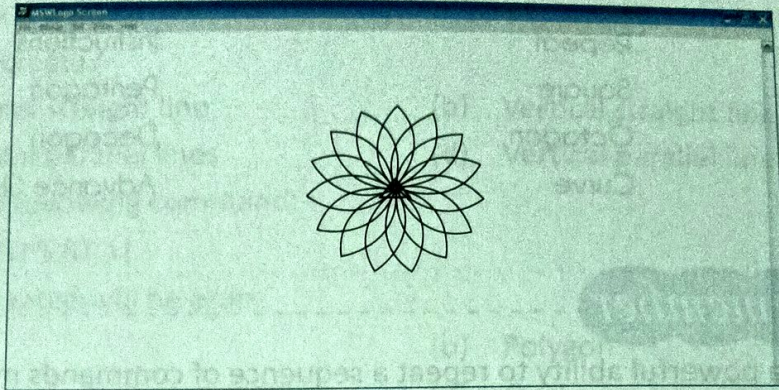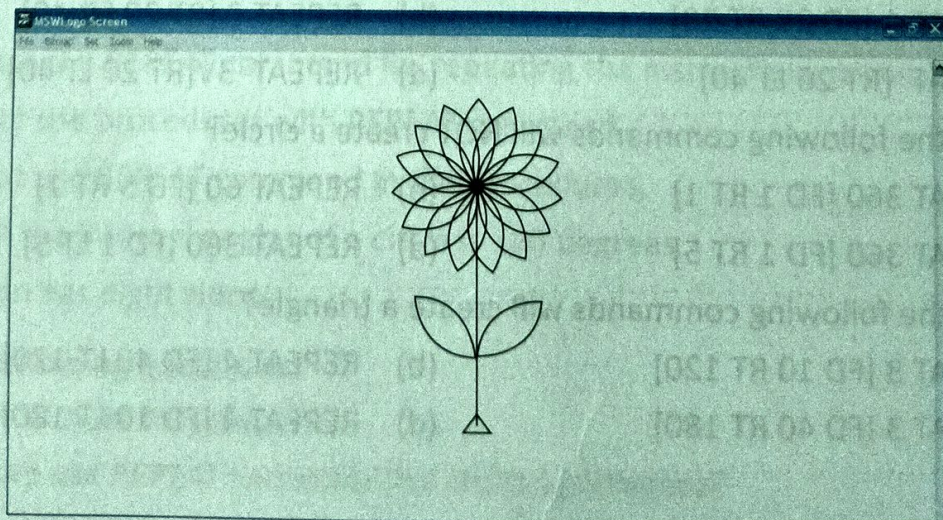Logo

Triangle

Hexagon

Circle

Repeat

Square

Octagon

Curve

Instructions

Pentagon

Decagon

Advance Shapes

Things to remember

- Computers have a powerful ability to repeat a sequence of commands many times.
- We can use REPEAT command in Logo for repeating instructions.
- We can draw advance shapes by combining procedures with REPEAT command.
- We can draw different polygons using REPEAT command.
- Sum of all the angles in the polygon is equal to 360 degree.

Assessment Zone

I. Choose the correct option for the following questions.

1. The polygon with 6 sides is called
   - (a) Pentagon
   - (b) Octagon
   - (c) Hexagon
   - (d) Decagon

2. Which of the following is the correct syntax for the REPEAT command?
   - (a) 3 REPEAT [RT 20 LT 40]
   - (b) REPEAT 3 [RT 20 LT 40]
   - (c) REPEAT [RT 20 LT 40]
   - (d) REPEAT RT 20 LT 40 [3]

3. Which of the following syntax for the REPEAT command is not correct?
   - (a) REPEAT 1 [FD 20 RT 20]
   - (b) REPEAT 2 [RT 20 FD 40]
   - (c) REPEAT [RT 20 LT 40]
   - (d) REPEAT 3V[RT 20 LT 40]

4. Which of the following commands will NOT create a circle?
   - (a) REPEAT 360 [FD 1 RT 1]
   - (b) REPEAT 60 [FD 5 RT 1]
   - (c) REPEAT 360 [FD 1 RT 5]
   - (d) REPEAT 360 [FD 1 LT 5]

5. Which of the following commands will create a triangle?
   - (a) REPEAT 3 [FD 10 RT 120]
   - (b) REPEAT 4 [FD 40 LT 120]
   - (c) REPEAT 3 [FD 40 RT 180]
   - (d) REPEAT 4 [FD 10 LT 180]

6. Consider the following command:

   FD 60 BK 120 FD 60

   What will it create?

   (a) Horizontal straight line   (b) Vertical straight line
   (c) Horizontal parallel lines   (d) Vertical parallel line

7. Consider the following command:

   REPEAT 90 [FD 5 RT 1]

   The shape created will be a/an

   (a) Circle   (b) Polygon
   (c) Curve   (d) Oval

8. Which of the following shapes will be created by the command REPEAT 4 [FD 100 RT 120]?

   (a) Triangle   (b) Square
   (c) Circle   (d) Octagon

9. Which of the following commands will create a square?

   (a) REPEAT 1 [FD 100 RT 90]   (b) REPEAT 5 [FD 100 RT 90]
   (c) REPEAT 1 [FD 100 RT 180]   (d) REPEAT 4 [FD 100 RT 180]

10. Which of the following commands will create a polygon with 20 sides?

    (a) REPEAT 20 [FD 100 RT 18]   (b) REPEAT 20 [FD 100 RT 20]
    (c) REPEAT 20 [FD 100 RT 40]   (b) REPEAT 20 [FD 100 RT 80]

II. **Fill in the blanks.**

1. A decagon has _____ sides.

2. A polygon with 3 sides is called _____.

3. Sum of all the internal angles in a polygon is equal to_____ degrees.

4. A polygon with five sides is called_____

5. A square is a _____ with 4 sides.

III. **Write (T) for the sentences that are true and (F) for the sentences that are false in the space provided.**

1. We can use the REPEAT command for repeating the instructions n number of times. ⬭

2. We cannot use procedures with REPEAT command. ⬭

3. We cannot use REPEAT command in the procedures. ⬭

4. Sum of all the internal angles of a circle is 180 degrees. ⬭
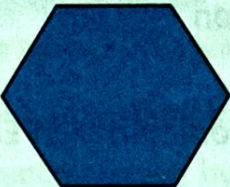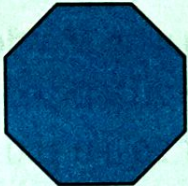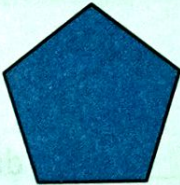
5. An octagon has eight sides. ⬭

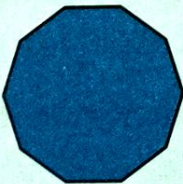IV. **Answer the following questions.**

1. Write a short note on polygons?

2. How can we use REPEAT command for creating polygons?

V. Match the following.

Connect the shape in Column I with the command for creating it given in Column II.

Column I	Column II
1. ▪ (square)	A. REPEAT 20 [FD 100 RT 120]
2. ⬡ (hexagon)	B. REPEAT 20 [FD 100 RT 90]
3. ▲ (triangle)	C. REPEAT 20 [FD 100 RT 72]
4. ⯃ (octagon)	D. REPEAT 20 [FD 100 RT 60]
5. ⬠ (pentagon)	E. REPEAT 20 [FD 100 RT 45]
6. ⬡ (decagon)	F. REPEAT 20 [FD 100 RT 36]

Mini Projects/Lab Work

Draw the following shapes using the REPEAT command and procedures.