

**Requirements:**

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**What you should do:****Requirements:**

A floppy diskette is required for storing programs.

**What you should do:**

(a) Read each program carefully before you type it in.

(b) *Deskcheck*. For each program, write down what you think is going to be the output (what the program is going to do) *before* you type the program in.

(c) Type in the following programs to practise the use of the QBasic programming environment and to see the programs work (execute).

(d) After each program listing below, write down the 'output' or what the program put onto the QBasic output screen when you have correctly executed with the program.

**Program 7 - Calculating the Area of a Circle**

```

REM
' Author:
' Class:
' Date:
'
' Purpose:
' This program will calculate the Area of a Circle
' after receiving the value for the radius.
'
' (a) Start
CLS
PI = 3.147 ' (b) Define the Known Values
COLOR 9

```

```

' (c) Get Required data from user
PRINT "This program calculates the Area of a Circle"
INPUT "what is the radius of the circle"; radius

```

```

' (d) Make the calculations
Area = PI * radius ^ 2

```

```

' (e) Send the results to the screen for the user
COLOR 2
PRINT "For a Circle of radius"; radius;
PRINT "and using a value for PI as"; PI
PRINT "The calculated Area is"; Area
'

```

```

' (f) Stop

```

Deskcheck 7:

Output 7:

**Program 8 - Calculating the Area of a Square**

```

REM
' Name:
' Class:
' Purpose: This program will calculate the area
' of a square from user input
'
' (a) Start
CLS
' (b) Define the known/required variables
sqwidth = 0 ' The width of the Square
sqArea = 0 ' The Area of the Square
'
' (c) Get required data from the User

```

```

PRINT "This Program Calculates the Area of a Square"
INPUT "What is the width of the square"; sqwidth
' (d) Make the Calculations
sqArea = sqwidth * sqwidth
' (e) Send the Calculations to the Screen
PRINT "The Area of the Square is:"; sqArea
'
' (f) Stop

```

Deskcheck 8:

Output 8:

### Programming Exercises

1. Draw a flowchart for each of the above programs.
2. Write a "Problem Resolution Process" for each of the above programs.
3. Write a program to calculate the floorspace (area) of a classroom, by first asking the for the length and width of the classroom.
4. Write a program to calculate the area of the shape.
  - Shape: *Square, parallelogram, rhombus, rectangle*
  - Formula: length \* length
5. Write a program to calculate the area of the shape.
  - Shape: Triangle

Formula:  $0.5 * \text{base} * \text{height}$

6. Write a program to calculate the area of the shape.

- Shape: Trapezoid
- Formula:  $0.5 * (\text{base} + \text{top}) * \text{height}$

7. Develop a program to calculate the Volume of a Cylinder by using the formula:

$$V = \pi r^2 h; \quad \pi = 3.141593$$

### Documentation Exercises

Writing the "Problem Resolution Process"

The documentation you put together for exercise 1 & 2 should include:

- ▣ Step 1. The definition of the problem
- ▣ Step 2. The problem analysis
- ▣ Step 3. The solution analysis
- ▣ Step 4. A written draft of what the program should look like.
- ▣ Step 5. Detailed figures on how you tested the program to make sure it is giving the correct answers.
- ▣ A Flow Chart