Question 1 Solution :-

*#include* <iostream>

*using* *namespace* std;

*class* AreaCalculator {

*public:*

    float area(int side) {

*return* side \* side;

    }

    float area(int length, int breadth) {

*return* length \* breadth;

    }

    float area(double radius) {

*return* 3.14 \* radius \* radius;

    }

};

int main() {

    AreaCalculator calc;

    int side, length, breadth;

    double radius;

    cout << "Enter side of square = ";

    cin >> side;

    cout << "Enter length and breadth of rectangle = ";

    cin >> length >> breadth;

    cout << "Enter radius of circle = ";

    cin >> radius;

    cout << "Area of Square := " << calc.area(side) << endl;

    cout << "Area of Rectangle := " << calc.area(length, breadth) << endl;

    cout << "Area of Circle := " << calc.area(radius) << endl;

*return* 0;

}

Question2 Solution :-

*#include* <iostream>

*using* *namespace* std;

*class* Vehicle {

*protected:*

    string brand;

    string model;

    int year;

*public:*

    Vehicle(string b, string m, int y) {

        brand = b;

        model = m;

        year = y;

    }

*virtual* void displayDetails() {

        cout << "Brand := " << brand << endl;

        cout << "Model := " << model << endl;

        cout << "Year := " << year << endl;

    }

};

*class* Car : *public* Vehicle {

*private:*

    int numberOfDoors;

    string fuelType;

*public:*

    Car(string b, string m, int y, int doors, string fuel)

        : Vehicle(b, m, y) {

        numberOfDoors = doors;

        fuelType = fuel;

    }

    void displayDetails() *override* {

        Vehicle::displayDetails();

        cout << "Number of Doors :- " << numberOfDoors << endl;

        cout << "Fuel Type := " << fuelType << endl;

    }

};

*class* Bike : *public* Vehicle {

*private:*

    bool hasGear;

    string bikeType;

*public:*

    Bike(string b, string m, int y, bool gear, string type)

        : Vehicle(b, m, y) {

        hasGear = gear;

        bikeType = type;

    }

    void displayDetails() *override* {

        Vehicle::displayDetails();

        cout << "Has Gear := " << (hasGear ? "Yes" : "No") << endl;

        cout << "Bike Type ;= " << bikeType << endl;

    }

};

int main() {

    Car myCar("Mahindra", "XUV700", 2025, 4, "Petrol");

    Bike myBike("Yamaha", "R15", 2021, true, "Sports");

    cout << "Car Details := " << endl;

    myCar.displayDetails();

    cout << "Bike Details := " << endl;

    myBike.displayDetails();

*return* 0;

}