Pseudocode

Player

player

variables:

set ps names

set ps points to 501

make variable for ps' bullseye accuracy

set segment accuracy to 80

create variable for target

create variable for segment

set variable gameWins to 0 - best of 5

set variable setWins to 0 - best of 13

set variable matchWins to 0

set variable gameWinsOverall = 0

set variable setWinsOverall = 0

functions:

bool TargetCheck(target)

if target does not equal 1-20 or bull values

display error

return false

else if segment does not equal 1-3 & does not equal bull

display error

return false

else

```
                    return true

        int SetTarget(inputTarget)
            target = inputTarget
            TargetCheck(inputTarget)
            return target

        int Throw(player p)

for 0 to 3

  if p.points = 50
    p.SetTarget(bull)
    p.segment = 0
  else if p.points > 100
    p.setTarget(20)
    p.segment = 3
  else if p.points < 100 && p.points > 50
    aim = p.points - 50
    if aim < 20
      p.setTarget(aim)
      p.segment = 1
    else if aim % 2 = 0
      p.setTarget(aim / 2)
      p.segment = 2
    else if aim % 3 = 0
      p.setTarget(aim / 3)
      p.segment = 3
    else
      p setTarget(aim - 1)
      p.segment = 1
  else
```

```
    p.setTarget(20)
    p.segment = 3

throw = p.Throw()

if p.segment = 0
    dartboard.HitBull(p.accuracyBull)
else if p.segment = 1
    dartboard.HitSingle(throw)
else if p.segment = 2
    dartboard.HitDouble(throw)
else if p.segment = 3
    dartboard.HitTreble(throw)
else
    "Error: the segment value is invalid"
```

Game

Game

```
 variables:

        set string winner

        matchNo = 0;

        set int game = 0
        set int set = 0
        set int match = 0

 functions:

        bool CheckBelow50(score)
```

```
        if score is below 50
                discount previous throw
        else
                return false

bool CheckGameWinner(score, name, gameWins, gameWinsOverall)
        if score = 0
                game++
                winner = name
                print "Game " + game + ": " winner + " wins!"
                gameWins++
                gameWinsOverall++
                if gameWins > 3
                        gameWins = 0
                return true
        else
                return false

bool CheckSetWinner(gameWins, name, setWins, setWinsOverall)
        if gameWins = 3
                set++
                winner = name
                print "Set " + set + ": " winner + " wins!"
                setWins++
                setWinsOverall++
                if setWins > 7
                        setWins = 0
                return true
        else
                return false

bool CheckMatchWinner(setWins, name, matchWins)
```

```
if setWins = 7
        match++
        winner = name
        print "Match " + match + ": " winner + " wins!"
        print "Game, Set, and Match: " + winner
        matchWins++
        return true
else
        return false
```

DartBoard

DartBoard

variables:

int bull = 50
int aim
int hit

functions:

int HitBull(accuracyBull)

generate random number between 0-100

if random is lesser than than accuracyBull - 20
    return 50
else if random number is lesser than 85
    return 25
else
    return a random number between 1 and 20

```
int HitTreble(aim)

        create array[2][21] to represent darboard

        generate random number between 0-100

        if random is lesser than 80
                return 3 * aim
        else if random is less than 90
                return aim
        else if random is less than 93
                return 3 * array[0][aim]
        else if random is less than 96
                return 3 * array[1][aim]
        else if random is less than 98
                return array[0][aim]
        else
                return array[1][aim]

int HitDouble(aim)

        create array[2][21] to represent darboard

        generate random number between 0-100

        if random is lesser than 80
                return 2 * aim
        else if random is less than 85
                return 0
        else if random is less than 90
                return aim
```

```
        else if random is less than 93
                return 2 * array[0][aim]
        else if random is less than 96
                return 2 * array[1][aim]
        else if random is less than 98
                return array[0][aim]
        else
                return array[1][aim]

int HitSingle(aim)

        create array[2][21] to represent darboard

        generate random number between 0-100

        if aim = 25
                if random is less than 80
                        return 25
                else if random is less than 90
                        return 50
                else
                        return random number between 1 and 20
        else
                if random is less than 88
                        return aim
                else if random is less than 92
                        return array[0][aim]
                else if random is less than 96
                        return array[1][aim]
                else if random is less than 98
                        return 3 * aim
                else
```

```
return 2 * aim
```

Main

```
int playerNumber = 1


Play()
    if player number is odd
        player = player1
        player.Throw(player)
    else
        player = player2
        player.Throw(player)


    Game.CheckBelow50
        Print Player1.name "'s new score is: " player1.points


    game.CheckGameWinner(player1.points, player1.name, player1.gameWins)
    game.CheckSetWinner(player1.gameWins, player1.name, player1.setWins)
    game.CheckMatchWinner(player1.setWins, player1.name, player1.matchWins)


Main


    new Game object "game"
    new DartBoard object "dartboard"


    Print "Welcome to my darts program! What are your names?
        input player 1
            new Player object "Player1"
            Player1.name = input
        input player 1
            new Player object "Player2"
            Player2.name = input
    Print "How many games would you like to play?
```

```
    input game.matchNo
```

Print player1.name “has a bullseye accuracy of 71% and ” player2.name “ has a bullseye accuracy of 73%, both players have 80% segment accuracy”

Print “If you miss the bull, there is a 5% chance you will hit any of the other segments, if you miss a segment you’re aiming for, there is a 50% chance you’ll hit the segment to the left and 50% you’ll hit the segment to the right”

```
for 0 to game.gameN0
    Play()



print player1.name " has: " player1.matchWins " match wins"
print player2.name " has: " player2.matchWins " match wins"

print player1.name " has: " player1.setWinsOverall " set wins"
print player2.name " has: " player2.setWinsOverall " set wins"

print player1.name " has: " player1.gamesWinsOverall " game wins"
print player2.name " has: " player2.gamesWinsOverall " game wins"

if player1.matchWins > player2.matchWins
    print player1.name " wins!"
else if player1.matchWins < player2.matchWins
    print player2.name " wins!"
else
    print "DRAW!"
```

TODO: Change the pseudocode to better reflect the production code