



GCSE

COMPUTER SCIENCE

**Paper 1 Computational thinking and
programming skills – Python**

8525/1B

Diagram Booklet

[Turn over]

FIGURE 1

```
film ← "Godzilla vs. Kong"  
year ← 2021  
OUTPUT "Please guess a letter"  
letter ← USERINPUT
```

FIGURE 2

```
1   num ← USERINPUT
2   IF NOT (num > 1) OR num > 20 THEN
3     OUTPUT "False"
4   ELSEIF num > 1 AND num < 15 THEN
5     OUTPUT "Almost"
6   ELSEIF num MOD 5 = 0 THEN
7     OUTPUT "True"
8   ELSE
9     OUTPUT "Unknown"
10  ENDIF
```

[Turn over]

FIGURE 3

```
1 import random
2
3 print("Enter a number")
4 userNumber = int(input())
5 while userNumber < 1 or userNumber > 100:
6     print("Invalid number")
7     userNumber = int(input())
8 print("Valid number entered")
9 if randomNumber == userNumber:
10    print("Number guessed correctly")
```

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[Turn over]

FIGURE 4

```
numberOfGuests ← USERINPUT
numberOfRooms ← USERINPUT
charge ← 25
IF numberOfGuests > 50 THEN
    totalCost ← numberOfGuests * 2
ELSE
    IF numberOfGuests ≥ 25 THEN
        totalCost ← numberOfGuests * 4
    ELSE
        totalCost ← numberOfGuests * 5
    ENDIF
ENDIF
ENDIF
```

```
totalCost ← totalCost + (numberOfRooms * 100)
IF totalCost < 1400 THEN
    totalCost ← totalCost + charge
ENDIF
OUTPUT totalCost
```

[Turn over]

FIGURE 5

sweetID	sweetName	brand
S1	WINE GUMS	MAYNARDS
S2	COLA CUBES	BERRYMAN'S
S3	STARBURST	WRIGLEY

FIGURE 6

```
days ← [10, 15, 4]
sales ← [20, 33, 12]
weeks ← [0, 0, 0]
FOR i ← 0 TO 2
    daysTotal ← days[i] + sales[i]
    weeks[i] ← daysTotal DIV 7
ENDFOR
weeksTotal ← weeks[0] + weeks[1] + weeks[2]
OUTPUT weeksTotal
```

[Turn over]

TABLE 2

1	2	author
B1	B2	Book
bookName	i	Real
OUTPUT	String	Boolean

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[Turn over]

FIGURE 8

```
def First(p1, p2, p3):  
    v1 = p2 + p3  
    print(Second(v1, p1))  
  
def Second(p1, p2):  
    v1 = p1 + p2  
    if v1 > 12:  
        v1 = v1 + Third(p1)  
    return v1  
  
def Third(p1):  
    if p1 > 3:  
        return 2  
    else:  
        return 0
```

FIGURE 9

USERNAME	PASSWORD
Yusuf5	33kk
Mary80	af5r

[Turn over]

FIGURE 10

		column		
		0	1	2
row	0	4		2
	1	1	7	6
	2	5	3	8

FIGURE 11

		column		
		0	1	2
row	0	1	2	3
	1	4	5	6
	2	7	8	

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[Turn over]

TABLE 3

SUBROUTINE	PURPOSE
<code>getTile (row, column)</code>	<p>Returns the number of the tile on the board in the position (row, column)</p> <p>For example:</p> <ul style="list-style-type: none">• <code>getTile (1, 0)</code> will return the value 5 if it is used on the board in FIGURE 12, provided in the Diagram Booklet

	<ul style="list-style-type: none"> • <code>getTile(1, 2)</code> will return the value 0 if it is used on the board in FIGURE 12.
<code>move(row, column)</code>	<p>Moves the tile in position <code>(row, column)</code> to the blank space, if the blank space is next to that tile.</p> <p>If the position <code>(row, column)</code> is not next to the blank space, no move will be made.</p>

TABLE 3 continues on the next page

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TABLE 3 – CONTINUED

<p>move (row, column)</p>	<p>For example:</p> <ul style="list-style-type: none">• move (0, 2) would change the board shown in FIGURE 12, provided in the Diagram Booklet, to the board shown in FIGURE 13, provided in the Diagram Booklet• move (2, 0) would not make a move if used on the board shown in FIGURE 12.
---------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

```
displayBoard()
```

**Displays the board showing
the current position of each
tile.**

[Turn over]

FIGURE 12

		column		
		0	1	2
row	0	1	7	4
	1	5	8	
	2	6	2	3

FIGURE 13

		column		
		0	1	2
row	0	1	7	
	1	5	8	4
	2	6	2	3

FIGURE 14

```
if getTile(1, 0) == 0:  
    move(2, 0)  
if getTile(2, 0) == 0:  
    move(2, 1)  
displayBoard()
```

FIGURE 15

		column		
		0	1	2
row	0	1	8	3
	1		7	5
	2	4	2	6

[Turn over]

FIGURE 16

```
for i in range(3):  
    for j in range(3):  
        if getTile(i, j) == 0:  
            ref1 = i  
            ref2 = j
```

FIGURE 17

		column		
		0	1	2
row	0	4	7	6
	1	3	8	1
	2		5	2

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[Turn over]

TABLE 4

SUBROUTINE	PURPOSE
getTile (row, column)	Returns the number of the tile on the board in the position (row, column)

FIGURE 18

	0	1	2
row 0	5	2	
row 1	1	3	4
row 2	6	7	8

FIGURE 19

	0	1	2
row 0	2	3	4
row 1	5	1	
row 2	7	8	6

[Turn over]

TABLE 5

SUBROUTINE	PURPOSE
solved()	Returns True if the puzzle has been solved. Otherwise returns False
checkSpace(row, column)	Returns True if there is a blank space next to the tile on the board in the position (row, column) Otherwise returns False

TABLE 6

SUBROUTINE	PURPOSE
move (row, column)	<p>Moves the tile in position (row, column) to the blank space, if the blank space is next to that tile.</p> <p>If the position (row, column) is not next to the blank space, no move will be made.</p>

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FIGURE 20

0	1	2	3	4	5	6	7
			X			X	

[Turn over]

FIGURE 21

- **The player starts at position 0 in a row of cells.**
- **The aim of the game is for the player to reach the end of the row.**
- **At each turn the player must enter either 1 or 2**
 - **if the player enters 1, the player's position increases by 1**
 - **if the player enters 2, the player's position increases by 2**
- **If the player's position goes beyond the end of the row or contains an X:**
 - **the message Bad move is displayed**
 - **the player goes back to position 0**

- **These steps are repeated until the player reaches the end of the row.**
- **If the player reaches the end of the row the game is finished.**

FIGURE 22

```
pos = 0
lastPos = len(row) - 1
while pos < lastPos:
```

END OF DIAGRAM BOOKLET

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