

12. (continued)

- (a) (i) State the type of loop required when implementing this design.

1

- (ii) State the standard algorithm used in this design.

1

- (iii) Several different programming constructs will be required when the program code is written.

Complete the table below to show this.

3

Example from design	Matching construct
Set totalPassengers to 0.00	
	Conditional statement
	Arithmetic operation

- (b) The total number of passengers is set to 0.00 in the design.

State a more appropriate data type to store the total number of passengers.
Give a reason for your answer.

2

Data type _____

Reason _____

[Turn over



* S 8 1 6 7 5 0 1 1 3 *

12. (continued)

- (c) The program is edited to calculate the total value of the passengers' tickets. The price of a ticket is different for each deck.

	Deck 1	Deck 2
Saturday's ticket numbers	1 to 50	51 to 100
Sunday's ticket numbers	101 to 150	151 to 200
Ticket price	£5	£10

The edited code is shown below.

```
...
Line 5  RECEIVE lower FROM KEYBOARD
Line 6  RECEIVE upper FROM KEYBOARD
...
Line 14 IF ticketNumber < lower OR ticketNumber > upper THEN
Line 15     SEND "Ticket Refused" TO DISPLAY
Line 16 ELSE
Line 17     SET numberOfPassengers TO numberOfPassengers + 1
Line 18     IF ticketNumber <= (lower + 49) THEN
Line 19         SET totalValue TO totalValue + 5
Line 20     END IF
Line 21     IF ticketNumber >= (lower + 50) THEN
Line 22         SET totalValue TO totalValue + 10
Line 23     END IF
Line 24 END IF
```

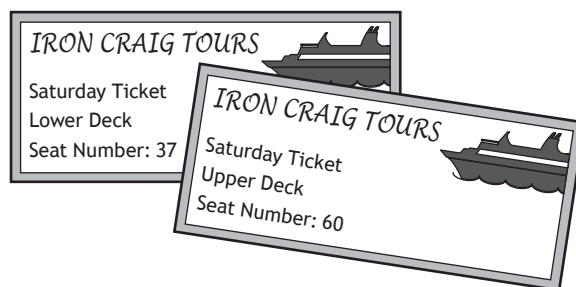


12. (c) (continued)

Using a programming language of your choice, re-write lines 18 to 23 in a more efficient way.

3

(d) Tickets include a bit-mapped graphic.



Describe how a bit-mapped graphic is represented in a computer system's memory.

2