



General Certificate of Secondary Education
2019

Centre Number

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Candidate Number

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Digital Technology

Unit 1: (Compulsory Core)

Digital Technology

MV18

[GDG11]

MONDAY 13 MAY, MORNING

Time

1 hour, plus your additional time allowance.

Instructions to Candidates

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write on blank pages.

Complete in black ink only.

Answer **all nine** questions.

Information for Candidates

The total mark for this paper is 90.

Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in

Questions **7** and **9**.

1 For Question 1 insert the appropriate letter in the space provided. [1 mark for each]

(a) A computer system stores data in:

- A** Analogue format
- B** Digital format
- C** Information format
- D** Doubled format

Answer _____

(b) MPEG stands for:

- A** Moving Photographic Experts Group
- B** Moving Picture Experts Group
- C** Moving Pixel Experts Group
- D** Moving Portable Experts Group

Answer _____

(c) Select the list which contains only image file formats:

- A** PNG, GIF, MIDI, PDF
- B** TIFF, PNG, GIF, JPEG
- C** GIF, PNG, PDF, CSV
- D** JPEG, TIFF, PNG, PDF

Answer _____

(d) Select the correct name of the legislation which protects the rights of customers when shopping online.

- A** Customer Card Regulations
- B** Consumer Card Regulations
- C** Customer Contracts Regulations
- D** Consumer Contracts Regulations

Answer _____

(e) Select the statement which is correct about the Data Protection Act.

- A** The Data Protection Act protects the rights of individuals whose data is being stored and their data can be shared with any organisation who requests it.
- B** The Data Protection Act protects the rights of organisations storing data so that they can make full use of the data.
- C** The Data Protection Act protects the rights of organisations storing data and prevents them from sharing data with other organisations who request it.
- D** The Data Protection Act protects the rights of individuals whose data is being stored and ensures their data is accurate and up to date.

Answer _____

(f) Select the list which correctly details only methods which will help reduce eye strain in computer users.

- A** Anti-glare screens, regular breaks, ergonomic mice and keyboards
- B** Ergonomic mice and keyboards, regular free eye tests, screens with adjustable brightness and contrast
- C** Appropriate lighting, swivel screens, regular free eye tests
- D** Appropriate lighting, anti-glare screens, screens with adjustable brightness and contrast

Answer _____

(g) Many electronic devices now use GPS. What do the letters GPS stand for?

- A** Global Placement System
- B** Geographical Positioning System
- C** Global Positioning System
- D** Geographical Placement System

Answer _____

(h) Select the correct meaning for the term VLookup, which is used with spreadsheet applications.

- A** Value Lookup
- B** Vertical Lookup
- C** Variable Lookup
- D** Valid Lookup

Answer _____

(i) Conditional formatting can be used in spreadsheets. Identify the statement that is not true about conditional formatting when it is applied within a spreadsheet.

- A** It can be used to change the cell colour if a specified condition is met.
- B** If a condition is not met nothing will happen to the appearance of the cell.
- C** It can be used to change the formula in a cell if a condition is met.
- D** It can be applied to more than one cell at a time.

Answer _____

- (j)** Select the statement which correctly describes bit rate when representing sounds.
- A** The bit rate is the number of bits used to store each sound sample.
 - B** The bit rate is the speed at which the sound has been recorded.
 - C** The bit rate is the amount of data, measured in bits, that is processed in a given amount of time.
 - D** The bit rate is the number of audio sound samples captured every second.

Answer _____

- 2 The table below records the details of sales in a local computer hardware store.

Computer Store		
Code	Description	Cost
AZY1	Keyboard	10.00
BCT2	Mouse	4.00
	Total	14.00
	Discount	2.00
	Sales Total	12.00

- (a) (i) Using an example from the table above, explain the term data. [2 marks]

- (ii) Using an example from the table above, explain the term information. [2 marks]

A byte contains 8 bits.

- (b) (i) How many bits are in a nibble? [1 mark]

- (ii) How many kilobytes can be stored in a megabyte?
[1 mark]

3 John makes use of a database to record DVD rentals.

(a) Using the terms provided complete the table below.
[1 mark for each term]

Table

Field

Record

Key Field

Definition	Term
A structure where data is organised in rows and columns.	
A collection of data items related to an object or person.	
Designed to hold a single item of data about an object or person.	
Uniquely identifies a record.	

Some of the fields from the MEMBERS table are shown below.

MEMBERID	TITLE	FIRSTNAME	SURNAME	DATEOFBIRTH	OVEREIGHTEEN	JOININGFEE
BEA01	MISS	JULIE	BEATTIE	20/01/2003	<input type="checkbox"/>	£10.00
BLA01	MR	RICHARD	BLACK	01/05/1990	<input checked="" type="checkbox"/>	£10.00
HUG01	MR	JOE	HUGHES	23/03/1967	<input checked="" type="checkbox"/>	£10.00
PAT01	MISS	LIZ	PATRICK	17/06/2014	<input type="checkbox"/>	£10.00
WAL01	MR	PAT	WALSH	25/08/1978	<input checked="" type="checkbox"/>	£10.00
WHI01	MR	WILLIAM	WHITE	26/02/1983	<input checked="" type="checkbox"/>	£10.00
WIL01	MRS	JANE	WILSON	14/10/1991	<input checked="" type="checkbox"/>	£10.00

- (b) Complete the table below by entering the appropriate data type for the fields listed.
[1 mark for each data type]

Field Name	Data Type
MEMBERID	String
TITLE	
DATEOFBIRTH	
OVEREIGHTEEN	
JOININGFEE	

- (c) (i) Suggest **one** reason why the data type for MEMBERID is string. [1 mark]

- (ii) How is the value for OVEREIGHTEEN set in the MEMBERS table? [1 mark]

A copy of the LOAN table is shown below.

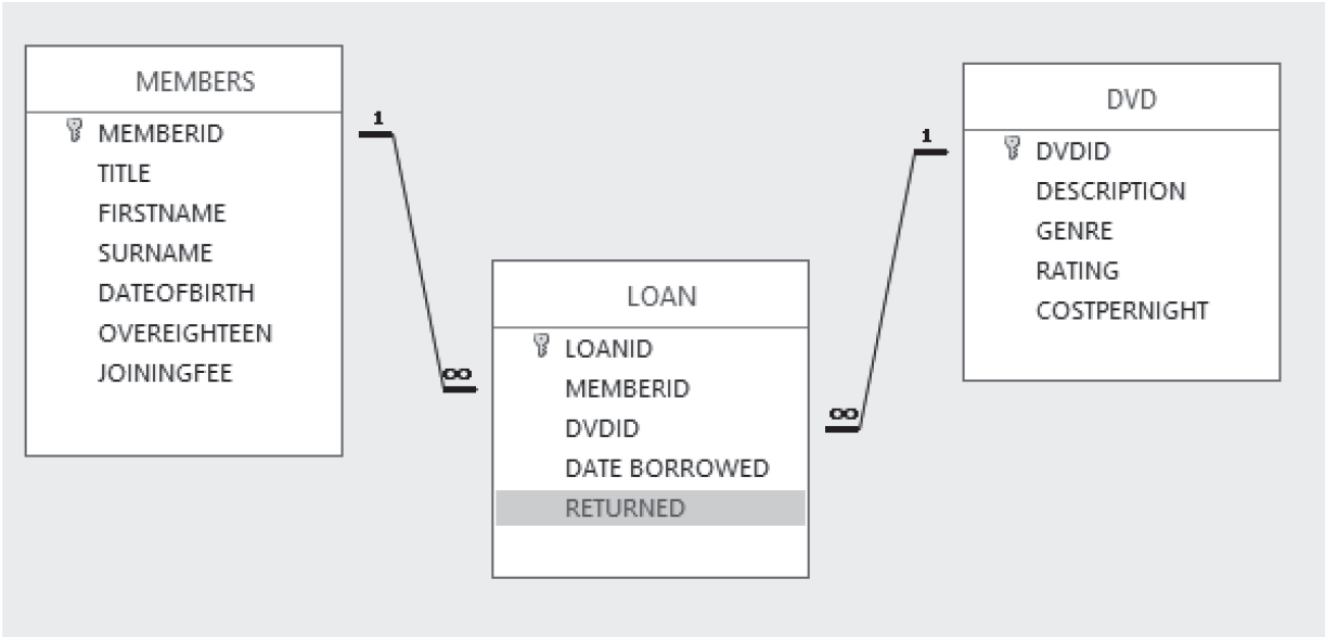
LOANID	MEMBERID	DVDID	DATE BORROWED	RETURNED
LOA11	BEA01	WIC01	03/05/2018	<input checked="" type="checkbox"/>
LOA12	HUG01	JAW01	09/05/2018	<input type="checkbox"/>
LOA13	HUG01	MAI02	08/05/2018	<input checked="" type="checkbox"/>
LOA14	BEA01	MAI03	07/05/2018	<input checked="" type="checkbox"/>
LOA15	BEA01	JAW02	05/05/2018	<input checked="" type="checkbox"/>
LOA16	BEA01	WIC01	09/05/2018	<input type="checkbox"/>
LOA17	WIL01	MAI04	08/05/2018	<input type="checkbox"/>
LOA18	PAT01	JAW03	09/05/2018	<input type="checkbox"/>
LOA19	WHI01	WIC01	07/05/2018	<input type="checkbox"/>
LOA20	BLA01	MAI05	07/05/2018	<input checked="" type="checkbox"/>

(d) (i) Write the criteria for a query, which would produce a list of all DVDs not returned. [2 marks]

(ii) Identify the feature of a database that would display the result of the query in a professional manner. [1 mark]

(e) Identify the feature of a database that would list the DVDs in order of the date borrowed. [1 mark]

The diagram below shows the relationships between the following three tables: MEMBERS, LOAN and DVD in the Loan system.



(f) What type of relationship exists between the MEMBERS and LOAN tables? [1 mark]

- 4 (a) Vic is editing her holiday images. Below is the data related to one of her digital photos.

Item type: JPG File Date taken 20/04/2019 22:34 Rating: Unrated Dimensions 1397 × 1397 Horizontal resolution 300dpi Size: 323KB
--

- (i) In the table below tick(✓) the statements which are true about Vic's image. [3 marks]

Statement	Tick(✓)
The image is a compressed file format.	
The image is not a compressed file format.	
The image is a vector-based graphic.	
The image is a bitmap graphic.	
The image uses lossy compression.	
The image uses lossless compression.	

(ii) Explain the term resolution when referring to a graphic. [2 marks]

(iii) The horizontal resolution is 300 dpi. What do the letters dpi stand for? [1 mark]

Computers can process moving images.

(b) Complete the table below by placing one of the following terms beside the correct definition.
[1 mark for each term]

Buffer

Streaming

Definition	Term
Allows the user to watch the video as it downloads.	
A part of memory used to store a downloaded video before it is watched.	

Computers also support the processing of sound files.

(c) Using **two** of the words supplied complete the following sentences. [1 mark for each]

Digital

Microphone

Analogue

A _____ enables a computer to record sound waves. Sounds are recorded in _____ format.

5 (a) The following is a section of the specification for John's computer system.

- Windows 10 (64-bit)
- Intel® Core™ i7-8700 Processor
- 3.2 GHz / 4.6 GHz (Turbo Boost)
- 12 MB cache
- 16 GB DDR4 (2400 MHz)
- 2 TB HDD, 7200 rpm
- 256 GB SSD

(i) How much RAM does the computer have?
[1 mark]

(ii) What is the purpose of ROM in a computer system?
[2 marks]

(iii) Give **one** advantage of John's computer having a Solid State Drive. [1 mark]

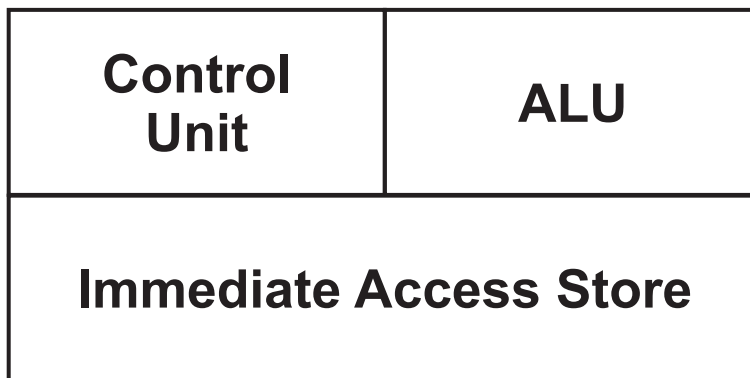
The operating system on John's computer includes a utility application.

(b) What is the function of the following two tasks carried out by utility software? [4 marks]

1. Disk defragmenting

2. Task scheduling

(c) John describes the Central Processing Unit (CPU) as the brain of the computer.



(i) What do the letters ALU stand for? [1 mark]

(ii) What is the role of the Control Unit in the CPU? [2 marks]

(d) Match the terms provided with the correct statements about the CPU and fetch-execute cycle.
 [1 mark for each term]



Term	Statement
	Indicates the speed at which the CPU can operate measured in gigahertz.
	Stores the memory location reference (address) of the next instruction to be fetched.
	Temporarily stores data being transferred to and from memory.

6 (a) Matt's employer uses a LAN to connect the company's workstations together.

(i) What is a LAN? [2 marks]

(ii) State **two** advantages of connecting computers together on a network. [2 marks]

Advantage 1

Advantage 2

(iii) Circle the correct word that matches the definition below. [1 mark]

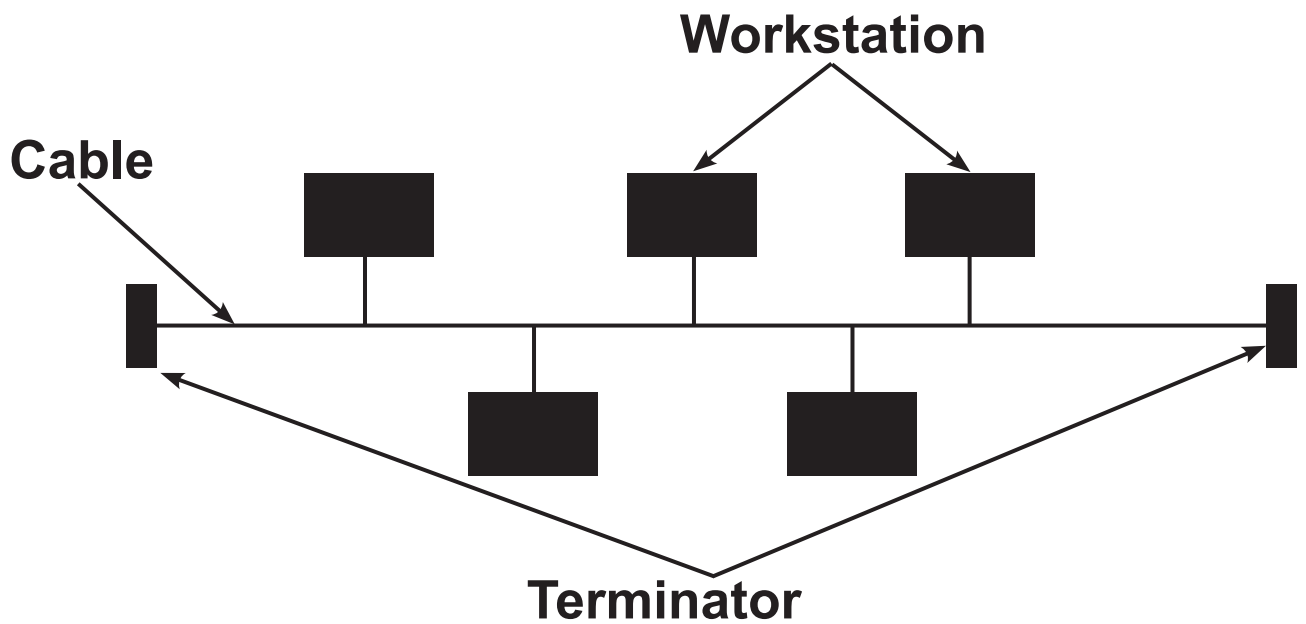
Internet

Intranet

Definition:

A private network owned and managed by an organisation accessible only to employees.

(b) Below is a diagram of the network topology used by an organisation.



(i) State the name of this network topology. [1 mark]

(ii) Identify **one** disadvantage of this type of topology. [1 mark]

At either end of the backbone cable are terminators.

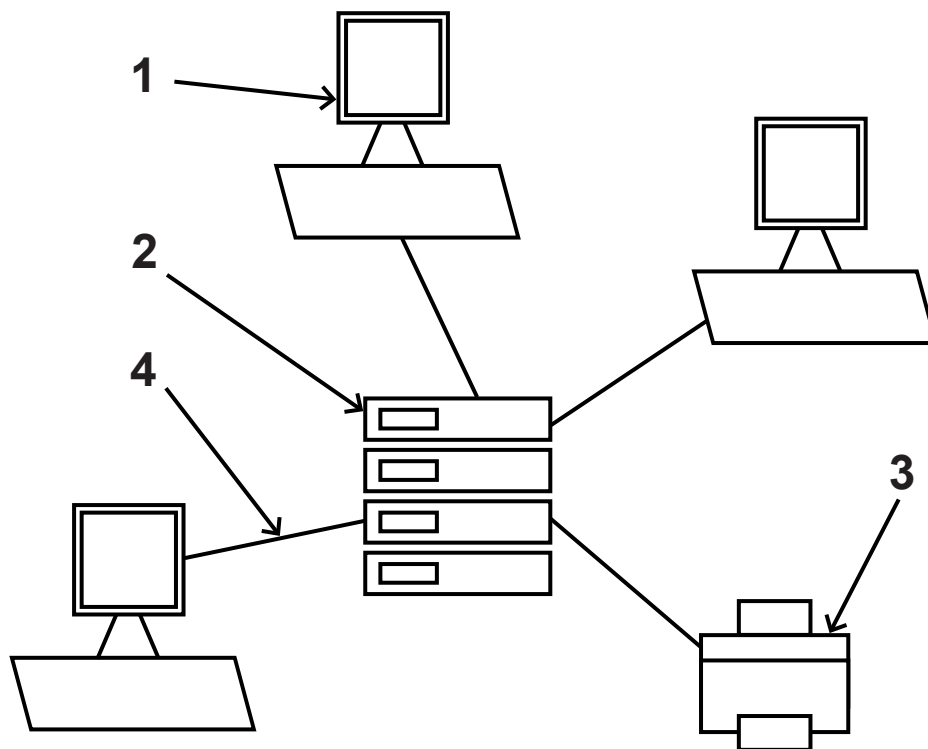
(iii) State the purpose of a terminator used on this type of network. [1 mark]

(c) Circle the statement below that is true about a ring network. [1 mark]

- Computers are connected to one cable.
- All the data passes from one workstation to another.
- If a cable fails, it will only affect one workstation.

(d) Below is a diagram of a star network.

(i) Label the components in the diagram below appropriately. Number one is already completed. [1 mark for each component]



- 1 **Work Station** _____
- 2 _____
- 3 _____
- 4 _____

(ii) State **two** advantages of a star network. [2 marks]

1. _____

2. _____

(iii) State **one** disadvantage of a star network.
[1 mark]

- 8 SPORTZONE have developed a spreadsheet to calculate the tax payable on the activities they offer each week.

	A	B	C	D	E	F
1	SPORTZONE				TAX RATE	15%
2		INCOME FROM ACTIVITIES				
3	ACTIVITY	Cost Per Session	Sessions each day	Total weekly sessions	Weekly Income	Tax Payable
4	Gym	£2.50	35	245	£612.50	£91.88
5	Squash Court	£2.05	10	70	£143.50	£21.53
6	Snooker Table	£3.50	15	105	£367.50	£55.13
7	Pool Table	£2.00	7	49	£98.00	£14.70
8	Spin Sessions	£3.00	12	84	£252.00	£37.80
9					£1,473.50	£221.03

- (a) State the formatting used on cells B2 to F2. [1 mark]
-

- (b) Place a tick(✓) against the correct formula used in cell E4. [1 mark]

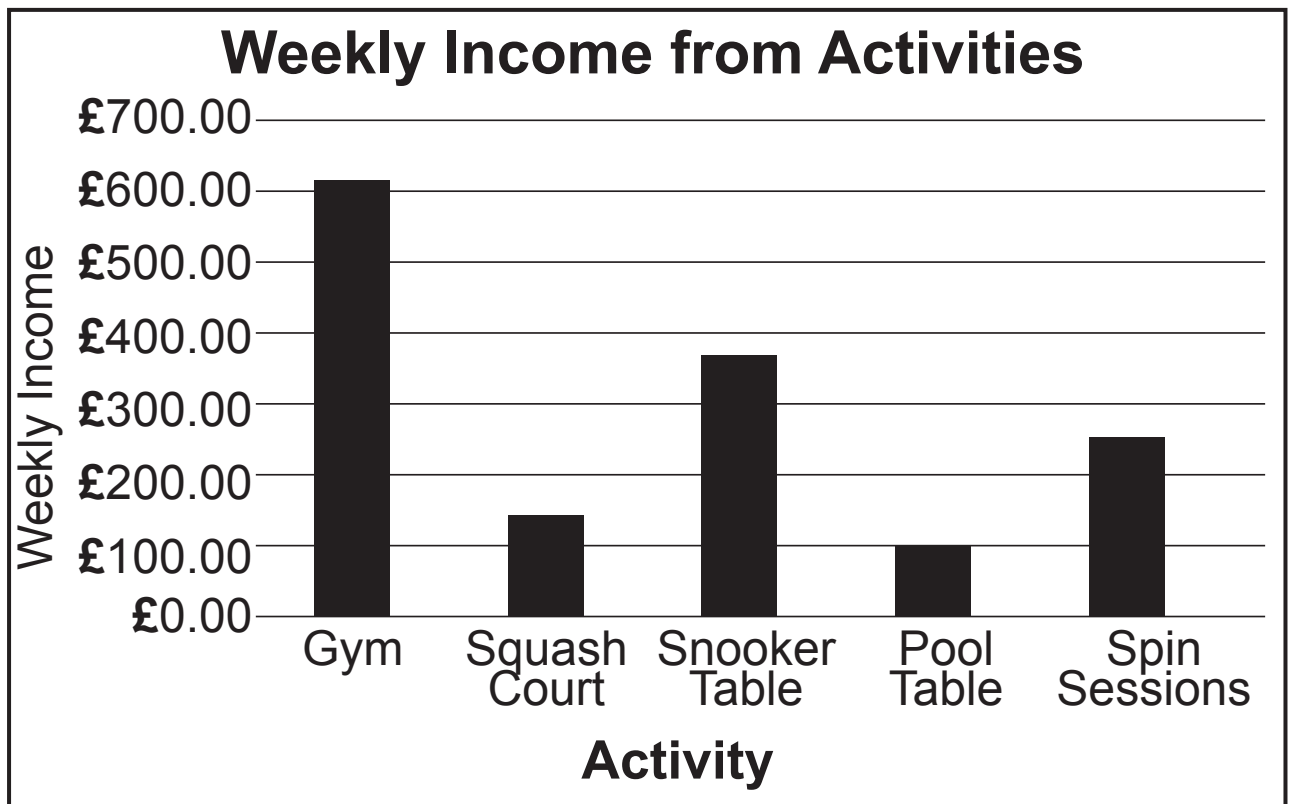
Formula	Tick (✓)
= C4*D4	
= B4*D4	
= A4*D4	

Cell F4 has the following formula which contains an absolute cell reference.

E4*\$F\$1

(c) What is the purpose of an absolute cell reference?
[2 marks]

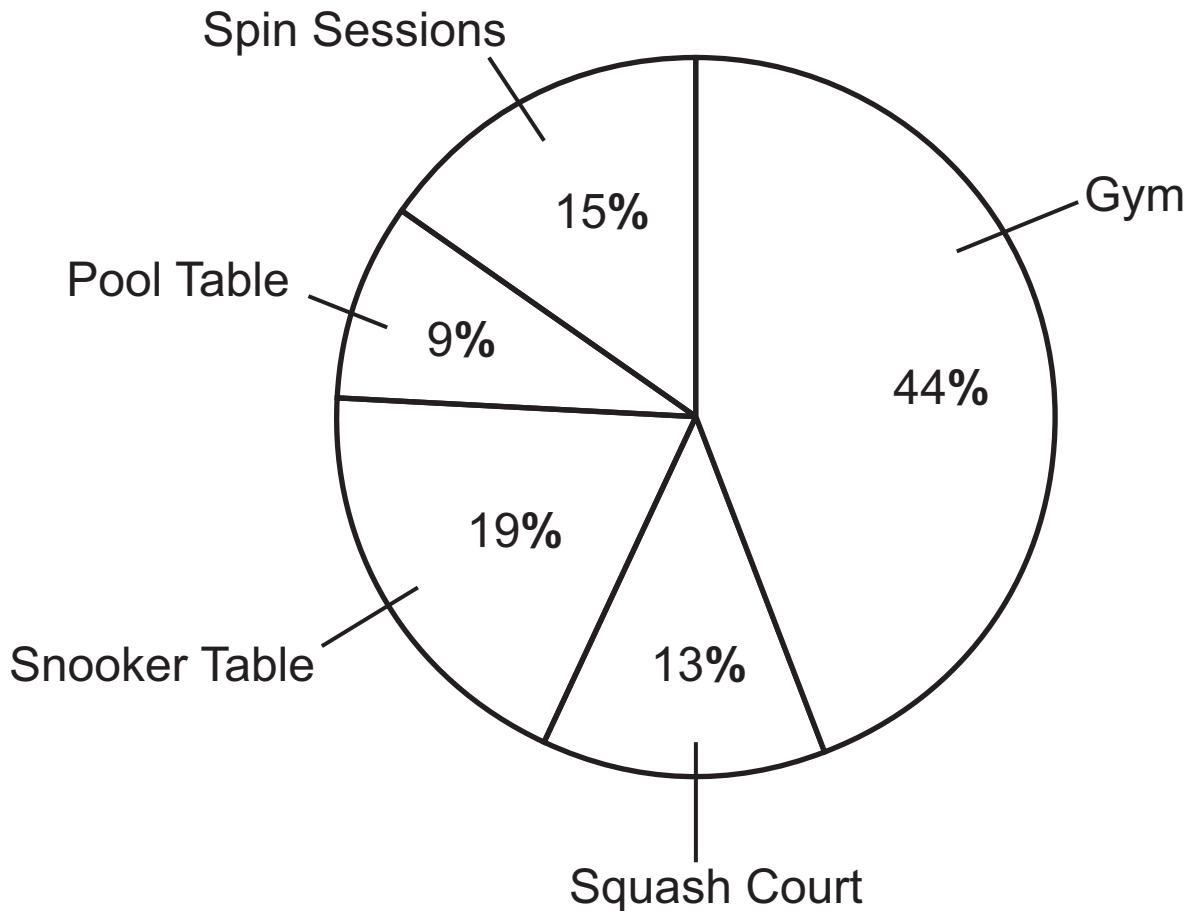
(d) Identify **two** cell ranges used to produce the following graph. [2 marks]



1. _____

2. _____

(e) (i) What type of graph is shown below? [1 mark]



(ii) What information is provided by the graph shown above in **e(i)**? [1 mark]

(f) Data modelling is used to answer ‘what if’ questions. How could SPORTZONE make use of this function using cell F1? [2 marks]

This is the end of the question paper

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	

Total Marks	
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Examiner Number

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