

Unit 1 – ICD20 – Hardware & Network Intro

Sample Test: Wednesday September 24, 2026

Name: Gorski

Total	%	Knowledge 	Communication 	Application 	Thinking 
(94)	(100)	(24)	(28)	(23)	(19)

Knowledge

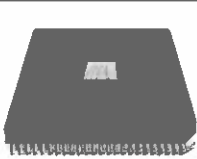
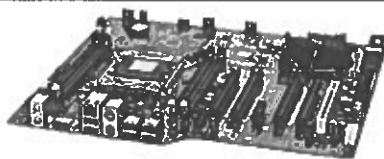
1. What does IPOMS stand for?

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Input	Processing	output	Memory	storage
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2. Identify each of the following:

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RAM	HD	CPU	Motherboard	Fan

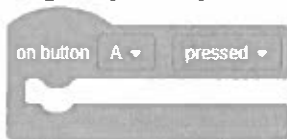
3. Classify each piece of hardware as input, output or storage.

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(a) Speakers	input	output	storage	(d) Microphone	input	output	storage
(b) LED Lights	input	output	storage	(e) Hard Drive	input	output	storage
(c) Accelerometer	input	output	storage	(f) Camera	input	output	storage

4. Identify the part of the Microbit's hardware that is changed by each piece of code.

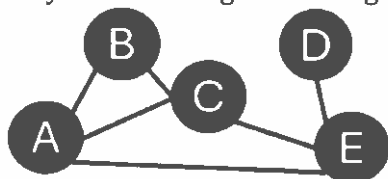
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Radio Antenna	Accelerometer	Button A	Microphone

			
Edge Connector	LEDs	Memory	Speaker

5. Identify the following in this diagram.

/4



Number of Nodes	Number of Edges	Degree of Node D	Degree of Node E
5	6	1	3

Communication

6. Identify the term from the description.

/10

Cochlear Implant	(a)	Hardware that connects directly to the human auditory nerve.
E Sports	(b)	A new media that is a cross between sports and entertainment.
Touch screen	(d)	A piece of hardware that is both input AND output.
Euler Path	(c)	On a graph, a path travelling over all edges once, never repeating.
Node	(d)	On a graph, it is used to model the end of a balloon animal.
18 months	(e)	According to Moore, the time for a computer price to be cut in half.
CPU	(f)	A piece of hardware that is the brain of the computer.
(any metal) Gold	(g)	A metal used to build a computer.

7. Identify the ergonomic issue caused by each clue.

/5

(a) Using your phone right before you go to bed.	(b) Using your headset at max volume.	(c) Using a Nintendo console without a break.	(d) Holding your mouse in a claw hand position.	(e) There is a glare off your computer screen.
Trouble Sleeping	Ringling Ears	Nintendo Thumb	Carpal Tunnel	Eye Strain

8. Match the user-categories with the computer (Regular Home User, Elite Gamer, School Students)

/3

A: RAM: 1 GB CPU: 1.4 GHz HD: 0.2 TB	B: RAM: 8 GB CPU: 2.8 GHz HD: 1 TB	C: RAM: 16 GB CPU: 4.2 GHz HD: 2 TB
Match: School Students	Regular Home User	Elite Gamer

9. Referring to the computers in question 8 above, Otto Graff is a film editor creating complex animations.

/4

They often render scenes that need a lot of computer resources. Which computer should they buy? Why?

Choice?	C	Reason?	Best specs (Best CPU, RAM, HD)
Specific Evidence: ...C's RAM is 16 GB, which is higher than A's 1 GB and B's 8 GB. note - use a specific #.			

10. Why is AI use an environmental problem? Use specific details to support your answer.

/6

☐ The POINT is first. It uses the word BECAUSE ☐ The reason in the POINT is concise and clear. It relates to the detail that follows it.	AI is an environmental problem because it consumes a lot of energy.
☐ The DETAIL has some examples or details. Some attempt to support an idea. ☐ The DETAIL is very specific. It has a specific name, number, or detailed example. No off-topic material.	one use of ChatGPT is 7000J, which is enough power to run a microwave for 8 sec. The billion daily requests consume the power of 7.2 million homes.
☐ The ANALYSIS explains HOW or WHY the point relates to the detail. It is not jumbled up with the detail. ☐ The ANALYSIS is excellent and adds to the paragraph.	Because modern AI simply throws power at a problem to guess an answer, it is very wasteful, and contributes to global warming.

Application

11. Circle all pieces of hardware that apply to the description.

/6

- Where open files are held.
- Holds variables for the CPU.
- Farthest from the CPU.
- Turns on (boots) the computer.
- Where things are saved.
- Not on the motherboard.

<u>RAM</u>	ROM	HD
<u>RAM</u>	ROM	HD
RAM	<u>ROM</u>	<u>HD</u>
RAM	<u>ROM</u>	HD
RAM	ROM	<u>HD</u>
RAM	ROM	<u>HD</u>

12. For each number on the diagram, how would you fix the ergonomic problem?

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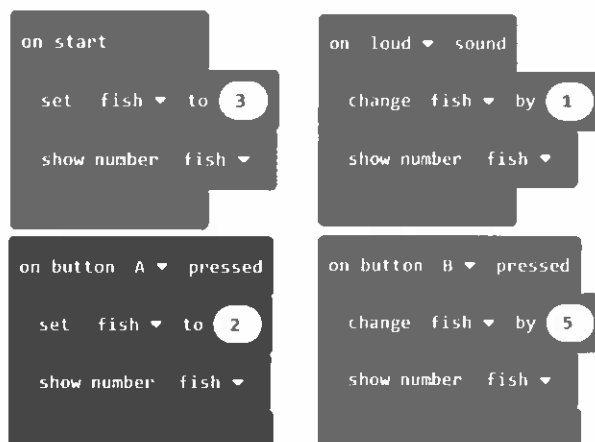


#	Fix
1	Move Phone up so neck isn't bent
2	Straighten back to ease Back Strain
3	Take breaks to relieve texter's finger
4	Place feet flat on ground to relieve numb legs

13. Consider the following microbit program. What is the variable's value in RAM after each action?

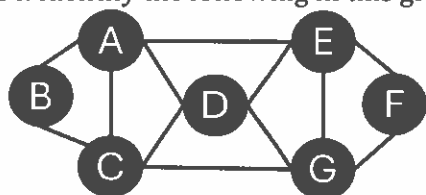
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Action	Value of fish after?
a) At the beginning.	3
b) Button A is pressed.	2
c) A fire alarm goes off.	3
d) Button A is pressed.	2
e) Button B is pressed.	7
f) Button B is pressed.	12



14. Identify the following in this graph.

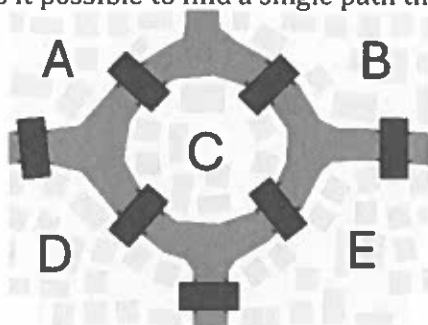
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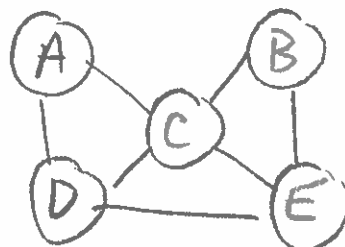
a) Number of Nodes with Odd Degree	0
b) Number of Nodes with Even Degree	7
c) Has an Euler Path? (y/n)	y

15. This is a map of a city with some bridges crossing a river. Draw a graph to represent this situation. Also, is it possible to find a single path that can cross all bridges once without repeating?

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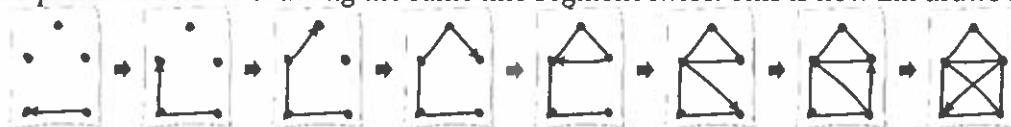


Does it have a path of all bridges? (y/n) ... y ...
☐ Below, draw a graph to represent the city.



Thinking

16. Zhi creates pictures by drawing dots and then connecting them with line segments in one motion, never picking up his pencil and never drawing the same line segment twice. This is how Zhi draws a house:



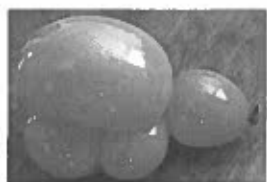
Which of the following pictures can Zhi draw? (circle all that can be drawn in this method)

/2

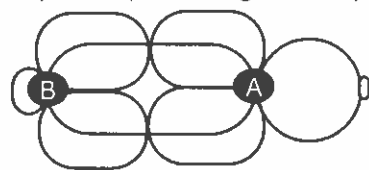


17. Draw this balloon turtle using a graph. I added 2 nodes, you must add 4 more.

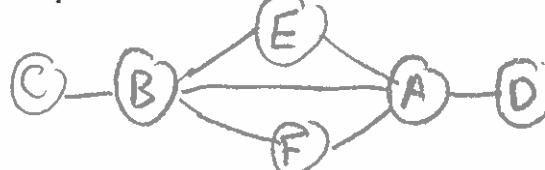
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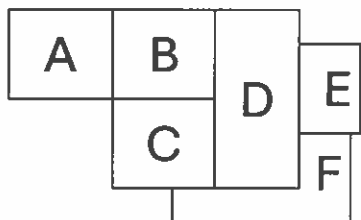
Top View (see-through balloon)



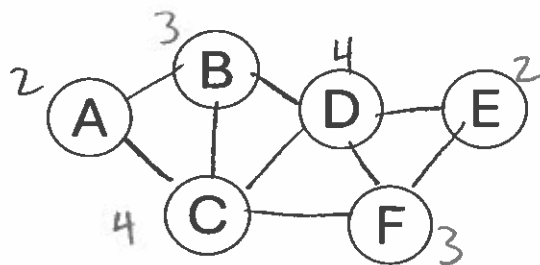
Graph:



18. You are planning a road-trip to the 6 countries shown below, with the following odd rule: you must cross all borders between all neighboring countries exactly once. For example, you must cross the Country A- Country B border exactly once.



Draw Graph Here: (add edges)



(a) Draw the graph for this situation below ☐

/6

(b) Can you plan the road trip? ... *y* ...

(c) If so, where do you need to:

- start your road trip? ... *B* ... (or reverse)
- end your road trip? ... *F* ... (odd nodes)

(d) What term from graph theory helps solves this problem?

... *Euler path* ...

19. Draw a graph using the following clues. Edges should be straight and they should not cross.

/6

Add the two missing room names inside the two blank nodes.

Clues:

- The Hall has 4 doorways.
- The Office has a door to every room except the Hall and the Closet.
- The Closet can be reached by 3 doors, including one in the Foyer and another in the Attic.
- There are 2 rooms with an even degree and all of the others have an odd number of connections.
- You can't get to the Closet from the Pantry.

