

AP Minecraft

Practice Exam

NOTE: This is a modified version of the 2018 AP Minecraft Exam.

This exam may not be posted on school or personal websites, nor electronically redistributed for any reason. This Released Exam is provided by the College Board for AP Exam preparation. Teachers are permitted to download the materials and make copies to use with their students in a classroom setting only. To maintain the security of this exam, teachers should collect all materials after their administration and keep them in a secure location.

Further distribution of these materials outside of the secure College Board site disadvantages teachers who rely on uncirculated questions for classroom testing. Any additional distribution is in violation of the College Board's copyright policies and may result in the termination of Practice Exam access for your school as well as the removal of access to other online services such as the AP Teacher Community and Online Score Reports.

AP[®] Minecraft Exam

SECTION I: Multiple Choice

2018

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

At a Glance

Total Time

1 hour and 30 minutes

Number of Questions

50

Percent of Total Score

50%

Writing Instrument

Pencil required

Electronic Device

None allowed

Instructions

Section I of this exam contains 50 multiple-choice questions. Fill in only the circles for numbers 1 through 50 on your answer sheet.

Indicate all of your answers to the multiple-choice questions on the answer sheet. No credit will be given for anything written in this exam booklet, but you may use the booklet for notes or scratch work. After you have decided which of the suggested answers is best, completely fill in the corresponding circle on the answer sheet.

Because this section offers only four answer options for each question, do not mark the (E) answer circle for any question. Give only one answer to each question. If you change an answer, be sure that the previous mark is erased completely. Here is a sample question and answer.

Sample Question Sample Answer

Chicago is a (A) ● (C) (D) (E)
(A) state
(B) city
(C) country
(D) continent

Use your time effectively, working as quickly as you can without losing accuracy. Do not spend too much time on any one question. Go on to other questions and come back to the ones you have not answered if you have time. It is not expected that everyone will know the answers to all of the multiple-choice questions.

Your total score on Section I is based only on the number of questions answered correctly. Points are not deducted for incorrect answers or unanswered questions.

Form I
Form Code 4OBP4-S

25

MINECRAFT

SECTION I

Time—1 hour and 30 minutes

50 Questions

Note: For all questions, assume that the questions relate to the newest version of Java vanilla Minecraft (1.14), unless otherwise specified. Assume no changes (such as hotkeys) have been made, and the game has just been installed.

Directions: Each of the questions or incomplete statements below is followed by four suggested answers or completions. Select the one that is best in each case and then fill in the corresponding circle on the answer sheet.

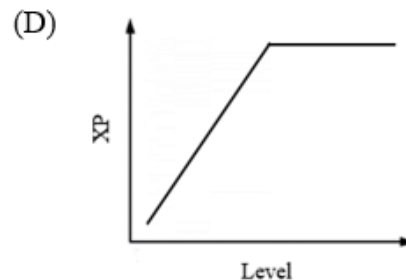
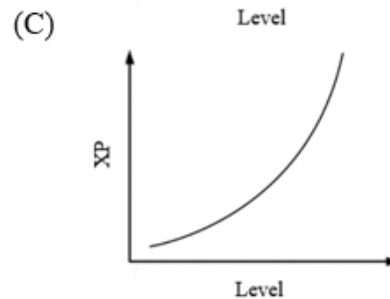
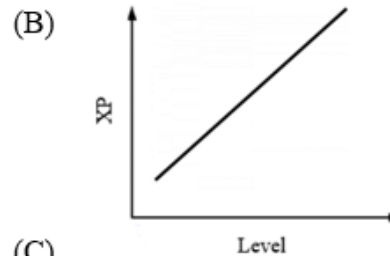
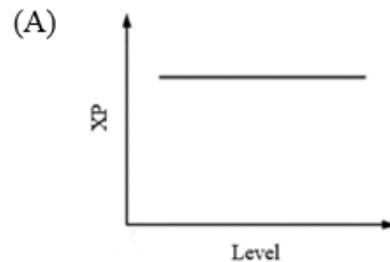
1. Which of the following items is NOT renewable?

- (A) Diamond Pickaxe
- (B) Cake
- (C) Music Discs
- (D) Redstone Comparator

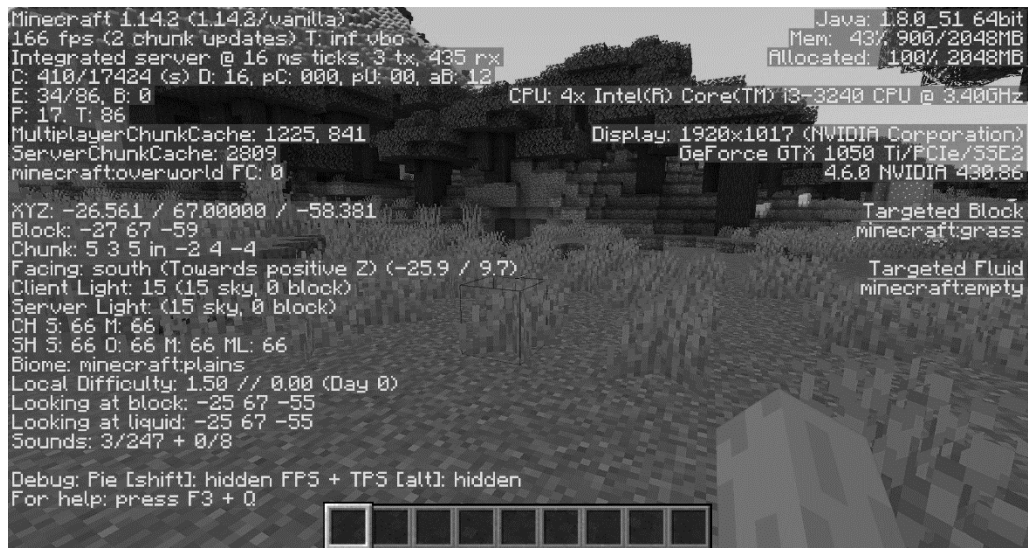
2. Which of the following is a difference between cave spiders and regular spiders?

- (A) Cave spiders take more damage than regular spiders if a weapon has a Bane of Arthropods enchantment on it
- (B) Cave spiders cannot spawn with status effects, while regular spiders can
- (C) Cave spiders are unaffected by poison, while regular spiders are
- (D) Cave spiders are always hostile, while spiders are only hostile at low light levels

3. Which of the following graphs best represents the total amount of experience orbs required to get to a particular level?



Questions 4-6 refer to the following material.



4. How many rendered entities are there in the following perspective?

- (A) 34
- (B) 86
- (C) 17
- (D) 12

5. What render distance is the user currently using?

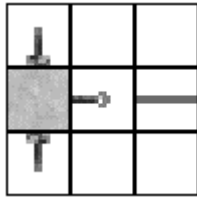
- (A) 12 blocks
- (B) 15 blocks
- (C) 16 blocks
- (D) 17 blocks

6. The coordinate 67.00000 represents which of the following?

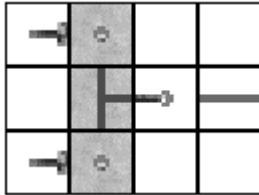
- (A) The Y coordinate of the player's head
- (B) The Y coordinate of the player's feet
- (C) The Z coordinate of the player's head
- (D) The Z coordinate of the player's feet

7. Which of the following is an AND gate?

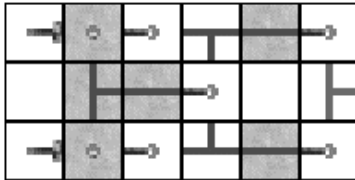
(A)



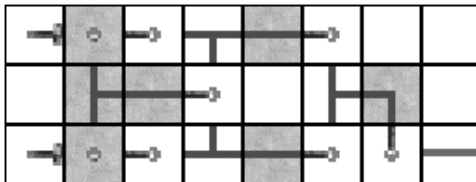
(B)



(C)



(D)



8. Which of the following does NOT cause a snow golem to die?

- (A) Placing it in a savannah biome
- (B) Bringing it into the Nether
- (C) Placing it in rain
- (D) Dropping it from >100 blocks

9. Which of the following best describes how slime chunks are created?

- (A) Pseudo-randomly generated based on the seed, uniform distribution by biome
- (B) Pseudo-randomly generated based on the seed, except not in particular biomes
- (C) Pseudo-randomly generated based on the cycle of the moon, with more prevalence in swamp biomes
- (D) Pseudo-randomly generated based on the cycle of the moon, generated in groups of 1-3, except not in particular biomes

10. Which of the following foods provides the most saturation?

- (A) Steak
- (B) Enchanted Golden Apple
- (C) Cake
- (D) Golden Carrot

11. Which of the following items are required to make a splash potion of harming?

- (A) Fermented Spider Eye, Glowstone
- (B) Fermented Spider Eye, Gunpowder
- (C) Spider Eye, Glowstone
- (D) Spider Eye, Gunpowder

12. Which of the following releases the most experience (at maximum)?

- (A) Mining diamond ore
- (B) Smelting diamond ore
- (C) Killing a blaze
- (D) Killing another player

13. Suppose you are in the Nether, and your coordinates are (8, 4, 8). Which of the following will be your coordinates in the Overworld if a Nether portal is built at the exact location you are standing at?

- (A) (8, 4, 8)
- (B) (1, 4, 1)
- (C) (64, 4, 64)
- (D) (64, 32, 64)

14. Which of the following fuels has the longest burning time (seconds)?

- (A) Block of Coal
- (B) Lava Bucket
- (C) Blaze Rod
- (D) Dried Kelp Block

15. Which of the following materials is most blast resistant?

- (A) End Stone
- (B) Cobblestone
- (C) Block of Iron
- (D) Water

16. Which of the following statements is true regarding horses?

- (A) When breeding two identical horses, as their attributes go up (speed and health), the chance of getting a better horse than the two being bred increases
- (B) At maximum, a horse can jump over 5 blocks
- (C) Theoretically, it could take over 30 tries to successfully tame a horse
- (D) The average horse speed is slower than a boat in flat water

17. Which of the following sets of statements is true regarding lava when placed in the Overworld and Nether?

	<u>Speed</u>	<u>Radius</u>
(A)	Same in both dimensions	Same in both dimensions
(B)	Faster in the Nether	Same in both dimensions
(C)	Faster in the Nether	Larger in the Nether
(D)	Same in both dimensions	Larger in the Nether

Questions 18-20 refer to the following material.

Strongholds are naturally occurring structures in Minecraft whose primary purpose is housing end portals. Answer the following questions related to strongholds.

18. Which of the following are true regarding stronghold generation?

- I. Strongholds generate in rings
 - II. It is possible for a stronghold to generate at the origin (0,0)
 - III. The portal frame may be naturally filled
- (A) I only
(B) I and II only
(C) I and III only
(D) II and III only

19. Which of the following is NOT a naturally occurring room?

- (A) Fountain rooms
(B) Libraries
(C) Store rooms
(D) Jail cells

20. Which of the following is NOT true regarding silverfish?

- (A) If damaged by any amount, silverfish will call upon other silverfish to break out of their monster eggs
(B) Silverfish can spawn light levels of 12 or higher in certain scenarios
(C) Silverfish are weak against weapons with the Bane of Arthropods enchantment
(D) Silverfish can naturally spawn in infested blocks outside mountain biomes and strongholds

Questions 21-24 refer to the following material.



21. Which of the following enchantments is possible to obtain using the above utility?

- (A) Impaling V
- (B) Punch III
- (C) Projectile Protection V
- (D) Respiration IV

22. Which of the following items can be repaired without using another of the same item (e.g. using another fishing rod to repair an existing one)

- (A) Bow
- (B) Chainmail Boots
- (C) Shears
- (D) Fishing Rod

23. Which of the following statements is true regarding repairing?

- I. More than one item can be renamed at once
 - II. The maximum level you can repair items at is 40 in survival
 - III. After an item has been worked on six times, further repair or enchantment is impossible in survival
- (A) I and II only
 - (B) I and III only
 - (C) II and III only
 - (D) I, II, and III

24. In the figure above, how many additional Fortune I books would be required to make the Pickaxe Fortune III?

- (A) 2
- (B) 3
- (C) 4
- (D) 5

Questions 25-27 refer to the following picture.



25. Which of the following ores pictured above has the highest possible drop count when mined?

- (A) Redstone ore
- (B) Emerald ore
- (C) Lapis lazuli ore
- (D) Coal ore

26. Which of the following could be the biome the player is in?

- (A) Mountain Edge
- (B) Stone Shore
- (C) Dark Forest Hills
- (D) Swamp

27. Which of the following statements are true?

- I. All ores that naturally occur in the Overworld are pictured above
 - II. During world generation, lava replaces all air blocks between levels 1 and 10
 - III. Lava naturally occurs in at least two other ways
- (A) I and II only
 - (B) II and III only
 - (C) I, II, and III
 - (D) I and III only

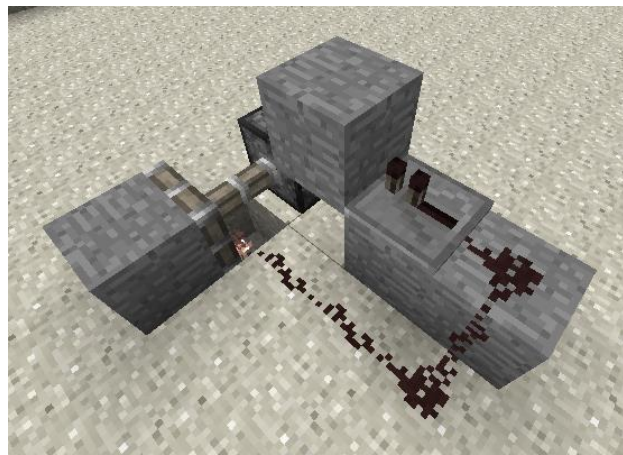
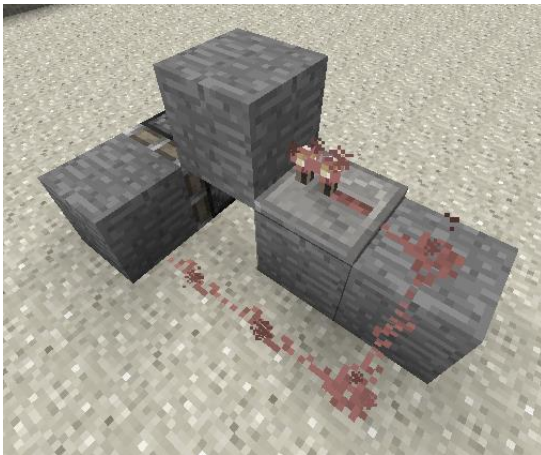
28. Which of the following provides an expression for the maximum number of items a player can carry (without uncrafting/crafting into more items after retrieval), not including armor?

- (A) 27×64
- (B) 37×64
- (C) $3 \times 9 \times 64 \times 37$
- (D) $3 \times 9 \times 64 \times 37 \times 27$

29. Which of the following statements BEST describes the purpose of an RS latch?

- (A) More customizable version of a repeater
- (B) Serve as a memory cell
- (C) Connects two logic gates
- (D) Serves as a rapid pulsar

Questions 30 and 31 refer to the following picture.



30. Which of the following BEST describes the pictured contraption?

- (A) T-BUD (Toggle-BUD)
- (B) Circuit breaker pulse generator
- (C) Edge detector
- (D) T flip-flop

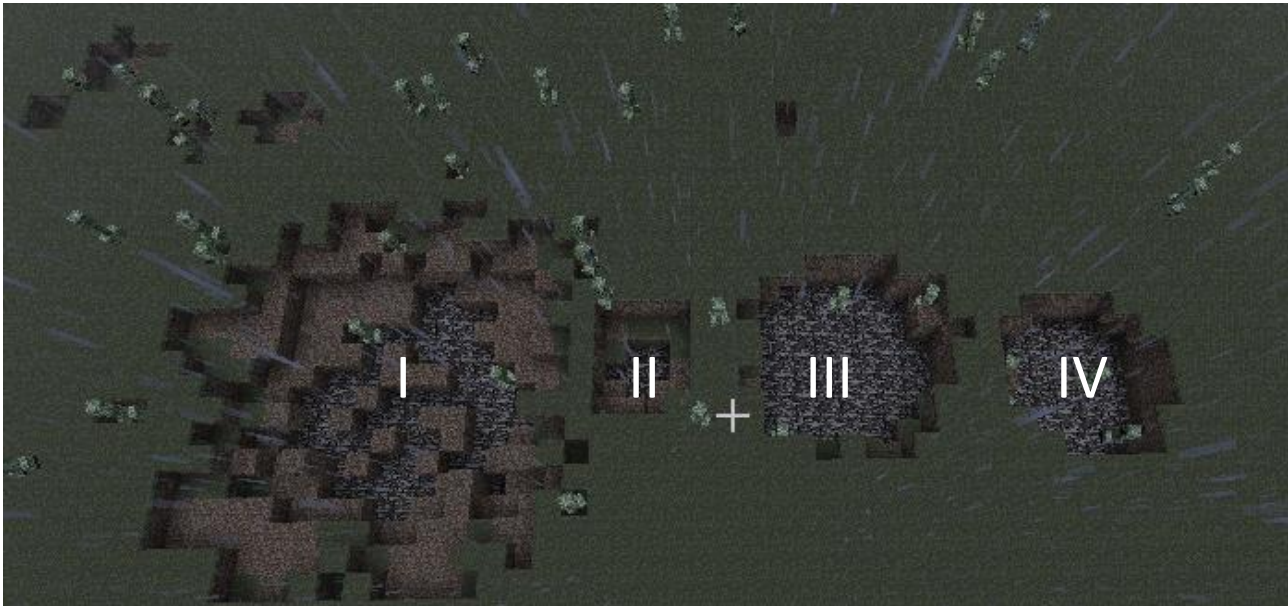
31. Which of the following changes will the above contraption NOT detect?

- (A) A furnace beginning or ceasing to smelt
- (B) Freezing of water or melting of ice
- (C) Rails changing orientation
- (D) An anvil become slightly damaged or very damaged

32. Which of the following statements regarding durability is true?

- (A) Hitting a mob with an axe counts as more uses than using it on a log or wood block
- (B) Breaking a block that breaks instantly with an axe counts as one use
- (C) The power at which a bow is shot affects the number of uses
- (D) Shields lose the same amount of durability as the strength of the attack

Questions 33 and 34 refer to the following picture.



33. Which of the following BEST identifies the cause of craters III and IV?

- | <u>III</u> | <u>IV</u> |
|---------------------|-------------------------|
| (A) Charged creeper | Wither (created) |
| (B) Creeper | Ghast fireball |
| (C) Charged creeper | TNT |
| (D) Creeper | Projectile wither skull |

34. Which of the following is NOT a primary cause of lag from explosions?

- (A) Dropped items
- (B) Liquid physics
- (C) Increased render-complexity of the crater
- (D) Calculation of blast radius

35. Which of the following statements is true regarding zombie villagers?

- I. Baby zombie villagers are able to fit through 1x1 block gaps
 - II. Conversion of zombie villagers can be made easier using certain blocks
 - III. Zombie villagers must be cured by giving it an enchanted golden apple and putting it under a weakness effect
- (A) I only
(B) I and II only
(C) II only
(D) I, II, and III
-

36. Which of the following is NOT a vanilla kick message?

- (A) disconnect.spam
(B) Flying is not enabled on this server
(C) The server is currently under maintenance
(D) Outdated client (Please use {version})

37. Which of the following is a hostile mob?

- (A) Cave Spider
(B) Enderman
(C) Zombie Pigman
(D) Endermite

38. Which of the following is NOT a death message?

- (A) [player] exploded
(B) [player] went off with a bang
(C) [player] fell of some vines
(D) [player] experienced kinetic energy

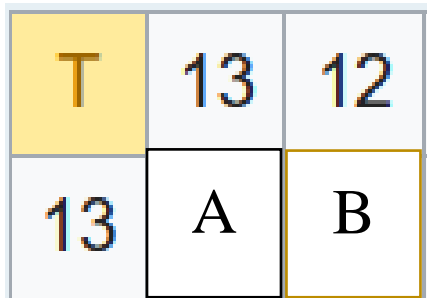
39. Which of the following blocks can be pushed, but not pulled by a sticky piston?

- (A) Jack o'Lantern
(B) Glazed Terracotta
(C) Anvil
(D) Dragon Egg

Questions 40-43 refer to the following topic.

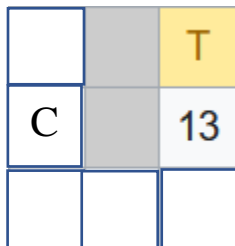
Light is a very important mechanic in Minecraft, affecting mob spawning, visibility, and plant growth.

40. In the diagram below, with “T” representing a torch (which has a light level of 14), what is the predicted light level at points “A” and “B?” Assume a flat plain with no interfering blocks.



- | | <u>Block A</u> | <u>Block B</u> |
|-----|----------------|----------------|
| (A) | 13 | 12 |
| (B) | 13 | 11 |
| (C) | 12 | 11 |
| (D) | 12 | 12 |

41. In the diagram below, predict the brightness level at block “C”. Assume white blocks are transparent and grey blocks are opaque.



- (A) 11
- (B) 10
- (C) 9
- (D) 0

42. Which of the following sets of blocks are more favorable for farming at lower light levels?

- (A) Mushrooms and Snow
- (B) Mushrooms and Mycelium
- (C) Pumpkins and Snow
- (D) Snow and Mycelium

43. Which of the following mobs spawn at the highest light level?

- (A) Witches
- (B) Creepers
- (C) Wither skeletons
- (D) Blazes

44. Which of the following statements are true regarding players?

- I. There exists one and two character usernames
 - II. When a player changes their username, old usernames are free for anyone to take after 30 days
 - III. The existing vanilla capes with more than one owner are the MINECON capes for each year and the Mojang AB staff capes
- (A) I only
 - (B) I and II only
 - (C) II and III only
 - (D) II only

45. Which of the following descriptions BEST describes the purpose of BungeeCord?

- (A) Connecting servers
- (B) Package and plugin manager for servers
- (C) Makes installing Minecraft modpacks easier
- (D) Debugs server lag

46. Which of the following is a correct matching between material of the block underneath a note block and its instrument?

	<u>Block Underneath</u>	<u>Instrument</u>
(A)	Block of Iron	Harp / piano
(B)	Pumpkin	Snare Drum
(C)	Wool	Guitar
(D)	Glass	Double Bass

47. What is the lowest efficiency (with no haste effect) on a diamond pickaxe to instantly mine ice and netherrack?

- (A) I
- (B) II
- (C) III
- (D) V

48. The base layer of a 6-beacon (2 by 3) pyramid, which provides all six effects, is at smallest what size?

- (A) 9x9
- (B) 9x10
- (C) 10x11
- (D) 11x11

49. Which of the following statements is NOT true regarding pressure plates?

- (A) A heavy weighted pressure plate will produce a full signal strength if there are over 64 entities
- (B) Stone pressure plates can only detect players and mobs, while wooden pressure plates detect all entities
- (C) Heavy pressure plates measures groups of 10 entities
- (D) Both wooden and stone pressure plates occur naturally

50. What is the effect of simultaneously pressing the F3 and F key?

- (A) Toggles the visible chunk borders around the player
- (B) Cycles between creative and spectator gamemodes
- (C) Increases render distance by 1
- (D) Clears chat history

END OF SECTION I

**IF YOU FINISH BEFORE TIME IS CALLED,
YOU MAY CHECK YOUR WORK ON THIS SECTION.**

DO NOT GO ON TO SECTION II UNTIL YOU ARE TOLD TO DO SO.

MAKE SURE YOU HAVE DONE THE FOLLOWING.

- **PLACED YOUR AP NUMBER LABEL ON YOUR ANSWER SHEET**
- **WRITTEN AND GRIDDED YOUR AP NUMBER CORRECTLY ON YOUR ANSWER SHEET**
- **TAKEN THE AP EXAM LABEL FROM THE FRONT OF THIS BOOKLET AND PLACED IT ON YOUR ANSWER SHEET.**

Section II: Free-Response Questions

This is the free-response section of the 2018 AP Exam.
It includes cover material and other administrative instructions
to help familiarize students with the mechanics of the exam.
(Note that future exams may differ in look from the following content.)

AP[®] Minecraft Exam

SECTION II: Free Response

2018

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

At a Glance

Total Time

1 hour and 45 minutes

Number of Questions

7

Percent of Total Score

50%

Writing Instrument

Either pencil or pen with black or dark blue ink

Electronic Device

None allowed

Suggested Time

Approximately
23 minutes each for questions 1—3 and
9 minutes each for questions 4—7

Weight

Approximate weights:
Questions 1—3:
22% each
Questions 4—7:
9% each

IMPORTANT Identification Information

PLEASE PRINT WITH PEN:

1. First two letters of your last name

First letter of your first name

2. Date of birth

Month

Day

Year

3. Six-digit school code

4. Unless I check the box below, I grant the College Board the unlimited right to use, reproduce, and publish my free-response materials, both written and oral, for educational research and instructional purposes. My name and the name of my school will not be used in any way in connection with my free-response materials. I understand that I am free to mark "No" with no effect on my score or its reporting.

No, I do not grant the College Board these rights. ☐

Instructions

The questions for Section II are printed in this booklet.

You may use the pages that the questions are printed on to organize your answers or for scratch work, but you must write your answers in the areas designated for each response. Only material written in the space provided will be scored.

Examples and equations may be included in your responses where appropriate. For calculations, clearly show the method used and the steps involved in arriving at your answers. You must show your work to receive credit for your answer.

Write clearly and legibly. Cross out any errors you make; erased or crossed-out work will not be scored.

Manage your time carefully. You may proceed freely from one question to the next. You may review your responses if you finish before the end of the exam is announced.

MINECRAFT

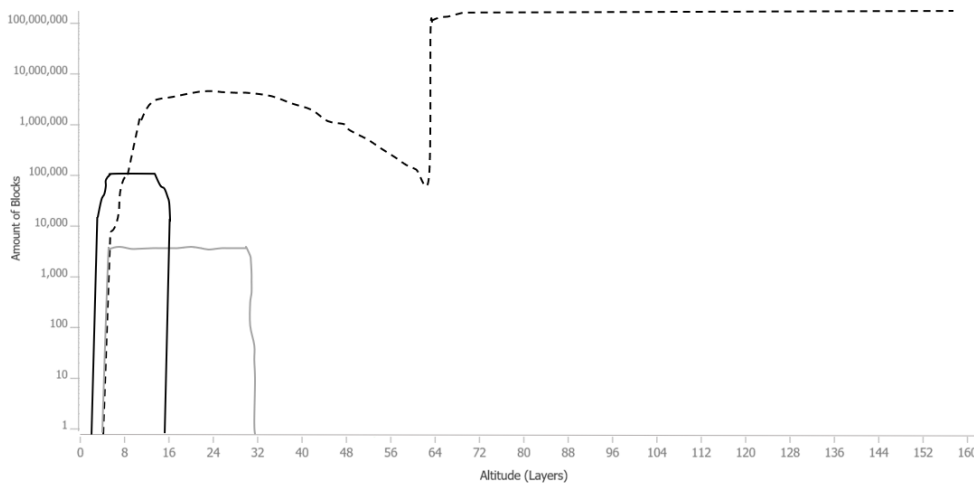
Section II

Time—1 hour and 45 minutes

7 Questions

Directions: Questions 1-3 are long free-response questions that require about 23 minutes each to answer and are worth 10 points each. Questions 4-7 are short free-response questions that require about 9 minutes each to answer and are worth 4 points each.

Write your response in the space provided following each question. You must explain your answer fully to receive credit – guesses will receive no credit.



1. The following logarithmic graph (note the scale) provides the abundance of blocks in a Minecraft world as a function of altitude. There are three distinct curves, namely a solid black, dashed black, and grey curve. Use the graph to answer the following questions.

(a) One of the curves represents the abundance of emerald ore, while another represents the abundance of diamond ore. Which curve represents diamond ore?

_____ Solid Black _____ Grey

Give at least **two** reasons for your answer.

(b) The dashed black curve represents the abundance of air. Provide **one** reason why the curve dips between layers 56-64.

(c) Below is a grid, representing a vertical view of stone blocks at a low altitude. **Identify** a reasonable layer (altitude) to mine diamonds at, then **shade** in the diagram (with an appropriate key) to represent a branch mine.

(d) **Explain** how your diagram would be different if you were representing strip mining.

(e) **Define** *pokeholing* and **explain** one other mining method (other than caving) that could be used find naturally occurring diamond ore.

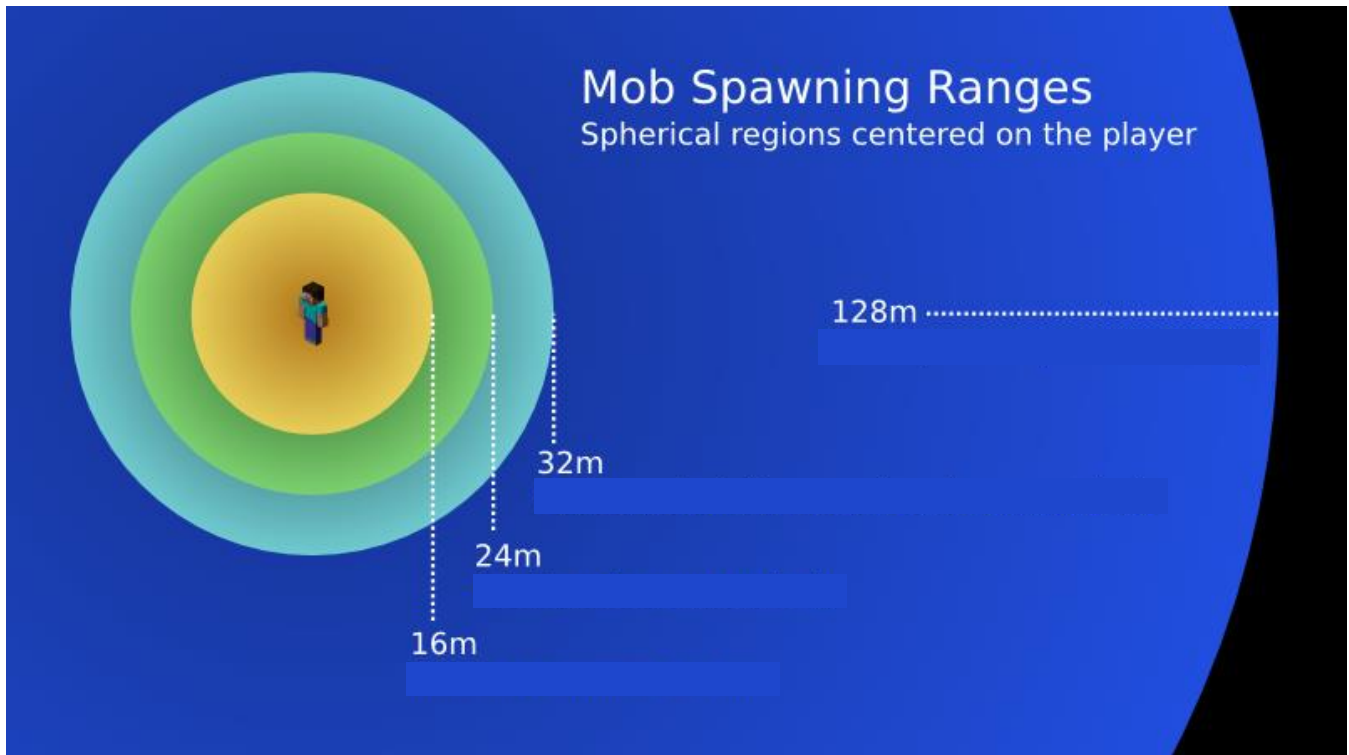
(f) **Identify** three structures that may contain diamonds.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

[illegible]

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

2. The following image provides 4 spherical regions centered on the player relating to mob spawning. Be specific as possible in your answer, using the words “within” and “outside” to describe regions carefully.



(a) **Identify** the effect of a hostile mob being between 32 and 128 meters of the player. Assume normal conditions (e.g. no nametags).

(b) Suppose you are at 0,64,0. Mob A is located at 65,64,65. Mob B is located at 91,64,91. Mob C is located at 32, 64, 32. Which mob(s) will despawn immediately?

_____ Mob A _____ Mob B _____ Mob C

Explain your answer. You may use that fact that $\sqrt{91^2 + 91^2} > 128$ and $32 < \sqrt{65^2 + 65^2} < 128$

(c) **Identify** which region you need to be in to cause mobs to spawn from spawners.

(d) **Identify** three conditions for a hostile mob to naturally spawn in the Overworld, other than not being in peaceful mode.

(e) **Explain** the two ways that slimes spawn. Provide at least two details for each.

(f) **List** two passive mobs that spawn only in specific biomes, and provide at least one of the biomes that they spawn in.

[illegible]

[illegible]

This image shows a full page of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page, providing a template for writing or drawing. There are no margins, text, or other markings on the paper.

3. In Minecraft, unlike diamonds, gold is a renewable resource, due to gold nuggets dropping from zombie pigmen. As a result of this, farms have been made to harvest zombie pigmen in large amounts.

(a) **Identify** the two common types of zombie pigman farms.

(b) **Design** one of the two types of farms you listed in the blank space below. You do not need to give a detailed drawing of the farm, just an overall sketch. Your design will be graded on the following components:

- Pre-Build (what you need to collect before building the farm, what modifications if any to the terrain need to be made, etc.)
- Compactness and Theoretical Yield Rate (perfection is not needed, but having major errors that will heavily affect yield rate will be considered)
- Instructions on how to go “AFK” and then collect loot

(c) **List** one other use of your designed farm other than collecting gold nuggets.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across its entire width, providing a template for writing or drawing. The margins are consistent on all sides.

4. Ultra Hardcore (UHC) is a custom gamemode in Minecraft that removes natural health generation (from having a sufficient hunger level).

(a) **Identify** two ways to regenerate health in this gamemode and how you would obtain these two effects.

(b) Suppose you are in the Nether, and you have been set on fire by an opponent's Flame I enchanted bow. **Identify** two ways you can stop taking damage (other than dying or waiting until the burning stops) from the fire without reentering the Overworld.

(c) **Calculate** the number of iron and coal ore blocks you should mine to obtain a full set of iron armor, an iron sword, pickaxe, axe, and two buckets.

(d) Skybasing is a common technique in UHC, where the player builds a floating base in the sky, removing all blocks when building up, usually over level 100. **List** five ways the player can reach solid ground without taking damage.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across its entire width, providing a guide for writing. The paper itself is a clean, off-white color. There are no margins, text, or other markings present.

5. Hacked clients are modifications to Minecraft that give an unfair advantage to the user. The following are some common “hacks”:

- Kill Aura - automatically aims and strikes at the nearest mob or player. Very customizable (block range, mob type, etc.). Used in combat for perfect (or near-perfect) aim.
- X-ray – causes a player to be able to see through walls and quickly identify ores or other structures (such as secret bases, strongholds, etc.)
- Auto Armor – causes the player to automatically put on the best armor when obtained

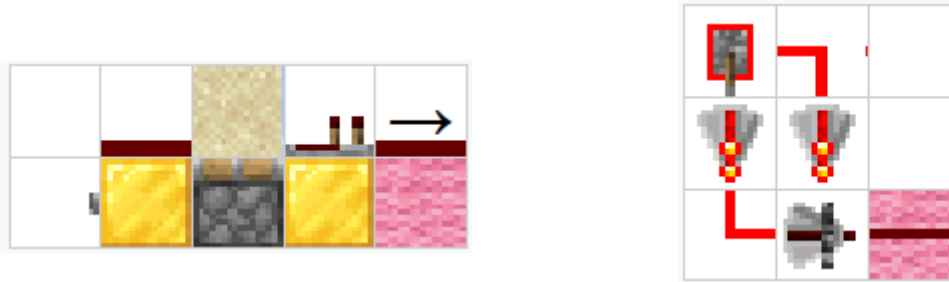
(a) For two of the modifications, explain how a server owner could prevent or detect the hack.

(b) **Define** *ghost client*. Identify one advantage of ghost clients over regular hacked clients.

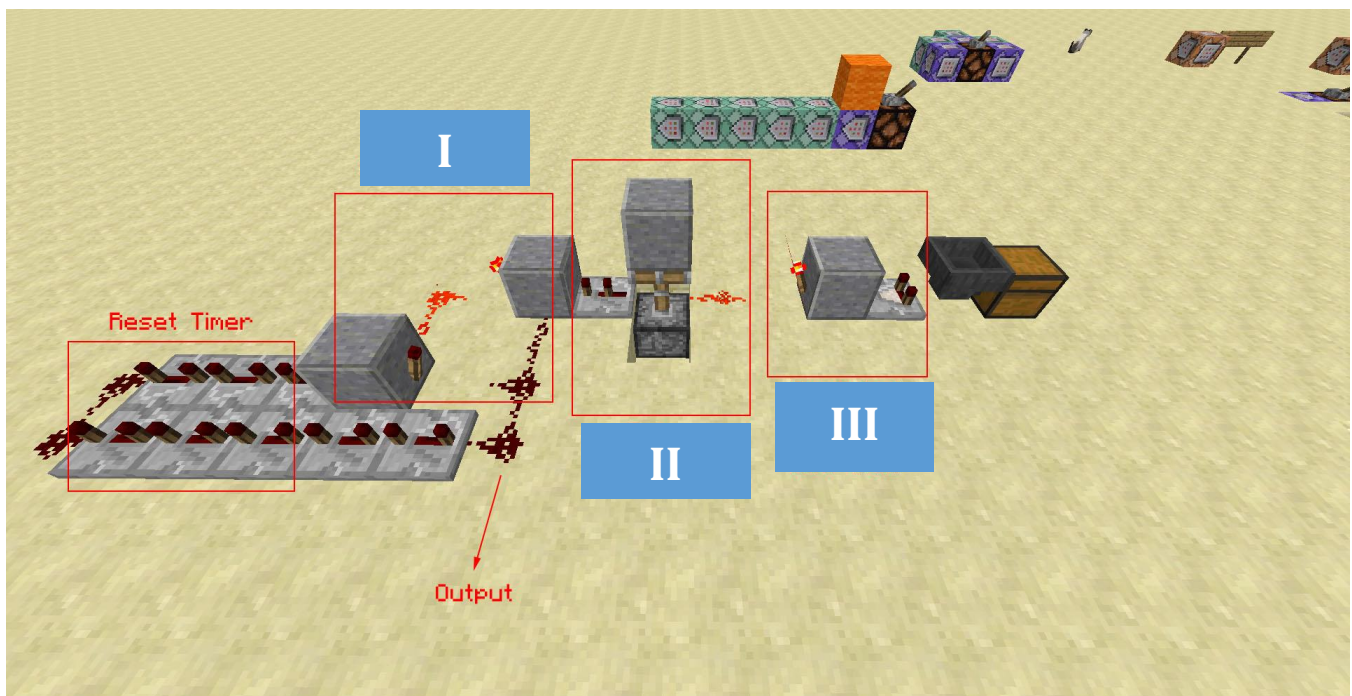
[illegible]

[illegible]

6. The following two schematics are two versions of the same contraption.

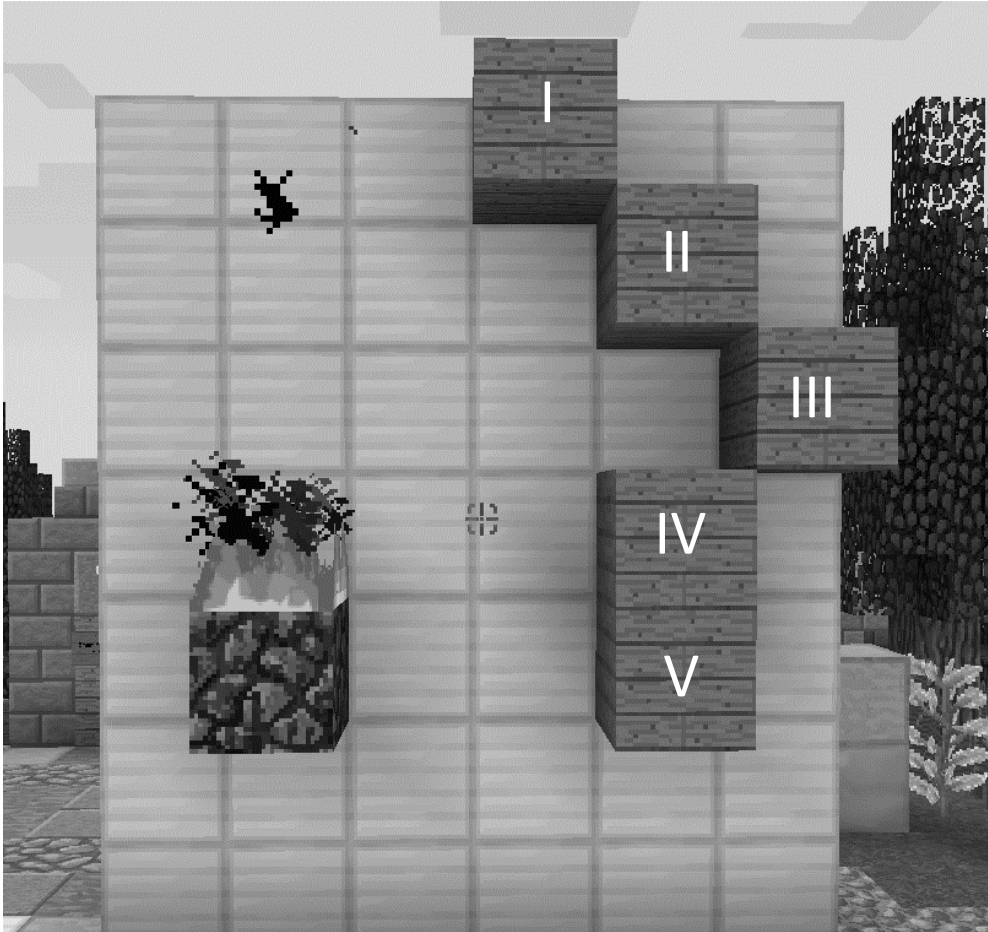


- (a) **Identify** and **define** the redstone contraption above. **Explain** how *each* schematic fits the definition.
- (b) For the figure below, **identify** the name of two of the numbered boxes in the redstone contraption.



[illegible]

7. The following figure shows a fire surrounding by various numbered flammable blocks.



(a) Which of the block(s) would be directly enflamed from the pictured fire in hard mode? Check all that apply.

_____ Block I _____ Block II _____ Block III _____ Block IV _____ Block V

Briefly explain your answer.

(b) In fire mechanics, explain the difference between **encouragement** and **flammability**. You do not need to be specific in the algorithms for both, but rather give a conceptual understanding.

[illegible]

STOP

END OF EXAM

**IF YOU FINISH BEFORE TIME IS CALLED,
YOU MAY CHECK YOUR WORK ON THIS SECTION.**

**THE FOLLOWING INSTRUCTIONS APPLY TO THE COVERS OF THE
SECTION II BOOKLET.**

- **MAKE SURE YOU HAVE COMPLETED THE IDENTIFICATION INFORMATION AS REQUESTED ON THE FRONT AND BACK COVERS OF THE SECTION II BOOKLET.**
- **CHECK TO SEE THAT YOUR AP NUMBER LABEL APPEARS IN THE BOX ON THE FRONT COVER.**
- **MAKE SURE YOU HAVE USED THE SAME SET OF AP NUMBER LABELS ON ALL AP EXAMS YOU HAVE TAKEN THIS YEAR.**