Flatland: The Book (Study Guide)

NAME:_____

Part One: This World

1—Of the Nature of Flatland

1. *True* or ***False*** Flatlanders call their world Flatland.

2. What shape is the narrator of Flatland?
   - ***Square***
3. Since Flatland is a plane, all shapes must appear to each other as what?
   - ***Straight Lines***
4. What happens to a Flatlander's appearance as they approach someone else? As they walk farther away?
   - ***Their "line" becomes longer / smaller***
5. Summarize the narrator's penny on a table example to describe flatland.
   - ***Flatland is like the surface of a table. Inhabitants of Flatland (Flatlanders) are like a penny place flat on the table. from above, we can easily see that the penny is round. However, if we look at table directly from the side, the penny will appear to be a straight line.***
6. How many dimensions does Flatland have?
   - ***2***
7. Is there a sun in Flatland?
   - ***No…no shadows either.***

2—Of the Climate and Houses of Flatland

8. What are the Flatlanders' cardinal directions?
   - ***Same as ours…North South East and West.***
9. From which direction does rain in Flatland always fall?
   - ***From the North***
10. Which side of the house is the roof on?
    - ***North***
11. Do the houses in Flatland have windows? Why or why not?
    - ***No…the light is everywhere anyway, inside or outside. They do not know where it comes from. It is the same all the time.***
12. The houses in Flatland were typically what shape? Why?
    - ***Pentagons…the angles are then much less dangerous (pointed) then with square or triangle shapes.***
13. Describe the doors in houses for men and women and explain why two different doors are necessary.
    - ***Women have a small narrow door that men cannot fit through. Men have a larger door. They use different doors so that a woman does not inadvertently slice through a man trying to use the same door.***

14. What helps Flatlanders determine direction?
    - ***Natural attraction to south, the side of houses that roofs are on, trees, rain falling from the north.***
15. What are the only buildings allowed by law to be triangular? Why?
    - ***Fortifications, powder-magazines, barracks, and other state buildings. This acts as a deterrent for unwelcomed visitors.***

3–Concerning the inhabitants of Flatland

16. How long were most inhabitants?
    - ***A full grown adult has a length or breadth between 11 and 12 inches.***
17. What was the shape and ranking of women?
    - ***Straight lines***
18. What are the various shapes and ranks of the men?
    - ***Isosceles triangles with one side shorter than the other two or soldiers and the lowest class of workers.***
    - ***Equilateral triangles make up the middle class.***
    - ***Squares and Pentagons are the professional men and gentlemen.***
    - ***Polygons with six or more sides form the noble class.***
    - ***When a polygon has so many sides that it cannot be distinguished from a circle, they become a part of the priestly order (the highest class).***
19. A male child typically has how many sides more than his father?
    - ***1 more (i.e. the child of a square is a pentagon)***
20. The children of isosceles triangles are also typically isosceles. Explain then how "his posterity may ultimately rise above his degraded condition."
    - ***The most successful and diligent workers among the isosceles tend to have their sides become closer in length to each other.***
    - ***The priests would then arrange marriages with these more diligent workers so that their children would be closer to equilateral triangles.***
21. What happens to the child of an Isosceles who is equilateral?
    - ***They are taken from their parents and adopted by a childless equilateral. Then the child is forbidden to ever again enter his former home or to ever see his former relations again.***
22. Why are equilateral triangle children of isosceles triangles considered a welcomed occurrence?
    - ***It provides the serfs a glimmer of hope to a better life for their posterity.***
    - ***The serfs are less likely to revolt if they know that their children will be among the higher classes.***
23. How are revolts from the lower isosceles class stopped?
    - ***The emergence of equilaterals from their serf-born ancestors serves to put down revolt. The serfs don't want to fight with their own kin.***
    - ***When an isosceles becomes intelligent and resourceful enough to lead a revolt, the Laws of Nature cause their acute angle to increase in size until they become equilateral. They are then immediately admitted to the privileged classes.***

- ***The leaders are admitted to hospitals so that they may become perfectly regular. Those that are still below the standard are kept in the hospitals for life. And those who are obstinate, foolish, and hopelessly irregular are led off to execution.***
- ***The Circular class cleverly stirs up the remaining unorganized rebels to fight against themselves.***

4–Concerning the Women

24. How can a woman make herself invisible?
    - ***She simply needs to come at someone head-on, which would make her appear a mere, lustrous point. If she approaches backwards, there is very little luminous effect, rendering her practically invisible.***
25. What must women do when walking in public places?
    - ***They must make a regular noise (her peace-cry) so that everyone can hear them coming. The penalty for those that do not do this is death.***
    - ***They must waddle so that they become more visible.***
    - ***Some locations require a son, servant, or husband to follow behind a woman as she walks.***
    - ***Some locations confine women to their houses except during religious festivals.***
26. Why are Circles and Statesman wary of placing too many restrictions on the women?
    - ***The women may become agitated and unstable, resulting in many more domestic murders since they are most likely to vent upon their husbands and children. In some cases the whole population of the village becomes at risk.***
27. What happens to women who suffer from a chronic cold, violent sneezing, or fits?
    - ***They are immediately destroyed.***
28. What additional safeguards help protect the population from murderous women?
    - ***If they do not pull their stinging extremity from their victim quickly, they are prone to shatter.***

5–Of Our Method of Recognizing One Another

29. Name three ways that Flatlanders are able to recognize one another.
    - ***Recognition by hearing, by feeling, and by sight.***
30. What are the advantages and disadvantages of each of these methods?
    - ***Hearing: Flatlanders have a naturally acute sense of hearing. They are able to recognize their friends and family simply by listening to their voice. The disadvantage is that it is easy for Flatlanders to deceive and imitate the voices of others.***
    - ***Feeling: Flatlanders are able to easily tell the size of someone's angle (and therefore their class) via a quick touch of their angle. In the higher classes recognition by feeling is frowned upon and often forbidden entirely.***
    - ***Sight: This is used mostly by the higher classes. It only works in temperate climates where there is a decent amount of fog.***
31. How much does the brain (or acute angle) of an isosceles increase each generation until it achieves a perfect 60 degrees?

- ***0.5 degrees every generation***

32. What is the fate of most of the isosceles who have an acute angle of 10 degrees or less?
    - ***They are given to the education systems as specimens for study. In many places they are deprived of food and, therefore, starved to death. New specimens are acquired monthly to replace the deceased specimens.***
33. What method of recognition is most commonly practiced among the lower classes?
    - ***Recognition by feeling***

6–Of Recognition by Sight

34. What method of recognition is most commonly used among the higher classes and in more temperate climates?
    - ***Recognition by sight***
35. What is the most important factor in Flatland that allows recognition by sight?
    - ***Fog***
36. What is the fate of those of the polygonal class that fail to pass the Final Test or Leaving Examination at the University?
    - ***They are rejected by both the higher classes and the lower classes***
37. An increasing minority of Statesmen, in order to show greater mercy, think that what should be done with those that do not pass their Final Test or Leaving Examination?
    - ***Imprisonment for life or a quick painless execution***

7–Concerning Irregular Figures

38. What is the fate of irregular figures in Flatland?
    - ***They are "from birth scouted by his own parents, derided by his brothers and sisters, neglected by the domestics, scorned and suspected by society, and excluded from all posts of responsibility, trust and useful activity. His every movement is jealously watched by the police till he comes of age and presents himself for inspections; then he is either destroyed, if he is found to exceed the fixed margin of deviation, or else immured in a Government Office as a clerk of the seventh class; prevented from marriage; forced to drudge at an uninteresting occupation for a miserable stipend; obliged to live and board at the office, and to take even his vacation under close supervision…"***
39. This chapter makes a case for regularity or symmetry. Although stressing symmetry, Abbott is mathematically careful when he states that "If our sides were unequal our angles *might be* unequal." He is obviously aware that there are exceptions.

    Give an example of a polygon with unequal sides, but with equal angles and of a polygon with equal sides, but with unequal angles.
    - ***A rectangle has unequal sides but equal angles***
    - ***A cross can have equal sides but unequal angles***

8–Of the Ancient Practice of Painting

40. What was the Color Revolt?
    - ***Everyone (except for women and priests) started to paint the houses and even their own sides to give variety and excitement to the otherwise drab world of Flatland.***

41. Who is said to have started the color movement?
    - ***Chromatistes***

9–Of the Universal Colour Bill

42. What proposed actions did the Universal Color Bill call for?
    - ***Every woman was to color their front half (the half containing their eye and mouth) red, and their hinder half green.***
    - ***Priests were to color their front half (the half in which the eye and mouth formed the middle point) red and their hinder half green.***
43. Who was the author of the Universal Color Bill?
    - ***An irregular circle***
44. What were the key "problems" with the Universal Color Bill?
    - ***Women would be able to imitate circles.***
    - ***The intellectual luster of the Priestly Order would wane.***
    - ***The Aristocratic Legislature would be destroyed.***
    - ***The Privileged Classes would be subverted.***

10–Of the Suppression of the Chromatic Sedition

45. How long did the agitation over the Color Bill continue?
    - ***3 years***
46. What incident led to the ultimate downfall of the Universal Color Bill?
    - ***An isosceles painted himself as a dodecagon and deceived an orphaned daughter of a noble Polygon into marriage, which was then consummated. Then the woman committed suicide when she learned of the deception. As women heard of this incident, their support for the Color Bill was lost.***
47. After the Universal Color Bill was struck down (following the slaughter of the isosceles in attendance and Chromatistes among them), what was the fate of color? Who left knew how to make the colorful paints?
    - ***The aristocracy was ever fearful of a rebirth of the color movement. So color was banned from society. The only exception was in some of the highest and most esoteric classes at the University where it is still sanctioned for the purpose of illustrating some of the deeper problems of mathematics.***
    - ***Only the Chief Circle knows the art of making color.***
48. What is the fate of those who work in the one manufactory that produces colorful paint?
    - ***They are annually consumed (killed) and replaced with new workers.***

11–Concerning our Priests

49. What are the responsibilities of the Priests?
    - ***Administrators of all business, art, and science; directors of trade, commerce, generalship, architecture, engineering, education, statesmanship, legislature, morality, theology.***
50. What are the two antagonistic decrees prescribed by Nature's Law affecting Circular propogation?

- ***The Circular class are less fertile and therefore less likely to have progeny.***
- ***The son of a Circle is likely to have many more sides than their parent (rather than just one more as with the lesser polygons).***

12–Of the Doctrine of Our Priests

51. What is the name of the Circle who quelled the Color Revolt?
    - ***Pantocyclus***
52. What happened to Flatlanders who were born with uneven, irregular sides?
    - ***They were sent to hospitals to have their disease cured.***
    - ***They were killed.***
53. Although A. Square makes an appeal for educating women, what reason does he give for this?
    - ***He claims that men have to learn a completely different way to communicate in order to talk with uneducated women.***

Part II: Other Worlds

A tour of alternative dimensions begins in Part Two.

13–How I had a Vision of Lineland

54. What is A. Square's favorite recreation?
    - ***Geometry***
55. In Lineland, what shape are the King and Men?
    - ***Lines***
56. What shape are the women?
    - ***Points***
57. How did the inhabitants of Lineland determine the gender and age of each other?
    - ***By the sound of their voices***
58. Was it possible for Linelanders to pass each other?
    - ***No***
59. Is proximity necessary for marriage and the generation of children in Lineland?
    - ***No***
60. How are marriages consummated in Lineland?
    - ***By means of the faculty of sound and the sense of hearing***
61. How many mouths, voices, and eyes does each Lineland man have?
    - ***2 mouths, 2 voices (one bass and one tenor), and 2 eyes (one on each end of their segment)***
62. How many wives does each Lineland man have?
    - ***2 (one soprano and one contralto)***
63. How do Linelanders figure out who they will marry?
    - ***The Marriage Chorus (occurs once in the middle of each week)***

64. How often does the marriage chorus occur?
    - ***Once in the middle of each week.***
65. How much time elapses after a marriage in Lineland before children are born?
    - ***No time…children are born immediately after marriage.***
66. How many children does each married couple have?
    - ***Three (always one boy and two girls)***

14–How I vainly tried to explain the nature of Flatland

67. How does the King of Lineland determine length (referred to in Lineland as Space)?
    - ***He figures how long it takes for him to hear the first and then the second voice of another man.***
68. How does the King of Lineland react when A. Square tries to explain the second dimension?
    - ***The King is unable to comprehend.***

15–Concerning a Stranger from Spaceland

69. When A. Square shows his grandson (the bright little Hexagon) how to determine the area of a square by squaring a side (a square with three inch sides, for instance, has an algebraic meaning–3 squared, and also has a geometric meaning–the area of a square), what analogy does the bright little Hexagon suggest? What is A. Square's reaction?
    - ***Hex suggests the there must therefore be a way for 3 squares to be placed somehow parallel to themselves, forming some type of super square, representing 3 cubed.***
70. When the Sphere appears to A. Square, what shape does A. Square see?
    - ***A circle cross-section of the Sphere.***

16–How the Stranger Vainly Endeavored to Reveal to Me in Words the Mysteries of Spaceland

71. A being from Spaceland can view the "insides" of a being from Flatland. (The interior of a polygon is not visible to a Flatlander because the edges get in the way, but to a Spacelander, the "insides" are visible.) By analogy, it follows that a creature from the fourth dimension could do what?
    - ***See our insides***

17–How the Sphere, Having in Vain Tried Words, Resorted to Deeds

72. What does the Sphere call the message he has come to proclaim to A. Square?
    - ***The Gospel of the Three Dimensions***
73. How often is the Sphere allowed to preach to the Flatlanders?
    - ***Once every thousand years***
74. What was A. Square's reaction when the Sphere attempts to show him evidence of the third dimension first by removing a tablet from the cupboard without opening the door, then by telling him about his neighbors and neighborhood as seen from above, and finally prodding A. Square's insides?
    - ***A. Square thought he was a Magician playing tricks, and so he dashed his hardest angle against the Sphere and cried out for aid.***
75. After A. Square refused to believe the Sphere, what did the Sphere do in a final attempt to convince him of the third dimension?

- ***The Sphere pulled A. Square off his plane into the third dimension..***

18–How I came to Spaceland, and What I Saw There

76. What did the High Council degree would happen to all Isosceles of any degree who professed to have received revelations from another World?
    - ***They would be destroyed.***
77. What did the High Council degree would happen to all regular Triangles who professed to have received revelations from another World?
    - ***They would be scourged and imprisoned.***
78. What did the High Council degree would happen to all Squares or Pentagons who professed to have received revelations from another World?
    - ***They would be sent to the district Asylum.***
79. What did the High Council degree would happen to all those of higher (noble) rank who professed to have received revelations from another World?
    - ***They would be arrested and sent to the Capital to be judged by the Council.***
80. When the Sphere presented himself before the High Council to proclaim that there was a land of Three Dimensions, how did the Council respond?
    - ***The younger Counsellors were startled, but the presiding Circle, quite unalarmed, ordered the Isosceles policemen to attack the Sphere.***
81. What was the fate of A. Square's brother, the Clerk, who had witnessed the appearance of the Sphere?
    - ***He had seen evidence of the existence of a 3rd dimension (Spherius appeared to the Grand Counsel); therefore, the clerk was to be imprisoned for life as long as he did not divulge the evidence that he had seen. He would be executed immediately if it were ever discovered that he talked about the events that had occurred.***

19–How, Though the Sphere Showed Me other Mysteries of Spaceland, I Still Desired More; and What Came of It

82. Why was A. Square unable to return to Flatland to speak on his brother's behalf when he heard of his brother's imminent imprisonment?
    - ***A. Square was not able to move on his own in Spaceland. He was completely dependent upon his guide.***
83. At first, A. Square has trouble perceiving a solid as it looks irregular to him. This is due to being unaccustomed to what three elements that allow two-dimensions to perceive three (as our eyes must do)?
    - ***Light, shade, and perspective***

84. Why is A. Square's lesson on the 3rd dimension ultimately cut short and A. Square returned to Flatland?
    - ***Because of A. Square's insistence upon knowing about a 4th dimension, which the sphere thinks is utterly absurd.***

20–How the Sphere encouraged me in a vision

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85. How many dimensions are there in Pointland?
    - ***0 dimensions***
86. How many Beings are there in Pointland?
    - ***1***
87. As the Sphere and A. Square returned from there visit to Pointland, what does the Sphere confess to A. Square?
    - ***The Sphere says that he was wrong to be angry about A. Square's conjecture about a fourth dimension. Then the Sphere proceeds to show A. Square mysteries and insight that supported the idea of a fourth dimension.***

21–How I Tried to Teach the Theory of Three Dimensions to my Grandson, and With What Success

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88. *True or False* A. Square was successful when he first attempted to convert his hexagon grandson to the Gospel of Three Dimensions.

22–How I then Tried to Diffuse the Theory of Three Dimensions by Other Means, and of the Result

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89. What happens after A. Square forgets himself at the Local Speculative Society meeting and tells about his experiences with the third dimension?
    - ***He was immediately arrested and taken before the Council.***
90. How many converts did A. Square have to the Gospel of Three Dimensions?
    - ***0***

Additional Thoughts, Questions, and Ponderments

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91. Describe some key differences between Flatland: the Book and Flatland: the Movie. Explain why you think the makers of the movie chose to make each of the described changes.

92. At the beginning of Chapter 11 (Concerning our priests), the narrator explains that he must omit explanations of many matters in Flatland which may have been of interest to the reader. These topics include the following:
    - Their method of propelling and stopping themselves, although destitute of feet.
    - The means by which they give fixity to structures of wood, stone, or brick, although of course we have no hands, nor can they lay foundations as we can.
    - The manner in which the rain originates in the intervals between their various zones, so that the northern regions do not intercept the moisture from falling on the southern.

- The nature of their hills and mines, their trees and vegetables, their seasons and harvests.
- Their Alphabet and method of writing, adapted to their linear tablets.

Pick one the above mentioned topics and provide an explanation for how the Flatlanders may have accomplished it.