

# DYNAMIC PLANET

## TECTONICS

*Pembroke Hill Invitational*

*January 6, 2018*

## ANSWER KEY

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### GRADING GUIDE

- All questions are weighted equally and worth 1 point. **The exam is 75 points.**
- **Do not give partial credit** on any question. This is for your own sake! Grading becomes much trickier if things can be partially correct.
- **Be lenient with spelling.** If you can make out the answer, give the point.
- There is a **strict 50 minute time limit** on this exam. Use the box on the front of the team's Answer Sheet to mark their start and end time (or tell students to mark their own start/end times). If students run over 50 minutes, deduct 2 points for every extra minute they work.
- For some **fill-in-the-blank questions** in Section 3 and Section 6, there is potential variability in answers. An optional word is given in parentheses. For example, if the answer is DYNAMIC (PLANET), then you can accept either DYNAMIC or DYNAMIC PLANET.
- For **Section 2** (the math section), the answer must be *exactly* as printed on the Answer Sheet. If an answer does not exactly match the listed answer, then it is incorrect.
- For **Section 5** (the drawing section), the general idea of the drawing should match what is on the Answer Key, but it is okay if there is some variance. For example, a student may make a drawing with six rock layers, but the Key may show four rock layers in that drawing – this is acceptable. Things to pay particular attention to in Section 5:
  - Make sure the alphabetical lettering of the layers is in the same order as on the Answer Key. (For example, if layer A is on the bottom in the Answer Key, then make sure layer A is on the bottom of the student's response.)
  - Make sure the general slope/direction of lines is the same as shown on the Answer Key. Many of the questions ask for a line that "points east" (or something like that), so make sure the lines are (within reason) going in the same as the ones on the Answer Key.
  - For questions 2 and 5, there will be lines denoting faults, and the lettering should shift slightly (up/down) on either side of the fault. Make sure the shift in lettering matches the shift on the Answer Key.
- In the event of a tie, use the following as **tiebreakers**. The first tiebreaker is the score on **Section 4**: Multiple Choice (i.e., whichever team has a higher score on Section 4 wins the tiebreaker). The second tiebreaker, if both teams have the same Section 4 score, is the score on **Section 6**: Case Studies. If both teams have the same score on Sections 4 and 6, the third tiebreaker is the score on **Section 3**: Definitions. If both teams have the same score on Sections 4, 6, and 3, the fourth tiebreaker is **Section 2**: Quantitative Reasoning. If you need more tiebreakers, contact Jeffrey Rubel.
  - For whichever team wins the tiebreaker, add 0.1 to their score.
- You have the right to **deduct points** from teams for misconduct. You can be the judge of how bad a student's behavior is and how much of a deduction it warrants. Try and refrain from disqualifications as this is a practice tournament. Possible deduction suggestions include:
  - Using more than four reference sheets: 20 point deduction
  - Using a phone, computer, or other prohibited device: 30 point deduction
  - Copying answers from another team: 40 point deduction
  - Being rude or disrespectful in any way: 30 point deduction
  - If students go over the 50 minute time limit, deduct 2 points for every minute they work on the exam
- Here's **how to use the scoring boxes on the Answer Sheet**: At the end of each section, write the section score in the box within the gray bar at the section's end. (If you want, you can copy these section scores into the "Section Scores" box on page 1.) Write the sum of the section scores in the "Raw Score" section of the "Additional Scoring" box. **Do not** write in the Final Score until all testing is complete, all exams are scored, and all ties are broken. The final score should be the sum of the raw score, the deductions, and the tiebreakers.

**SECTION 1**  
**GEOLOGIC TIMELINE**

- |                     |               |
|---------------------|---------------|
| 1. PHANEROZOIC      | 4. PALEOGENE  |
| 2. MESOZOIC         | 5. ORDOVICIAN |
| 3. PALEOPROTEROZOIC |               |

**SECTION 1 SCORE**

*1 point per question  
5 points possible*

**SECTION 2**  
**QUANTITATIVE REASONING**

- |             |  |
|-------------|--|
| 1. 0.3 (cm) | 4. 5 (km <sup>3</sup> )                                      |
| 2. 149 (m)  | 5. 1,000   |
| 3. 0.2 (cm) | <i>It's okay if they don't put units with their numbers!</i> |

**SECTION 2 SCORE**

*1 point per question  
5 points possible*

**SECTION 3**  
**DEFINITIONS**

- |                              |                                 |
|------------------------------|---------------------------------|
| 1. ALFRED WEGENER            | 9. WILSON CYCLE(S)              |
| 2. MARIE THARP               | 10. LAVA                        |
| 3. LAURENTIA                 | 11. ASTHENOSPHERE               |
| 4. APPALACHIAN (MOUNTAINS)   | 12. MANTLE                      |
| 5. YELLOWSTONE (HOT SPOT)    | 13. CONTINENTAL (CRUST)         |
| 6. RIFT VALLEY or RIFT BASIN | 14. CONVERGENT (PLATE BOUNDARY) |
| 7. HYPSONOMETRY              | 15. TECTONIC PLATE(S)           |
| 8. TERRANE                   |                                 |

**SECTION 3 SCORE**

*1 point per question  
15 points possible*

**SECTION 4  
MULTIPLE CHOICE**

- |      |       |       |       |       |
|------|-------|-------|-------|-------|
| 1. D | 6. D  | 11. E | 16. A | 21. E |
| 2. B | 7. D  | 12. C | 17. C | 22. C |
| 3. C | 8. D  | 13. B | 18. A | 23. B |
| 4. D | 9. D  | 14. E | 19. B | 24. D |
| 5. A | 10. A | 15. C | 20. B | 25. A |

**SECTION 4 SCORE**

1 point per question  
25 points possible

**SECTION 5  
DIAGRAM CREATION**

1. *curves open down*  
*North*

*D at bottom*

2. *note how "slide letter down" over here*  
*line should drop to left*

3. *A at bottom*  
*Curve should have this shape (or so)*

4. *line should be horizontal, anywhere in box*

5. Feature 5.1: B  
Feature 5.2: G  
Feature 5.3: A

*In order to get the point for Question 5, you must correctly fill in all three blanks. No partial credit.*

*There should be two letters, and letter below line should be alphabetically first*

**SECTION 5 SCORE**

1 point per question  
5 points possible

**SECTION 6  
CASE STUDIES**

- |             |                      |                      |              |
|-------------|----------------------|----------------------|--------------|
| 1. <b>D</b> | 6. <b>B</b>          | 11. <b>EAST</b>      | 16. <b>M</b> |
| 2. <b>B</b> | 7. <b>H</b>          | 12. <b>ANTICLINE</b> | 17. <b>B</b> |
| 3. <b>A</b> | 8. <b>E</b>          | 13. <b>NA</b>        | 18. <b>3</b> |
| 4. <b>E</b> | 9. <b>E</b>          | 14. <b>A</b>         | 19. <b>B</b> |
| 5. <b>B</b> | 10. <b>(FAULT) 1</b> | 15. <b>F</b>         | 20. <b>D</b> |

**SECTION 6 SCORE**

*1 point per question  
20 points possible*

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