HEED Geometry or Algebra 2 Placement Test

Student's name:_____ Date of Birth _____

Phone number: _____

Student email: _____ Parent email: _____

Last math class completed and where: _____

Student is entering grade _____

Dear Parents (please read this entire page and follow the directions carefully):

The purpose of this test is to determine your student's readiness for a math class at HEED. Your student should do as much as they can on the test without your direct assistance. If your student is struggling with a problem, he can skip it and go back to it later. It is acceptable for him to review the concept and then return to the question, provided that he answers the question on his own. **Parents are required to proctor the test. (The student must be in the same room with the parent while the test is completed.)** You must sign below indicating you proctored the test.

Please impress upon your student the importance of carefully reading each question. Also please remind your student that this test should be an example of his best work. It should be as neat and complete as possible.

Please be sure to follow these directions:

- Please do not assist your child at all.
- Take the exam in one sitting.
- Calculators are permitted for Algebra 1, Geometry and Algebra 2. The use of cell phones and computers is strictly forbidden during the test.
- Do all work NEATLY on a separate piece of paper. It will take several pages to complete the test. It is better to use many pages and be neat and accurate.
- SHOW all your work so we can attempt to discern if incorrect answers are due to computational errors or comprehension issues.
- If you can't complete a problem do as many steps as you can to show your work
- Number each problem and circle each answer.
- Once completed, scan this cover sheet and your work, and email a copy of the scanned pdf document to:

[redacted] thaliasteffen@takeheed.org

She will review the placement test as quickly as possible and then email you the results. She will do her best to let you know if your student is already prepared for the HEED class in the fall or if there is some preparation that must be done prior to taking the class.

This test was proctored by the parent whose name and signature appear below:

Parent's printed name: _____

Parent's Signature: _____

Readiness Test Geo/A2 SHOW YOUR WORK Part 1 Name: _____

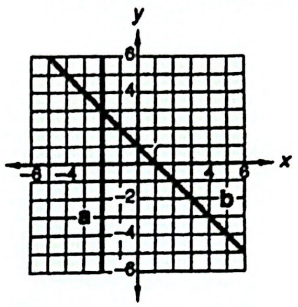
1. Three fourths of the tickets had been sold, and there were 360 tickets left. How many tickets were printed?

2. Find three consecutive odd integers such that the sum of the first and the third equals the sum of the second and 15.

3. Two dice are rolled. What is the probability that the sum of the top numbers on the dice is 9?

4. Justin's test grades were 75, 82, 79, and 84. What is his weighted average if the test grades are weighted 4, 5, 2, and 3, respectively?

5. Find the equations of lines (a) and (b).



6. Graph the following equation on a rectangular coordinate system: $2x + y - 2 = 0$

7. Simplify:

(a) $\dfrac{(9000 \times 10^7)(0.000004)}{(30{,}000)(0.0000000002)}$ (b) $\dfrac{(0.00007 \times 10^9)(400{,}000 \times 10^{-3})}{(0.002)(2{,}000{,}000)}$

Factor the following polynomials completely:

8. $81x^2 - 4y^2$

9. $16a^2x^2y^2 - 49a^2z^2$

10. $-x^3 + 15x^2 - 50x$

11. $2a^2 - 4a - 70$

Solve:

12. $\dfrac{a+2}{3} - \dfrac{5}{2} = \dfrac{2a-4}{4}$

13. $-[-2(x-4) - |-3|] = 3x - 6$

14. Given: $R_AT_A = R_BT_B$, $R_A = 8$, $R_B = 2$, $T_B = 5 - T_A$. Find T_A and T_B.

15. Use elimination to solve the following system of equations for x and y: $\begin{cases} x - 3y = -6 \\ 2x + 5y = 21 \end{cases}$

16. Add: $\dfrac{2}{xy} - \dfrac{4}{x^2} - \dfrac{7}{x+y}$

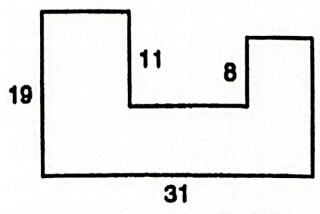
17. Simplify: $4\sqrt{45} - 2\sqrt{180} + 3\sqrt{20}$

18. Simplify. Write the answer as a simple fraction with all exponents positive.

$$\frac{x^{-1}yz - y^{-1}z}{-2x - xy^{-1}}$$

19. (a) $16\sqrt{7} \in$ {What subsets of the real numbers}? (b) $\sqrt[3]{-64} \in$ {What subsets of the real numbers}?

20. Find the perimeter of this figure. All angles are right angles. Dimensions are in meters.



Part II: Readiness Test for Saxon's *Algebra 2*

& Geometry

The purpose of this section is to determine readiness for Saxon's *Algebra 2* textbook. Answering 8 or more problems correctly indicates readiness for Saxon's *Algebra 2* textbook.

1. Evaluate $x^2y - y^3 + x^{1/2}$ if $x = 3$ and $y = 4$.

2. Simplify:

$$\frac{-2 - 2(1 - 5)}{-2 - 3}$$

3. Simplify and write the answer with all variables in the numerator.

$$\frac{(xm^{-1})^{-3}x^2m^2}{(x^0y^2)^{-2}xy}$$

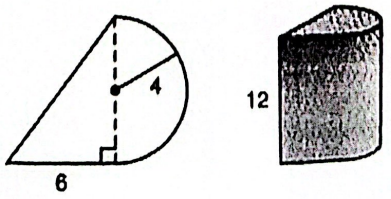
4. Solve for x:

$$3\left(\frac{5}{6} - \frac{5}{3}x\right) = -\left(-\frac{1}{2} + x\right)$$

5. The total value of the pennies and nickels was \$14.50. Hala counted the coins and found there were 450 coins in all. How many of each type of coin did she have?

6. Graph $y = 3x + 5$. Determine the slope of the line and its y-intercept.

7. (a) Find the perimeter of the figure shown on the left below. Dimensions are in meters. (b) Find the area of the figure. (c) The figure shown is the base of a geometric solid whose sides are perpendicular to the base and whose height is 12 meters. A depiction of the solid is shown on the right. Find its volume. Leave π as π.



8. The scores that Frank achieved on his five tests were 90, 70, 70, 85, and 95. Find the range, mean, median, and mode of the five test scores.

9. Twice a number is decreased by 7, and this quantity is multiplied by 3. The result is 9 less than 10 times the number. What is the number?

10. Solve by factoring: $x^2 - 15 = 2x$