



TO: Parents and mentors of Terra Fairs students

FR: Terra Fairs

RE: Math Placement screening for Terra Fair participation

To accommodate students whose math skills exceed their assigned grade level, Terra Fairs uses Houghton Mifflin Harcourt's Middle Grades Math Placement Test which places homeschooled students in the right curriculum.

Terra Fairs finds that a student's level of mathematics knowledge is the most accurate way to define his/her eligibility for a regional science and engineering fair, and establish the level of competition s/he should select - Junior / Middle School, Senior / High School.

Date of birth is not considered for Terra Fair applications. For "grade" we accept the *grade* in which the student is placed (e.g., a sixth grader at a bricks and mortar school), the *mathematics* course being taken at the community college (e.g., Algebra I), or the *results* of this screening placement test.

Below are the guidelines for using the placement test for either Junior and Senior Level in a Terra Fair. The student may then select Topic Presentation or Research/Engineering Design within that level.

Problems	Score	Terra Fair Placement
Problems 1-20	0-15 not eligible this year	NA
	16-20 qualifies for >	Junior Level
Problems 81-100	0-15 not eligible this year	NA
	16-20 qualifies for >	Senior Level

Feel free to contact Terra with questions.

Whether we see you this year or next, enjoy each day's opportunities to expand your skills, discover your passions, and explore the amazing world around you!

Terra Science and Education

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501(c)3 nonprofit association and sponsor of Genius Olympiad and the Terra Fairs

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Middle Grades Math Placement Test

For Students New to the Saxon Math Program



Show Your Work!

Math 5/4

1. Mae-Ying bought a package of paper priced at \$1.98 and 2 pens priced at \$0.49 each. The tax on the entire purchase was 18¢. What was the total cost of the items?
2. Seventy-five beans were equally divided into five pots. How many beans were in each pot?
3. Robo could run 7 miles in 1 hour. At that rate, how many miles could Robo run in 3 hours?
4. At 11:45 A.M. Jason glanced at the clock. His doctor's appointment was in $2\frac{1}{2}$ hours. At what time was his appointment?
5. Find the sixth number in this counting sequence: 7, 14, 21, . . .

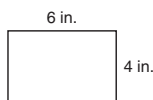
6. Write the number of shaded rectangles shown as a mixed number.



7. Twenty-five percent of this square is shaded.
What percent of the square is not shaded?

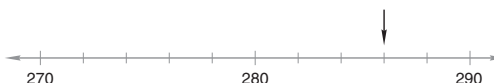


8. What is the perimeter of this rectangle?



9. A square has one side that is 7 inches long. What is the area of the square?

10. To what number is the arrow pointing?



11. $4.2 + 3.5 + 0.25 + 4.0$

12.
$$\begin{array}{r} 460 \\ \times 9 \\ \hline \end{array}$$

13. $6 \overline{)3795}$

14. $6 \times 4 \times 10$

15.
$$\begin{array}{r} \$4.86 \\ + \$2.95 \\ \hline \end{array}$$

Find each missing number for 16–17:

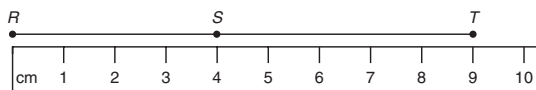
16.
$$\begin{array}{r} z \\ + 179 \\ \hline 496 \end{array}$$

17.
$$\begin{array}{r} 67 \\ - B \\ \hline 16 \end{array}$$

18. Use digits to write the number three hundred forty-three.

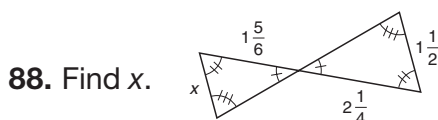
19. Which digit in 6.125 is in the hundredths place?

20. What is the length of \overline{ST} ?

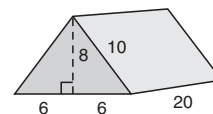


Algebra $\frac{1}{2}$

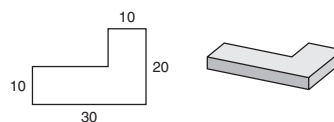
81. The first flock contained 5283 birds. The second flock contained 5 times as many birds. The third flock had twice as many birds as the second flock. How many birds were there in all?
82. The whole batch cost \$28,000 and contained 140 items. Write the two rates (ratios) implied by this statement. What would be the price for 200 items?
83. For 4 hours Sam traveled at 40 miles per hour. Then he increased his speed to 60 miles per hour and drove for another 3 hours. How far did he go in the 7 hours he traveled?
84. The ratio of roses to snapdragons was 4 to 5. If there were 26,000 roses on the float, how many snapdragons were there?
85. The number of red frogs exceeded the number of blue frogs by 80. The number of green frogs was 20 less than the number of blue frogs. If there were 120 blue frogs, what was the sum of the reds, the blues, and the greens?
86. Six times a number is 45 greater than the product of the number and -3 . Find the number.
87. If 200 is increased by 130 percent, what is the resulting number?



89. Find the surface area of this right solid. Dimensions are in centimeters.



90. What is the volume in cubic meters of the right solid whose base is the figure shown on the left and whose sides are 200 centimeters tall? Dimensions are in meters. All angles are right angles.



91. Write 0.000387 in scientific notation.

92. $\frac{1821.5}{0.7}$

93. $9\frac{2}{14} - 3\frac{15}{21}$

94. $9876.5 - 643.99$

95. $3\frac{1}{2} \times 6\frac{1}{3} \div 2\frac{1}{3} \times 1\frac{1}{3}$

96. $3^2 + 3[2^3(\sqrt{49} - 2^2)(3^2 - 2^3) - 2^2]$

97. Reduce to lowest terms: $\frac{102}{170}$

98. Convert 250.025 to a mixed number.

99. Use two unit multipliers to convert 144 square feet to square miles. Round any decimal answer to two places.

100. Evaluate: $\sqrt[m]{p} + \frac{x}{\sqrt{p}}$ if $p = 16$, $m = 4$, and $x = 3$

Answers for Saxon Homeschool Middle Grades Placement Test

- | | | | |
|-------------------|----------------------------|-----------------------------|--|
| 1. \$3.14 | 31. 1483 | 59. 62.5% | 88. $\frac{11}{9}$ |
| 2. 15 beans | 32. 200 | 60. $1\frac{1}{4}$ | 89. 736 cm^2 |
| 3. 21 miles | 33. \$3.92 | 61. 7.494 | 90. 800 m^3 |
| 4. 2:15 P.M. | 34. $3\frac{1}{2}$ | 62. 1882 | 91. 3.87×10^{-4} |
| 5. 42 | 35. 28 | 63. 704 seconds | 92. $2602.\overline{142857}$ |
| 6. $3\frac{1}{6}$ | 36. $12\frac{1}{2}$ | 64. \$0.17 per
container | 93. $5\frac{3}{7}$ |
| 7. 75% | 37. 8 sides | 65. 54.6 seconds | 94. 9232.51 |
| 8. 20 in. | 38. 3000, 3100,
3200 | 66. 81 square inches | 95. $\frac{38}{3}$ |
| 9. 49 sq. in. | 39. 12 cm | 67. 20 cm | 96. 69 |
| 10. 286 | 40. 49 mm | 68. $30,000 \text{ mm}^3$ | 97. $\frac{3}{5}$ |
| 11. 11.95 | 41. 6 | 69. \$80 | 98. $250\frac{1}{40}$ |
| 12. 4140 | 42. 21.05 | 70. $\frac{5}{12}$ | 99. $5.17 \times 10^{-6} \text{ mi}^2$ |
| 13. 632 R3 | 43. 450 chairs | 71. 36 | 100. $2\frac{3}{4}$ |
| 14. 240 | 44. 54 average
pumpkins | 72. 10 | |
| 15. \$7.81 | 45. \$49.00 | 73. $3\frac{2}{3}$ | |
| 16. 317 | 46. 400 hamburgers | 74. 0.0075 | |
| 17. 51 | 47. $\frac{13}{50}$ | 75. 11 | |
| 18. 343 | 48. 8 | 76. $\frac{1}{3}$ | |
| 19. 2 | 49. 0.925 | 77. $\frac{5}{6}$ | |
| 20. 5 cm | 50. 0.16 | 78. 3 | |
| 21. 449 cherries | 51. $3\frac{2}{3}$ | 79. 150 | |
| 22. \$11.25 | 52. $\frac{1}{2}$ | 80. 70% | |
| 23. 25 members | 53. 15 | 81. 84,528 birds | |
| 24. 12 years old | 54. 3.47 | 82. \$40,000 | |
| 25. 1500 | 55. 32 cm | 83. 340 mi | |
| 26. \$818,080 | 56. 138 m^2 | 84. 32,500 | |
| 27. \$8.65 | 57. 10.35 | 85. 420 frogs | |
| 28. 560 | 58. 240 | 86. 5 | |
| 29. 21,435 | | 87. 460 | |
| 30. 607 R5 | | | |