terra STEM Fairs

TO: Terra Fairs students and their parents and mentors
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.

Terra Fairs finds that a student's level of mathematics knowledge is the most accurate way to define their eligibility for a regional STEM fair, and to establish the level of competition they 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 fifth 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 or Senior Level in a Terra Fair. You 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 at terrafairs@terraed.org, or the director of your fair.

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!

* Date of birth can impact options for international advancement; early admission students will still be eligible for Fair Honors and Special Awards.

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

Houghton
Mifflin
Harcourt™

Middle Grades Math Placement Test

For Students New to the Saxon Math *Program*

S**AXON**™
HOMESCHOOL

The Objective

This test can be used to help teachers find the best initial placement for students who are new to the *Saxon Math* program. This test includes selected content from *Math 5/4*, *Math 6/5*, *Math 7/6*, *Math 8/7*, and *Algebra $\frac{1}{2}$*. Please note that this placement test is not infallible. It is simply one indicator that can be used to place students. The best placement for most students is to start the year in the textbook designed for students at that grade level (*Math 5/4* for fourth grade, *Math 6/5* for fifth grade, *Math 7/6* for sixth grade, *Math 8/7* for seventh grade, and *Algebra $\frac{1}{2}$* for eighth grade). Students who have missed math concepts in their previous study may be better served beginning one textbook level lower. Exceptional students, at either end of the spectrum, can be well served when they are placed at levels consistent with their competencies. This test is not intended for use with current Saxon students.

The Rules

1. Allow the student to work until he/she cannot complete any more problems.
2. The student may not use a calculator during the test.
3. The student should work independently without coaching or other assistance.
4. The student should show all of his/her work. Look over the student's work carefully as you grade the test.
5. Use the placement guide provided along with sound judgment to help you place the student in the most appropriate book.

The Score

- Fifteen or fewer correct from Questions 1–20 and the student is an average-to-accelerated fourth grader: Student may begin *Math 5/4*.
- Sixteen or more correct from Questions 1–20: Student may begin *Math 6/5*.
- Sixteen or more correct from Questions 1–20 and 16 or more correct from Questions 21–40: Student may begin *Math 7/6*.
- Sixteen or more correct from Questions 21–40 and 16 or more correct from Questions 41–60: Student may begin *Math 8/7*.
- Sixteen or more correct from Questions 41–60 and 16 or more correct from Questions 61–80: Student may begin *Algebra $\frac{1}{2}$*.
- Sixteen or more correct from Questions 61–80 and 16 or more correct from Questions 81–100: Student may begin *Algebra 1* or be given an additional test for possible placement in a higher-level text.

The math placement tests are only one tool used to place a student who is new to the *Saxon Math* program. You must also consider the student's age, previous curriculum, and how quickly the student grasps math concepts. If you need more information from a qualified *Saxon Math* teacher about specific circumstances, please email us at info@saxonhomeschool.com.

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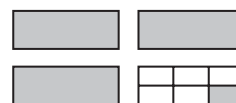
7. Twenty-five percent of this square is shaded. What percent of the square is not shaded?
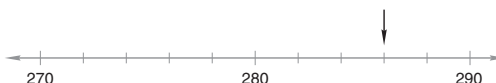
8. What is the perimeter of this rectangle?

6 in.

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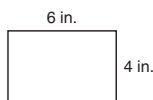
9. A square has one side that is 7 inches long. What is the area of the square?

10. To what number is the arrow pointing?

270   280   290

11. 4.2 + 3.5 + 0.25 + 4.0

12.   460
       × 9

13. 6)3795

14. 6 × 4 × 10

15. $4.86
       + $2.95

Find each missing number for 16–17:

16.   z
       + 179
        496

17.   67
         − B
          16

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 $\overline{ST}$?

R   S   T

cm   1   2   3   4   5   6   7   8   9   10
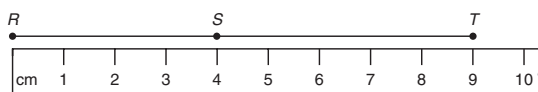
81. The first flock contained 5283 birds. The second flock contained 5 times as many birds. The third flock had twice as many birds as the second flock. How many birds were there in all?

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 fogs, 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?

88. Find x.
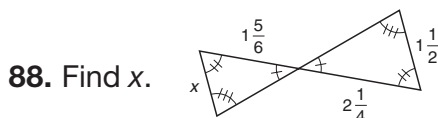
89. Find the surface area of this right solid. Dimensions are in centimeters.
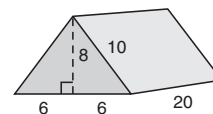
90. What is the volume in cubic meters of the right solid whose base is the figure shown on the left and whose sides are 200 centimeters tall? Dimensions are in meters. All angles are right angles.
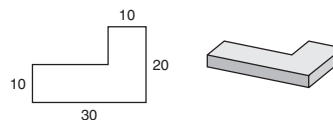
91. Write 0.000387 in scientific notation.

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

2. 15 beans

3. 21 miles

4. 2:15 P.M.

5. 42

6. $3\frac{1}{6}$

7. 75%

8. 20 in.

9. 49 sq. in.

10. 286

11. 11.95

12. 4140

13. 632 R3

14. 240

15. $7.81

16. 317

17. 51

18. 343

19. 2

20. 5 cm

21. 449 cherries

22. $11.25

23. 25 members

24. 12 years old

25. 1500

26. $818,080

27. $8.65

28. 560

29. 21,435

30. 607 R5

31. 1483

32. 200

33. $3.92

34. $3\frac{1}{2}$

35. 28

36. $12\frac{1}{2}$

37. 8 sides

38. 3000, 3100, 3200

39. 12 cm

40. 49 mm

41. 6

42. 21.05

43. 450 chairs

44. 54 average pumpkins

45. $49.00

46. 400 hamburgers

47. $\frac{13}{50}$

48. 8

49. 0.925

50. 0.16

51. $3\frac{2}{3}$

52. $\frac{1}{2}$

53. 15

54. 3.47

55. 32 cm

56. 138 m^2

57. 10.35

58. 240

59. 62.5%

60. $1\frac{1}{4}$

61. 7.494

62. 1882

63. 704 seconds

64. $0.17 per container

65. 54.6 seconds

66. 81 square inches

67. 20 cm

68. 30,000 mm^3

69. $80

70. $\frac{5}{12}$

71. 36

72. 10

73. $3\frac{2}{3}$

74. 0.0075

75. 11

76. $\frac{1}{3}$

77. $\frac{5}{6}$

78. 3

79. 150

80. 70%

81. 84,528 birds

82. $40,000

83. 340 mi

84. 32,500

85. 420 frogs

86. 5

87. 460

88. $\frac{11}{9}$

89. 736 cm^2

90. 800 m^3

91. 3.87×10^{-4}

92. $2602.\overline{142857}$

93. $5\frac{3}{7}$

94. 9232.51

95. $\frac{38}{3}$

96. 69

97. $\frac{3}{5}$

98. $250\frac{1}{40}$

99. 5.17×10^{-6} mi^2

100. $2\frac{3}{4}$