Middle Grades Placement Test

For students entering mathematics at One Day Academy between fourth grade math and Algebra 1.

One Day Academy's transitional mathematics program consists of four courses: Elementary Mathematics 4/5 (the end of elementary mathematics), Transition Math, Pre-Algebra, and Algebra 1 (the beginning of well defined high school credit mathematics). These courses bring the student from elementary mathematics, which is primarily arithmetic, through conceptual basics of fractions, variables, equations, and exponents, and into algebraic reasoning, which is heavily based in variables, comparison, and graphical representations. These are the years where math curricula vary so greatly in style, pace, and rigor, where diversity seems to be the rule, where everyone does things a little differently.

Because ODA has a mathematics program which is international in flavor, our sequence is different than many programs around the area. We focus on content and pace and rigor which will lead a student toward success in university level mathematics. Although math never changes, how it is taught and how it is sequenced has changed a lot in the past 25 years. This is not the case at ODA. Our math program is "old school". We know how children learn at different developmental stages and offer a math program which is consistent with children's developmental realities. We strive to work with the design of the Creator rather against it.

Because of this distinction, placing a student in the sequence properly is not just a matter of age. We have 10 year olds in Algebra 1 and 17 year olds in Pre-algebra. We try to place each student in the course where their skills place them, the course for which they are best suited. To help parents and faculty members with this process, we have provided a placement test. This test is not meant to be an unquestionable system but a helpful tool in the hands of the parents and the faculty.

If the test can be administered according to a few guidelines, it can be a help to this placement process.

1. Do not restrict the time a student has to take the test. Let the student work until finished.
2. Do not let the student use a calculator on any portion of the test.
3. Do not coach or assist the student. Let the student work completely independently.

At the end, you will find the chart for scoring and interpreting the results. Good luck using this test. And do not hesitate to contact an ODA math faculty in your area if you have any questions.

SECTION 1

1. Eric buys 2 balls for $0.73 each, and a block for $2.16. If he also pays 29 cents in tax, what is the total cost of the purchase?

2. What time is it $3\frac{1}{2}$ hours after 10:45pm?

3. What is the perimeter of a rectangle which is 10 inches wide and 6 inches wide?

4. What is the area of a square whose side has a length of 9 inches?

5. If 35% of children bring their lunches to campus, what percent of children do not bring their lunches to campus?

6. What is the 8th number in the following sequence?   9, 18, 27,….

7. How many cookies are in each pile if 80 cookies are split evenly into 5 piles?

8. How many meters can Matt walk in 6 minutes if he can walk 25 meters in 1 minute?

9. What number is half way between 690 and 700?

10. Running a mile at the local track requires running 4 laps around the track. Write a mixed fraction which represents the number of miles covered in running 9 laps.

For problems 11 through 15, perform the indicated operations.

11. $3.2 + 1.8 + 0.34 + 3.7$

12. $340 \cdot 7$

13. $2,387 \div 8$

14. $8 \cdot 4 \cdot 100$

15. 731 - 258

16. Write the number four-hundred seventy-one in digits.

17. How far is it on a ruler from the 8cm notch to the 15cm notch?

18. In the number 9.136, what digit is in the tenths place?

For problems 19 and 20, find the value of the missing number.

19. $N + 274 = 532$

20. $85 - P = 27$

SECTION 2

21. Seven girls find 1,561 golf balls. If each girl takes home the same amount of golf balls, how many golf balls does each girl take home?

22. Estimate the product of 341 and 659 by rounding each number to the nearest hundred before multiplying.

23. Use digits to write the following number: three-hundred thousand, twelve.

24. Lizzie paid $12.75 for a music CD. If Lizzie still had $3.60 left after the purchase, how much did she have before the purchase?

25. John has $\frac{1}{4}$ as many marbles as Sam. If Sam has 56 marbles, how many Marbles does John have?

26. Forty-seven birds are sitting on a wire. Some more birds sat on the wire, making a total of 93 birds. How many birds were in the second group which sat on the wire?

For numbers 27 through 33, perform the indicated operation.

27. $\$30 + \$6.41 + 29¢$

28. $3,217 \div 8$

29. $4 \times 7 \times 100$

30. $2,597 \times 7$

31. $517,823 - 488,949$

32. $2\frac{5}{8} + 3\frac{7}{8}$

33. $8.62 + 27.9 + 51$

34. Solve for B. $\qquad \frac{9}{20} = \frac{B}{80}$

35. Solve for z. $\qquad 40z = 1,200$

36. Find the perimeter of a rectangle which is 2 feet long and 4 inches wide.

37. How many edges does a pentagon have?

38. What is $\frac{1}{3}$ of 70?

39. Tell the next four terms in the following sequence. $\qquad$ 700, 800, 900,....

40. Find the distance from Dallas to Oklahoma City if it is 205 miles from Austin to Dallas and 382 miles from Austin to Oklahoma City.

SECTION 3

41. Write the following number in digits. Seventeen and fifty-six ten-thousandths.

42. What is the total cost of purchasing 3 knives at $19.95 each if the tax rate is 6 percent?

43. How many quarts of milk can be poured from a 40 gallon container?

44. What digit is in the ten-thousands place in the following number? 43,275,689

45. A national singing contest had 4 finalists out of 25 contestants which started the contest. What percentage of the original contestants made it to the finals?

46. A corn field has 12 rows, each of which has 28 corn plants. How many corn plants does the field contain?

47. A serving of regular yogurt contains 300 calories, while a serving of low-fat yogurt contains 75 calories. A serving of regular yogurt contains as many calories as how many servings of low-fat yogurt?

48. What is the average of the following numbers? 31.6, 8.05, 12, and 0.59

For numbers 49 and 50, fill in the following chart.

	FRACTION	DECIMAL NUMBER	PERCENT
#49	$\dfrac{7}{20}$	0.35	
#50		4.2	420%

51. What is the area of a square whose perimeter is 20 yards?

52. Find the area of a circle whose circumference is 20π meters.

53. If $E = mgh$, find E when m = 10, g = 9.8, and h = 5.

54. Find the value of B when $31 + B + 4.7 = 63$.

For numbers 55 through 60, perform the indicated operation.

55. $\dfrac{2}{3} \cdot \dfrac{9}{10}$

56. 8.4×0.62

57. $3\dfrac{5}{8} + 5\dfrac{3}{4}$

58. $\dfrac{7}{10} \div 2\dfrac{1}{4}$

59. $23.6 \div 0.8$

60. $\sqrt{81} - 3^2 + 2 \cdot 5^2 - \sqrt{36}$

SECTION 4

61.   Round 14.8967 to the nearest hundredth.

62.   John ate 100 hot dogs in 9 minutes and 37 seconds. How many seconds did it take John to eat 100 hot dogs?

63.   Jane buys a car for $2,400, which was 40% off the original price. What was the original price of the car?

64.   Bill has 9 playing cards: 2 jacks, 3 queens, and 4 kings. If he draws a card at random, what is the probability that the card Bill draws is a king?

65.   Sue shoots 100 free throws 3 times. The first time she makes 71 out of 100. The second time she makes 82 out of 100. How many does she make the third time if her average for the 3 sets is 77 out of 100?

66.   The World Cup was held in Brazil in 2014. The World Cup was last held in South America 36 years previous to that. When was the last time the World Cup was held in South America prior to 2014?

67.   Carlos can buy a can of soda for 79 cents or a 12 pack of soda for $4.59. How much money would Carlos save by buying a 12 pack of soda rather than 12 individual cans?

68.   A square has a perimeter of 3 feet. What is the area of the square in square inches?

69.   Find the volume of a cube if each face has an area of 16 square meters?

70.   Find the area of a circle whose diameter is 12 miles.

71.   Write a fraction equal to $\frac{3}{4}$ with a denominator of 20.

72.   Thirty percent of what number is 81?

73.   If $\frac{4}{5}$ of students love math, what percent of students do not love math?

74.   Evaluate $x^2 + 2xy - \frac{y}{x}$ if $x = 5$ and $y = 3$.

For numbers 75 through 77, solve for the given variable.

75. $4x = 88$ 76. $\frac{3}{5} = \frac{x}{7}$

77. $x - 16 = 47$

For numbers 78 through 80, perform the indicated operation.

78. $2\frac{1}{5} \cdot 3\frac{2}{3} \cdot 1\frac{1}{2}$

79. 2.4×0.6

80. $\frac{5}{8} - \left(\frac{1}{2} - \frac{1}{6}\right)$

SECTION 5

81. A box of 36 car batteries costs $2,160. At this rate, how much would 85 batteries cost?

82. What is the new total if 300 is increased by 180%?

83. John travels 90 kilometers per hour for 5 hours and 110 kilometers per hour for 6 hours. What is the total distance that John travels?

84. On the first day I run three miles. On the second day I double the first day's distance. On the third day, I double the distance of the second day. How far did I run total over the three days?

85. The ratio of supervisors to workers for a particular company is 17 to 4. If one of their job sites has 60 workers, how many supervisors does that job site have?

86. At one university, there are 500 more math majors than history majors, and 800 more history majors than science majors. How many people at that university are majoring in math, history and or science if 2150 people are majoring in math?

87. Three times a number is 56 more than the opposite of the number. Find the number.

88. Write the following numbers in scientific notation. A)   2,380,000   B)   0.000000825

89. Convert 3,806.217 to an equivalent mixed fraction.

90. Convert 210 square yards to square inches.

91. Evaluate $x^2 + y \cdot z - \sqrt{y} + \sqrt[z]{x}$ when $z = 3,\ x = 8, and\ y = 9$.

92. Reduce $\frac{120}{256}$ to an equivalent fraction in lowest terms.

93. Evaluate. $3^3 + 2[8 - (3^2 - 2^3) + 11] - 4 \cdot 5$

For numbers 94 through 97, perform the indicated operation.

94. $8\frac{2}{5} - 5\frac{7}{8}$ 95. $\frac{974.4}{0.3}$

96. $3,105.2 - 879.56$ 97. $3\frac{1}{2} \times 2\frac{1}{5} \div 5\frac{3}{4} \times 1\frac{3}{8}$

98. Find the surface area of a box which is 3 meters wide, 4 meters deep, and 5 meters high.

99. Right triangle A has legs of 8 cm and 15 cm, and a hypotenuse of 17 cm. Find the lengths of the legs of triangle B if it is similar to triangle A and has a hypotenuse of 68 cm.

100. Find the volume of the Pentagon building if it is 40 feet tall and the roof has a total area of 82,500 square feet.

Answer Key

Section 1:

1. $3.91
2. 2:15 am
3. 32 in.
4. 81 sq. in.
5. 65%
6. 72
7. 16 cookies
8. 150 m
9. 695
10. 2 ¼ miles
11. 9.04
12. 2380
13. 298.375
14. 3200
15. 473
16. 471
17. 7 cm
18. 1
19. N = 258
20. P = 58

Section 2:

21. 223 golf balls
22. 210,000
23. 300, 012
24. $16.35
25. 70 marbles
26. 46 birds
27. $36.70
28. 402.125
29. 2800
30. 18, 179
31. 28,874
32. 6 ½
33. 87.52
34. B = 36
35. z = 30
36. 56 inches
37. 5
38. 23.3 (repeating 3)
39. 1000, 1100, 1200, 1300
40. 177 miles

Section 3:

41. 17.0056
42. $63.44
43. 160 qt.
44. 7
45. 16%
46. 336 corn plants
47. 4 servings
48. 13.06
49. 35%
50. 4 ⅕
51. 25 sq. yd.
52. 100π m^2
53. E = 490
54. B = 27.3
55. ⅗
56. 5.208
57. 9 ⅜
58. 14/45
59. 29.5
60. 44

Section 4:

61. 14.90
62. 577 seconds
63. $4000
64. 4/9
65. 78
66. 1978
67. $4.89
68. 81 sq. in.
69. 64 m^3
70. 36π sq. miles
    113.04 sq. miles
71. 15/20
72. 270
73. 20%
74. 54 ⅔
75. x = 22
76. x = 21/5   x = 4 ⅕
77. x = 63
78. 121/10 or 12 1/10
79. 1.44
80. 7/24

Section 5:

81. $5100
82. 540
83. 1110 km
84. 21 miles
85. 255 supervisors
86. 2150 in math
    1650 in history
    850 in science
87. 14
88. a) $2.38 \cdot 10^6$
    b) $8.25 \cdot 10^{-7}$
89. 3806 217/1000
90. 210(36)(36) in^2 or
    272,160 in^2
91. 90
92. 15/32
93. 43
94. 2 21/40
95. 3248
96. 2225.64
97. 847/460
    1 387/460
98. 94 m^2
99. 32 cm and 60 cm
100. 3,300,000 $feet^3$

Interpretation for Transitional Mathematics Placement Test

Problems 1 – 33

Missed less than 3 → Transition Math

Missed less than 10 → placement of Elementary 4/5

Missed 10 or more → placement of Abeka 3

Problems 34 – 72

Missed Less than 3 → Pre-Algebra

Missed less than 10 → Transition Math

Missed 10 or more → Elementary 4/5

Problems 73 – 100

Missed Less than 3 → Algebra 1

Missed less than 10 → Pre-Algebra

Missed 10 or more → Transition Math