

MATHEMATICS SKILLS ASSESSMENT

SAMPLE TEST AND PREPARATION GUIDE

Testing is usually offered at the Waterloo Campus, 108 University Ave. E. If you have applied to the College and have received a letter from the Admissions Office indicating that you are required to write the Mathematics, English, or Science assessment (Chemistry and/or Biology), please phone our Testing Hotline at (519) 748-5220, Ext. 2266. You can also phone the hotline if you are thinking of applying and wish to check out your academic readiness for college.

Please check the Testing Hotline or the testing website at <http://www.conestogac.on.ca/testing/pretest.jsp> to determine dates and locations when testing is available:

English – 8:45 a.m.

Mathematics – 10:45 a.m.

Science – 9:30 a.m. or 11:15 a.m.

Please arrive 15 minutes before tests start

It is recommended that if you need to write all 3 tests that you write a maximum of 2 per day.

IMPORTANT INFORMATION:

TESTING FEE - \$30 FOR 1 TEST, \$40 FOR 2 TESTS, \$50 FOR 3 TESTS (Please note that the Science test is considered 1 test whether you write Biology, Chemistry, or both)

The above fees must be paid by cash or cheque in the classroom. It is possible to pay by debit or credit card if you go to the main office at the Waterloo Campus, Room 1C04.

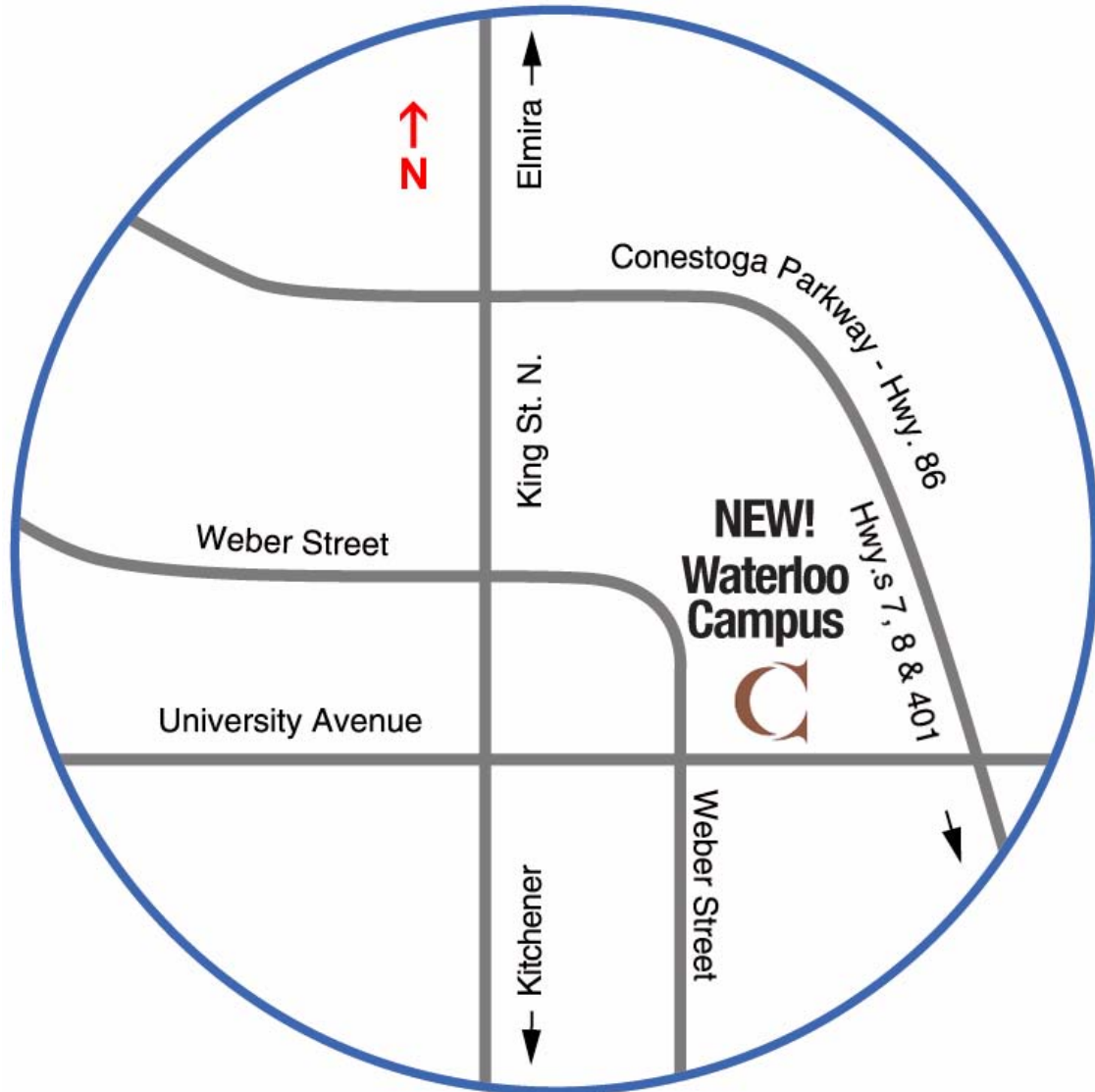
Please arrive at the campus 15 minutes prior to the test in order to pay the testing fee.

PARKING

A paid parking system is enforced at most campuses Monday to Friday, from 8:00 a.m. to 4:00 p.m. The cost for a day pass is \$7.00. At the Waterloo Campus, the large lot off of Marsland Drive has the parking pass dispenser.

IDENTIFICATION

All persons referred for testing must present personal identification to the test administrator (photo ID or ID with a signature on it). Failure to provide proper identification will result in the test date being rescheduled.



Waterloo Campus
108 University Avenue East
Waterloo, Ontario
N2J 2W2
(519) 885-0300

PREPARATION AND REVIEW BOOKLET

This booklet is designed to help you prepare for your English, Mathematics and/or Science Skills Assessment.

HELPFUL HINTS

1. Get a good night's sleep before the test and arrive early for the testing session.
2. Don't let the thought of taking a test make you too nervous. Rest assured a little nervousness is natural and even helpful.
3. Be on time! This will give you the opportunity to familiarize yourself with the test room and calm the butterflies!
4. Listen carefully and follow directions.
5. Ask questions if anything is unclear. The test administrator is there for that purpose.
6. The tests are multiple choice. You will be required to choose the best answer to a question from several choices. You may mark an answer even if you are not perfectly sure it is right.
7. If one question is too hard, leave it and go on to the next. You can always come back and try it again if there is time.
8. If you come to a section in the test that you cannot do, don't give up. There may be parts of the test which are easier for you. Keep working.
9. Work steadily, and complete as many questions as you can.

If you are an applicant with special needs (eg. Physically disabled, blind or visually impaired, deaf or hard of hearing) and require some form of test accommodation, please contact the **DISABILITY SERVICES OFFICE** at (519) 748-5220, Ext. 3232. This office is located at our Doon Campus.

MATHEMATICS SKILLS ASSESSMENT

OVERVIEW

The Conestoga College Math Skills Assessment has practical value for you and for us. Experience has shown that a student needs a certain level of skills in mathematics to succeed in Conestoga College programs. Therefore, we have designed the Math Skills Assessment so that you, and we, may be certain you have the skills suitable to your program of study.

A sample assessment is included in this packet. In content, it parallels the actual Math Skills Assessment you will write at the College and covers subject material through the grade 12 level.

WHAT TO EXPECT

The Conestoga College Math Skills Assessment has 100 questions – 4 questions for each of the 25 different math skills. The test is multiple choice. You will be required to choose the best answer to a question from several choices without the use of a calculator.

Introduction and instructions	15 minutes
Math test	120 minutes

The test begins at 10:45 a.m. The sample assessment is your best preparation. By making sure that you can do each question before coming to write the assessment at the College, you will be well prepared. The College supplies all materials. We do not allow the use of calculators, dictionaries or learning aids.

IMPORTANT: PLEASE NOTE

It is recommended that all applicants complete the entire Math Skills Assessment, that is all 100 questions. Your overall score on the test is important.

Some College programs require only partial test results to determine your level of readiness in mathematics.

Any of our Engineering Technology/Technician Programs (except Woodworking), General Arts & Science – Technology Option, Technology Stream, and Aviation	Questions 1-100
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Any of our Business programs and Training & Development Programs	Questions 1-88
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Certificate Programs, Woodworking, Health Sciences Programs, General Arts & Science – Certificate and Health Option, Trades Programs	Questions 1-72
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SAMPLE MATH SKILLS ASSESSMENT

Without the use of a calculator, perform the following operations, as indicated. Always state answers in the lowest form.

Fundamentals

1. $216 + 64 + 1092 =$
2. $318 - 95 =$
3. $6 \times 12 \times 343 =$
4. How much would it cost to cover a floor 8 m x 6 m with carpet that costs \$13 per square metre?

Fractions I

5. Find the lowest common denominator of $\frac{1}{3}$, $\frac{1}{7}$, $\frac{1}{2}$
6. Reduce $\frac{24}{56}$ to lowest terms
7. List the prime factors of 216
8. Evaluate $\frac{2}{0}$

Fractions II

9. $\frac{3}{4} + \frac{7}{8} =$
10. $\frac{11}{2} - \frac{2}{3} =$
11. $\frac{63}{8} \times \frac{3}{4} =$
12. If $60 \frac{2}{3}$ litres of gasoline are added to a tank that already contains $5 \frac{1}{2}$ litres, what is the total amount of gasoline in the tank?

Fractions III

13. $\frac{7}{8} \times 1\frac{2}{3} \times \frac{24}{5} =$

14. $\frac{2}{3} \div \frac{5}{8} =$

15. $(1\frac{3}{4}) \div (3\frac{5}{8}) =$

16. How many blocks which are $\frac{2}{3}$ metres in length must be laid end to end to make a row 66 metres long?

Order of Operations:

17. $12 + 12 \div 6 + 4 =$

18. $36 \div 12 \times 6 - 4 =$

19. $(18 - 9) \div (20 \times 6) =$

20. $15 + 5 \div 5 \times 15 =$

Exponents I:

21. Evaluate $10^3 \times 10^4 =$

22. Evaluate $2^2 \div 2^7 =$

23. Evaluate $-(7^2) (-4)^2 =$

24. Evaluate $(7 - 4)^2 =$

Decimals

25. $0.653 + 1.09 =$

26. $45.75 \times 1.20 =$

27. $15.75 \div 0.25 =$

28. Write as a decimal “one thousand twenty-two and eighty-three hundredths.”

Metric Conversions:

29. 456 mm to m =
30. 1500 m^2 to km^2 =
31. 36 km^2 to mm^2 =
32. 125 mm^3 to m^3 =

Fractions-Decimals-Percents:

33. Write $\frac{2}{3}$ as a percent.
34. Write $12 \frac{1}{2}\%$ as a decimal.
35. Write 0.125 as a fraction.
36. 42.5 is what percent of 170?

Signed Numbers:

37. $-12 + 20 - (-12) =$
38. $(-6)(2) \div (-12)(6) =$
39. $-(-1) + (1) \div [-(-1)] =$
40. Which of the following would represent the lower temperature?
(45°) (-24°) (51°) (-17°) (0°)

Scientific Notation:

41. Express 4.95×10^{-3} in ordinary notation.
42. Express 1.75×10^4 in ordinary notation.
43. Express 0.000875 in scientific notation.
44. Express 9250000 in scientific notation

Exponents II:

45. Simplify $2A^2 (2A)^2$

46. Simplify $(4B^3)^2$

47. Simplify $12C^2 \div (CD^0)$

48. Simplify $5E^5 \div (5E)^4$

Simplification:

49. $\frac{5AB}{C^2} \div \frac{A^3C}{B} =$

50. $2[7 - (-4 + 2) - 1] =$

51. $(D - A/D) \div (2D/A) =$

52. $\frac{2A}{3} - \frac{4A}{5} + \frac{3A}{4} =$

Substitution:Given $A = 3$, $B = -1$, $C = -2$, $D = 0$, $E = 0$

53. $A(-B + 1/C) =$

54. $A^2 (BC)^3 + D/C =$

55. $A - B^2 (C^3/A) =$

56. $AEC^3 \div (A^2B^3D) =$

Expand by removing Brackets:

57. $(2A + 3)(A - 2) =$

58. $7(AB)(A^2 - B) =$

59. $(4E - 3)^2 =$

60. $(6F - 7)(-1 - F) =$

Equations:

61. If $3G = 24$ $G =$

62. If $4H + 7 = 23$ $H =$

63. If $5J - 6 = 2J + 12$ $J =$

64. If $\frac{K}{3} = \frac{15}{105}$ $K =$

Formula Rearrangement:

65. $V = \frac{D}{T}$ $T =$

66. $A = (V - U) \div T$ $V =$

67. $V^2 = U^2 + 2AD$ $U =$

68. $D = \frac{1}{2} AT^2$ $T =$

Word Problems:

69. Three times a number plus five is one hundred twenty-five. Find the number.

70. Seven times one third of a number, minus four equals ten. Find the number.

71. A collection of dimes and quarters totals \$12.55. If there are three more dimes than quarters, how many dimes and quarters are there?

72. Adding two years to the age of a boy would make him a quarter of his father's age. Five years ago his father was one year less than ten times his son's age. Determine the age of the boy and his father.

Systems of Equations, Solve:

73. $4A - 3B = 9,$ $A + B = 4$ $A =$ $B =$

74. $3C - 12D = -5$ $4C + 6D = -3$ $C =$ $D =$

75. $E + F = -1$ $2E + 3F = 0$ $E =$ $F =$

76. $6G - 4H = 9$ $5G + 3H = -2$ $G =$ $H =$

Graphing:

77. In Figure 1, which point is indicated by the co-ordinates (-2,3)?
78. In Figure 2, what are the co-ordinates of the point where the line crosses the "Y" axis?
79. In Figure 2, what is the slope of the line?
80. In Figure 3, what are the co-ordinates of the point where the line crosses the "X" axis?

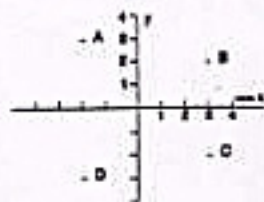


fig. 1

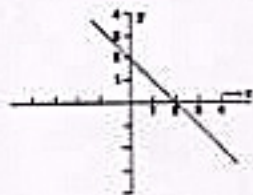


fig. 2



fig. 3

Radicals:

81. $\sqrt{48}$
82. $\sqrt{0.0001}$
83. $\sqrt{X^2Y^3}$
84. $\sqrt{\frac{16}{5A^3}}$

Simplification by Factoring:

85. $[(B^2 - 4)(A + 7)] \div [(B - 2)(2A + 14)] =$
86. $(D^2 - 5D - 14) \div (D^2 - 3D - 10) =$
87. $(4F^2 - 1) \div (4F^2 + 8F + 3) =$
88. $(3H^4 + 6H^2 - 9) \div (4H^4 - 4) =$

Geometry: (Take $\pi = \frac{22}{7}$)

89. What is the area of Figure 4?
90. What is the volume of Figure 5?
91. What is the perimeter of Figure 6?
92. What is the surface of Figure 7?

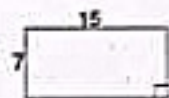


fig. 4

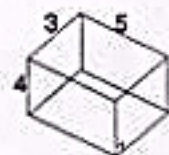


fig. 5

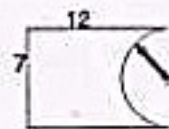


fig. 6

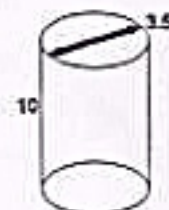


fig. 7

Angles:

- 93. How many degree is 2π radians?
- 94. What is the complementary angle of 18° ?
- 95. What is the equivalent positive angle of -235° ?
- 96. What is the supplementary angle of 105° ?

Trigonometry:

- 97. In Figure 8, what is the value of $\sin(A)$?
- 98. In Figure 8, what is the value of $\cos(A)$?
- 99. In Figure 9, what is the value of $\tan(B)$?
- 100. In Figure 10, what is the value of side "C"?

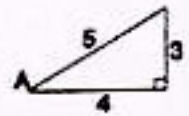


fig. 8

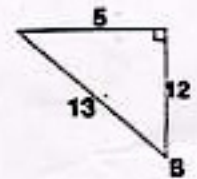


fig. 9

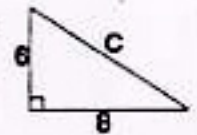


fig. 10

ANSWERS:

- | | | | | | |
|-----|-----------------------------------|-----|----------------------------|------|-----------------------------|
| 1. | 1372 | 35. | 1/8 | 68. | $T = \pm \sqrt{2D/A}$ |
| 2. | 223 | 36. | 25% | 69. | 40 |
| 3. | 24696 | 37. | 20 | 70. | 6 |
| 4. | \$624 | 38. | 6 | 71. | 38 D, 35 Q |
| 5. | 42 | 39. | 2 | 72. | Boy 9, Father 44 |
| 6. | 3/7 | 40. | -24 | 73. | A = 3, B = 1 |
| 7. | 3x3x3x2x2x2 | 41. | 0.00495 | 74. | C = -1, D = 1/6 |
| 8. | Undefined | 42. | 17500 | 75. | E = -3, F = 2 |
| 9. | 1 5/8 | 43. | 8.75×10^{-4} | 76. | G = 1/2, H = -3/2 |
| 10. | 4 5/6 | 44. | 9.25×10^6 | 77. | A |
| 11. | 5 29/32 | 45. | $8A^4$ | 78. | (0,2) |
| 12. | 66 1/6 | 46. | $16B^6$ | 79. | -1 |
| 13. | 7 | 47. | 12C | 80. | (-1,0) |
| 14. | 1 1/15 | 48. | E/125 | 81. | $4\sqrt{3}$ |
| 15. | 14/29 | 49. | $\frac{5B^2}{A^2C^3}$ | 82. | 0.01 |
| 16. | 99 | 50. | 16 | 83. | $XY\sqrt{Y}$ |
| 17. | 18 | 51. | $\frac{A(D^2 - A)}{2D^2}$ | 84. | $(4/A)\sqrt{1/5 A}$ |
| 18. | 14 | 52. | $\frac{37A}{60}$ | 85. | $\frac{B+2}{2}$ |
| 19. | 3/40 | 53. | 1 1/2 | 86. | $\frac{D-7}{D-5}$ |
| 20. | 30 | 54. | 72 | 87. | $\frac{2F-1}{2F+3}$ |
| 21. | 10,000,000 | 55. | 5 2/3 | 88. | $\frac{3(H^2+3)}{4(H^2+1)}$ |
| 22. | 1/32 | 56. | Undefined | 89. | 105 sq. units |
| 23. | -784 | 57. | $2A^2 - A - 6$ | 90. | 60 cu. Units |
| 24. | 9 | 58. | $7A^3B - 7AB^2$ | 91. | 42 units |
| 25. | 1.743 | 59. | $16E^2 - 24E + 9$ | 92. | 129.25 sq. units |
| 26. | 54.90 | 60. | $-6F^2 + F + 7$ | 93. | 360 |
| 27. | 63 | 61. | G = 8 | 94. | 72 |
| 28. | 1022.83 | 62. | H = 4 | 95. | 125 |
| 29. | $4.56 \times 10^{-1} \text{ m}$ | 63. | J = 6 | 96. | 75 |
| 30. | $1.5 \times 10^{-3} \text{ km}^2$ | 64. | K = 3/7 | 97. | 3/5 |
| 31. | $3.6 \times 10^{13} \text{ m}^2$ | 65. | T = D/V | 98. | 4/5 |
| 32. | $1.25 \times 10^{-7} \text{ m}^3$ | 66. | V = AT + U | 99. | 5/12 |
| 33. | 66 2/3% | 67. | $U = \pm \sqrt{V^2 - 2AD}$ | 100. | 10 |
| 34. | 0.125 | | | | |