

# **ENGLISH, MATHEMATICS AND SCIENCE SKILLS ASSESSMENT**

## **SAMPLE TEST AND PREPARATION GUIDE**

**Testing is held most Tuesdays and Wednesdays 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.**

**English – Tuesdays and Wednesdays, 8:45 a.m.**

**Mathematics – Tuesdays and Wednesdays 10:45 a.m.**

**Science – Tuesdays, 9:30 a.m., Wednesdays, 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.

# ENGLISH SKILLS ASSESSMENT

## OVERVIEW

The Canadian Adult Achievement Test (CAAT) is a measure of your current functional level in Reading Comprehension and English Grammar Skills. This battery of achievement tests has been designed specifically for the Canadian adult, regardless of his or her previous school experience.

## THE PURPOSE OF THE CAAT TEST

Conestoga College uses the CAAT test as a pre-admission instrument to assess an applicant's readiness for College programs. Please note that the College does not issue a Statement of Equivalency as part of the test results.

## WHAT TO EXPECT

You will be asked to complete two sub-tests:

Introduction and Instructions	15 minutes
1) Reading Comprehension	40 minutes
2) English Grammar Skills	30 minutes

Instructions for the test begin at 8:45 a.m., and you will be finished by 10:15 a.m. All materials are supplied by the College. **We do not allow the use of learning aids, such as dictionaries and calculators.**

## THE READING COMPREHENSION TEST

The final goal of reading instruction is comprehension of written material. The Reading Comprehension sub-test assesses reading comprehension with three types of reading material. Textual content is similar to that found in non-fiction and general information materials. Recreational content includes material read for enjoyment, including fiction, humour, literary criticism, and poetry. Functional content is the type of material encountered in everyday life, eg. directions, forms, advertising, and labels. Test items are constructed to measure literal, inferential, and critical levels of comprehension.

## SAMPLES:

### TALL TALES

Light from the candles bounced off the dark windows and made strange shadows on the walls. After hearing Uncle Sal's stories, we all sat nervously, listening for creaking footsteps and squeaking doors. Leo was the first to speak.

"You don't really believe all those stories about the old Potter place, do you, Uncle Sal?"

"I don't know," Uncle Sal said slowly, "no one has seen Mr. Potter in town for the last five years. Some say he hasn't set foot out of the house."

- A. What time of day is it in the story?
- a) Morning
  - b) Noon
  - c) Afternoon
  - d) Evening
- B. What kind of stories did Uncle Sal tell?
- a) Peaceful
  - b) Scary
  - c) Sad
  - d) Funny

### SAVE ENERGY, SAVE MONEY, SAVE THE ENVIRONMENT

How energy is used in Ontario homes *		For an annual energy bill of \$2,000
Space heating	57-62%	\$1,140 - \$1,240
Water heating	20-21%	\$400 - \$420
Appliances	12-13%	\$240 - \$260
Lighting	4-5%	\$80 - \$100
Cooling	0-7%	\$0 - \$200

\*Many factors can affect your annual energy bill, such as size and location of your home, yearly variations in weather, efficiency of your furnace and other appliances, thermostat settings, number of occupants, and the local cost of energy.

- C. If an annual energy bill was \$1,500, approximately how much of it was for heating water?
- a) \$500
  - b) \$100
  - c) \$300
  - d) \$200
- D. Presently your annual electric bill is \$2,000. If you install an air conditioner, approx. how much more could your annual electric bill be?
- a) \$150 - \$200
  - b) \$250 - \$300
  - c) \$350 - \$400
  - d) \$450 - \$500

- E. What factor would be least likely to affect your annual electric bill?
- a) Square footage of house
  - b) Seasonal changes
  - c) Age of furnace and appliances
  - d) The North American costs of energy

**NEED A NEW BLUE BOX?**

The Region gives out free Blue Boxes from the locations listed below. If your box is broken, bring it with you to have it recycled.

- Kitchener:** Utilities Operation Centre (Stockroom), 83 Elmsdale Drive, (519) 741-2536; Mon. – Fri., 8:30 a.m. – 4:00 p.m.
- Waterloo:** Works Yard, 265 Lexington Ct., (519) 886-2634; Mon. - Fri., 8:30 – 4:30  
Waste Management Admin. Bldg., 925 Erb St. W., (519) 883-5100, Mon. – Fri., 8:30 a.m. – 4:30 p.m.
- Cambridge:** Works Yard, 1310 Bishop St., (519) 621-0740  
Mon. – Fri., 7:00 a.m. – 3:30 p.m.
- Townships:** North Dumfries Twp. Office at R.R. #75 & Greenfield Rd., (519) 621-0340; Mon. – Fri., 8:30 a.m. – 4:30 p.m.  
Wellesley Twp. Office, ¼-mile east of Crosshill on RR #15, (519) 699-4611; Mon. – Fri., 8:30 a.m. – 4:30 p.m.  
Wilmot Twp. Office, 60 Snyder’s Rd., Baden, (519) 634-8444; Mon. – Fri., 8:30 a.m. – 4:30 p.m.

Blue Boxes are also available at Small Vehicle Transfer Stations in Cambridge, Waterloo, Wilmot, Wellesley, North Dumfries and Woolwich Townships. Call (519) 883-5100 for hours.

- F. If your blue box has been run over by the garbage truck, to receive a new one you should:
- a) Collect the pieces and take them to the nearest Operation Centre/Works Yard
  - b) Go to the nearest Operation Centre/Works Yard to order a new blue box
  - c) Phone (519) 883-5100 to request that a new one be sent to you
  - d) Take your damaged box to any of the Operation Centres/Works Yards on the weekend to pick up a new one.
- G. You work from 8:00 a.m. – 5:00 p.m. every Monday – Friday. Where is the only location you can pick up a new blue box?
- a) Kitchener
  - c) Cambridge

b) Waterloo

d) North Dumfries Township

**What's Important**

**by Lynne Kattenhorn**

What's Important?

A man of wisdom, long ago, asserted,  
"The four things man needs most in life,  
Are Health, Love, Beauty and Wealth."  
He specified the order, his message to come through.  
Thank you Plato for your words, and your wisdom, true.  
I can agree with Health and Love, and Beauty sounds right too.  
Of Wealth, I'm not quite certain.  
You know it's often said, "'tis the root of all that's evil."  
And many hearts have bled, over money and the damage,  
To which it's cruel pursuit has led.  
All right, I will concede,  
Some wealth we may require, to care for physical need.

What's More Important?

It's got to be the lessons.  
The knowledge we have gained.  
Doesn't come without a struggle, frustration, fear and pain.  
It has to be the lessons. Of this I am quite sure.  
We've got to do the preparation, improve our attitude.  
Yes, it is the lessons, that help us to achieve,  
Everything we're meant to, everything we need.

What's Most Important?

To have a soul that's free.  
Attain a greater level,  
Of Spirituality.  
Love, Health, Beauty, Wealth.  
Inside is where they're found.  
Every wonder, mystery and reason,  
We cannot hope to understand.  
But of one thing, I am certain,  
We each must heed our Call.  
And in the Higher Order of Life  
There is a place for all.

- H. According to the poet, which of the following is most important:
- a) Wealth
  - b) Love
  - c) Health
  - d) Knowledge
- I. "Tis the root of all that's evil" refers to
- a) Fear
  - b) Pain
  - c) Wealth
  - d) Bleeding hearts

## THE ENGLISH SKILLS SUBTEST

The English Skills sub-test reflects the current emphasis in language instruction on the development of sound written communication skills that form the groundwork for writing fluency. It assesses your knowledge of punctuation and capitalization, as well as your ability to apply grammatical concepts and to recognize correct and effective structure and writing style.

### SAMPLES: Choose the sentence with the correct capitalization

- A. He is a student in \_\_\_\_\_.
- a) high school
  - b) High school
  - c) High School
  - d) high School
- B. I'm taking \_\_\_\_\_
- a) geography, mathematics, law and french
  - b) Geography, Mathematics, Law and French
  - c) geography, Mathematics, law and French
  - d) geography, mathematics, law and French

### Choose the sentence with the correct punctuation.

- C. My brother carried the boxes into the \_\_\_\_\_ unpacked them.
- a) house I
  - b) house; I
  - c) house, I
  - d) house: I
- D.
- a) Although, it was raining on Saturday we decided to go to the park.
  - b) Although it was raining on Saturday we decided to go to the park.
  - c) Although it was raining, on Saturday, we decided to go to the park.
  - d) Although it was raining on Saturday, we decided to go to the park.
- E.
- a) Maria asked, "Would you like me to take care of the problem?"
  - b) Maria asked "Would you like me to take care of the problem?"
  - c) Maria asked, "Would you like me to take care of the problem"?
  - d) Maria asked "if she should take care of the problem."
- F.
- a) The childrens toys filled the room.
  - b) The childrens' toys filled the room.
  - c) The children's toys filled the room.
  - d) The children's toy's filled the room.

**Decide which word or group of words belongs in the blank.**

- G. The wind \_\_\_\_\_ through the trees.  
a) rustles  
b) are rustling  
c) do rustle  
d) rustle
- H. The car belongs to \_\_\_\_\_.  
a) he and I  
b) him and I  
c) he and me  
d) him and me
- I. a) I found an excellent job after I graduated from college.  
b) I find an excellent job after I graduated from college.  
c) I have found an excellent job after I am graduating from college.  
d) I will have found an excellent job after I am graduated from college.
- J. That movie was one of the \_\_\_\_\_.  
a) excitingest that I have ever seen  
b) excitinger that I have ever seen  
c) most exciting that I have ever seen  
d) most excitable that I have ever seen

**Sentence Correctness: For each question, read all four groups of words. One group of words forms a correct, clear sentence. Each of the other choices is incorrect in one of these ways:**

- 1) **It does not form a complete sentence.**
- 2) **It forms two sentences that are incorrectly run together.**
- 3) **It has confusing or unnecessary wording.**
- 4) **It does not express what the writer intended.**
- 5) **It does not express ideas well.**

**For each question, decide which sentence is written clearly and correctly.**

- K. a) She read the paragraph, explained it, and sat down.  
b) June felt surprised, worried and anger.  
c) Watching a play is more interesting than to watch a movie.  
d) The room is warm, comfortable, and has good lights.
- L. a) Since they were late for the meeting.  
b) Waiting for the bus, I ate my lunch.  
c) The player who is the best.  
d) One of the children in the playground.

- M. a) He thought he had the best seat, he was in the front row.  
b) The class was cancelled the students were pleased.  
c) Her car broke down, so she was late for the appointment.  
d) We laughed then we cried.
- N. a) The class was full, so more chairs were needed.  
b) People were rushing around, yet little was being accomplished.  
c) Although the problem had been identified, we chose to ignore it.  
d) Since we had finished the report early, we had time for a break.
- O. a) I wondered whether you were coming and if you had forgotten about the meeting.  
b) The employees were happy to receive a raise in pay, an increase in vacation time and medical benefits were improved.  
c) Good students should be organized, independent, and stay positive.  
d) Robert lost his keys, and he looked under the desk, between the filing cabinets, and his backpack was searched.
- P. Choose the answer that best combines these sentences without changing their meaning.

**Ed went to the shoe store. It is at the mall.**

- a) Ed went at the mall to the shoe store.  
b) Ed's shoe store is at the mall.  
c) Ed went to the shoe store at the mall.  
d) To the shoe store at the mall went Ed.

### **Sentence Effectiveness**

- Q. a) You will receive a complimentary free gift at no charge.  
b) Paul walked into the adjacent building next door.  
c) Karen mailed the package today.  
d) Joseph himself was there live and in person.
- R. a) Flying over the house, Nancy heard a helicopter.  
b) Full of energy, the house was cleaned in an hour.  
c) I called to ask you to wait for me on the telephone.  
d) My brother George just started high school.
- S. a) The dog was hungry and wanted more.  
b) He always enjoyed music, so he became a music teacher.  
c) Hiding under the desk, the instructor found his pen.  
d) My employer offered me a raise which pleased me.

- T. a) Even though the organizers did an outstanding job in planning the event, many people attended.  
b) Unless you are certain, you should give the incorrect answer.  
c) Because I finished the report on time, I treated myself to an ice cream cone.  
d) Since reading that book, my confidence has grown.

**ANSWERS:**

**Reading Comprehension**

- A. (d)
- B. (b)
- C. (c)
- D. (a)
- E. (d)
- F. (a)
- G. (c)
- H. (d)
- I. (c)

**English**

- A. (a)
- B. (d)
- C. (b)
- D. (d)
- E. (a)
- F. (c)
- G. (a)
- H. (d)
- I. (a)
- J. (c)
- K. (a)
- L. (b)
- M. (c)
- N. (d)
- O. (a)
- P. (c)
- Q. (c)
- R. (d)
- S. (b)
- T. (c)

# 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.**

<b>Any of our Engineering Technology/Technician Programs (except Woodworking), General Arts &amp; Science – Technology Option, Technology Stream, and Aviation</b>	<b>Questions 1-100</b>
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<b>Any of our Business programs and Training &amp; Development Programs</b>	<b>Questions 1-88</b>
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<b>Certificate Programs, Woodworking, Health Sciences Programs, General Arts &amp; Science – Certificate and Health Option, Trades Programs</b>	<b>Questions 1-72</b>
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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<sup>2</sup> to km<sup>2</sup> =
- 31. 36 km<sup>2</sup> to mm<sup>2</sup> =
- 32. 125 mm<sup>3</sup> to m<sup>3</sup> =

**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  $4.95 \times 10^{-3}$  in ordinary notation.
- 42. Express  $1.75 \times 10^4$  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?

**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?

**Angles:**

93. How many degree is  $2\pi$  radians?
94. What is the complementary angle of  $18^\circ$ ?
95. What is the equivalent positive angel of  $-235^\circ$ ?
96. What is the supplementary angle of  $105^\circ$ ?

**Trigonometry:**

97. In Figure 8, what is the value of  $\text{SIN}(A)$ ?
98. In Figure 8, what is the value of  $\text{COS}(A)$ ?
99. In Figure 9, what is the value of  $\text{TAN}(B)$ ?
100. In Figure 10, what is the value of side "C"?

**ANSWERS:**

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

## **SAMPLE SCIENCE (BIOLOGY) ASSESSMENT**

1. Blood flows directly from the right ventricle in the human heart to the:
  - a) left atrium
  - b) left ventricle
  - c) lungs
  - d) right atrium
  
2. Genes are located in (on) the:
  - a) centriole
  - b) mitochondrion
  - c) endoplasmic reticulum
  - d) chromosomes
  
3. A constant body temperature is characteristic of:
  - a) mammals and reptiles
  - b) birds and reptiles
  - c) mammals only
  - d) mammals and birds
  
4. The basic functional unit of the nervous system is the:
  - a) neuron
  - b) spinal cord
  - c) nerve
  - d) dendrite
  
5. The pH of blood is slightly basic. Which of the following would be most appropriate?
  - a) 6.4
  - b) 4.6
  - c) 7.4
  - d) 13.8
  
6. Which aspect of a protein determines whether it will function as an enzyme?
  - a) interior
  - b) surface
  - c) weight
  - d) colour
  
7. Granules which are the sites of protein synthesis within a cell are:
  - a) chloroplasts
  - b) mitochondria
  - c) endoplasmic reticula
  - d) ribosomes

8. Organelles associated with cellular respiration are called:
  - a) mitochondria
  - b) Golgi apparatus
  - c) chloroplasts
  - d) lysosomes
  
9. The ability of cell membrane to allow certain substances to enter or leave the cell is called:
  - a) diffusion
  - b) purposeful passage
  - c) osmosis
  - d) selective permeability
  
10. The most common method of cell division in the body is called:
  - a) osmosis
  - b) mitosis
  - c) meiosis
  - d) halitosis
  
11. A nerve cell is smaller than a(n):
  - a) virus
  - b) atom
  - c) proton
  - d) tissue
  
12. A person standing facing you has his heart located:
  - a) above the stomach
  - b) above the brain
  - c) behind the spinal cord
  - d) below the ovary
  
13. The cell nucleus is located:
  - a) outside the cell membrane
  - b) inside the mitochondria
  - c) next to the protons and neutrons
  - d) in the cytoplasm
  
14. Which of the following is the highest level of complexity in the human body?
  - a) molecule
  - b) cell
  - c) organ
  - d) tissue

15. Your blood flows throughout your body because of a(n):
- a) temperature gradient
  - b) pressure gradient
  - c) concentration gradient
  - d) electrical gradient

Answers:

- |        |         |
|--------|---------|
| 1. (c) | 9. (d)  |
| 2. (d) | 10. (b) |
| 3. (d) | 11. (d) |
| 4. (a) | 12. (a) |
| 5. (c) | 13. (d) |
| 6. (b) | 14. (c) |
| 7. (d) | 15. (b) |
| 8. (a) |         |

### **SAMPLE SCIENCE (CHEMISTRY) ASSESSMENT**

1. Iron rusting is an example of what kind of change?
  - a) chemical
  - b) physical
  - c) nuclear
  - d) biological
  
2. A structure consisting of nucleus with electrons orbiting around it is a(n):
  - a) molecule
  - b) organism
  - c) cell
  - d) atom
  
3. A bond that is formed between two atoms of opposite charge is called:
  - a) impossible
  - b) ionic
  - c) maternal
  - d) covalent
  
4. Atoms which have gained or lost electrons are:
  - a) molecules
  - b) ions
  - c) neutrons
  - d) neutral

5. Arrange the following components in descending order of relative size (largest first, smallest last):
- |  |                              |
|--|------------------------------|
| 1) glucose molecule ( $C_6H_{12}O_6$ ) | 3) water molecule ( $H_2O$ ) |
| 2) electron                            | 4) carbon atom               |
- a) 1, 3, 4, 2  
b) 2, 1, 3, 4  
c) 3, 1, 2, 4  
d) 4, 1, 3, 2
6. When sugar is dissolved in water, the water is called the:
- a) solution  
b) solvent  
c) solute  
d) syrup
7. A bond that is formed through a sharing of electrons by two atoms is:
- a) impossible  
b) covalent  
c) unlikely  
d) ionic
8. Compounds releasing hydroxyl ions ( $OH^{-1}$ ) when dissolved in water are:
- a) alcohols  
b) acids  
c) salts  
d) bases
9. When heat is applied to a liquid, the molecules of the liquids:
- a) come closer together  
b) increase in weight  
c) are converted to heat energy  
d) move faster
10. Which of the following is NOT true of an ion?
- a) it has an unequal number of protons and electrons  
b) it has an electrical charge  
c) it has the same number of electrons and protons  
d) it is an atom that has gained or lost electrons
11. If the atomic weight of an element is eight, and if it contains four protons in the nucleus, what else do we know about the atom?
- a) there are eight electrons in its shell  
b) the atomic number is eight  
c) there are four electrons in the nucleus  
d) there are four neutrons in the nucleus

12. Many hydrogen ions will be yielded by:

- a) strong acids
- b) weak bases
- c) strong bases
- d) weak acids

For questions 13-15 indicate whether the following are:

- a) atoms
- b) molecules
- c) ions

13.  $\text{CO}_2$  \_\_\_\_\_

14.  $\text{H}^+$  \_\_\_\_\_

15.  $\text{O}$  \_\_\_\_\_

Answers

- |        |         |
|--------|---------|
| 1. (a) | 9. (d)  |
| 2. (d) | 10. (c) |
| 3. (b) | 11. (d) |
| 4. (b) | 12. (a) |
| 5. (a) | 13. (b) |
| 6. (b) | 14. (c) |
| 7. (b) | 15. (a) |
| 8. (d) |         |