



# **Academic Upgrading**

Academic Services

## **Study Guide for Placement into Math Foundations (MATH 100)**

Updated: March 2020

# Important Information

## The Math Placement Test

The Math Placement test is a free assessment designed for Academic Upgrading placement purposes only. No section of the test may be used for admission to any SAIT program other than Academic Upgrading. The Math Placement Test is not accepted for admission to any other institution.

- A passing mark required for admission into the Academic Upgrading program and be able to enroll in MATH 100 is 60%.
- We aim to put students' passing mark on our system within 2 business days of successful completion of the test. \*  
*\*Students must have a SAIT ID number in order for us to enter their marks.*
- Students, who have been accepted into the Academic Upgrading program, can register for the course they are placed into once we have granted them permission based on their passing grades.
- Students who have already taken and passed SAIT's Academic Upgrading courses in Math and Physics ARE NOT required to take a placement test.

## Math Placement Study Guide

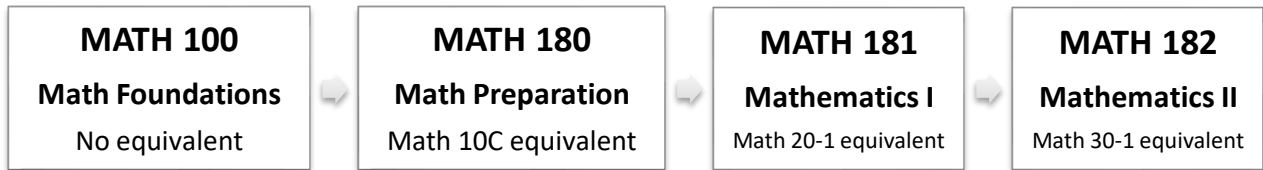
This study guide is designed to prepare students for the Academic Upgrading Math Placement test for Grade 8 (MATH 100/ Math Foundations). Use the following practice exercises to prepare for your online test. An answer key is included at the end of this guide.

This test is for placement into MATH 100:

- This test (18 questions) is to be attempted
- The test is to be completed in 45 minutes.
- A passing mark of 60% or greater is required in this test for eligibility to register in MATH 100
- You are not allowed to use a calculator for the test
- Instructions for each test are also provided at the start of the test.

## SAIT Academic Upgrading Course Sequence

**Note:** MATH 100 is not transferable outside of SAIT. MATH 180,



MATH 181, and MATH 182 are accepted as admission requirements at other post-secondary institutions in Alberta, but you should always check with the post-secondary institution you are interested in attending (if it is not SAIT) to confirm it will accept the courses.

**Grade 8 material Mathematics Exercises**-these will be similar to what you will be tested on in the placement test into Math Foundation (MATH 100)

**(All questions are to be completed without the use of a calculator)**

1) In the number 74,127, which digits tell the number of hundreds, tens, and thousands, respectively?

2) Write in exponential notation:  $11 \cdot 11 \cdot 11 \cdot 11 \cdot 11$

Add the following whole numbers:

|           |            |           |            |           |             |           |            |           |             |
|-----------|------------|-----------|------------|-----------|-------------|-----------|------------|-----------|-------------|
| <b>3)</b> | 4          | <b>4)</b> | 8          | <b>5)</b> | 2           | <b>6)</b> | 7          | <b>7)</b> | 12          |
|           | 9          |           | 1          |           | 18          |           | 19         |           | 36          |
|           | 15         |           | 12         |           | 17          |           | 8          |           | 14          |
|           | 6          |           | 6          |           | 4           |           | 23         |           | 5           |
|           | 2          |           | 11         |           | 3           |           | 11         |           | 7           |
|           | <u>+ 3</u> |           | <u>+ 9</u> |           | <u>+ 11</u> |           | <u>+ 6</u> |           | <u>+ 28</u> |

Subtract the following whole numbers:

|           |              |           |              |            |              |            |             |            |               |
|-----------|--------------|-----------|--------------|------------|--------------|------------|-------------|------------|---------------|
| <b>8)</b> | 564          | <b>9)</b> | 963          | <b>10)</b> | 378          | <b>11)</b> | 531         | <b>12)</b> | 6611          |
|           | <u>- 321</u> |           | <u>- 452</u> |            | <u>- 139</u> |            | <u>- 67</u> |            | <u>- 4332</u> |

Multiply the following whole numbers:

|            |            |            |             |            |              |
|------------|------------|------------|-------------|------------|--------------|
| <b>13)</b> | 79         | <b>14)</b> | 83          | <b>15)</b> | 92           |
|            | <u>× 5</u> |            | <u>× 6</u>  |            | <u>× 8</u>   |
| <b>16)</b> | 57         | <b>17)</b> | 389         | <b>18)</b> | 389          |
|            | <u>× 9</u> |            | <u>× 10</u> |            | <u>× 100</u> |

Divide the following whole numbers. State remainders if applicable:

19)  $715 \div 5$

20)  $782 \div 4$

21)  $847 \div 7$

22)  $379 \div 9$

23)  $6 \overline{)2454}$

24)  $8 \overline{)4832}$

Evaluate the following whole number expressions using correct order of operations (BEDMAS):

25)  $5 + 10 - 3^2$  \_\_\_\_\_

26)  $6 \times 4 + 5^2 - 11$  \_\_\_\_\_

27)  $7 \times (2 + 3) - 21$  \_\_\_\_\_

28)  $(5 + 7) \div 2^2$  \_\_\_\_\_

Reduce the following fractions to simplest form:

29)  $\frac{3}{12}$

30)  $\frac{5}{25}$

31)  $\frac{4}{8}$

Multiply the following fractions simplify (reduce answers to simplest form). Note that improper fractions (numerator larger than the denominator) ARE considered acceptable as simplest form provided the numerator and denominator are reduced as much as possible relative to one another.

32)  $\frac{3}{4} \times \frac{7}{8}$

33)  $5 \times \frac{4}{7}$

34)  $\frac{8}{7} \times \frac{21}{16}$

35)  $\frac{1}{6} \times \frac{1}{8}$

36)  $\frac{3}{4} \times \frac{5}{8}$

37)  $\frac{7}{12} \times \frac{4}{5}$

Adding or subtract the following fractions as indicated. Reduce the answers to simplest form.  
(See note in multiplication section above about improper format being acceptable as simplest form.)

$$38) \frac{3}{5} + \frac{4}{5} \text{ _____} \quad 39) \frac{4}{3} + \frac{1}{2} \text{ _____} \quad 40) \frac{4}{9} + \frac{6}{27} \text{ _____}$$

$$41) \frac{9}{10} + \frac{3}{7} \text{ _____} \quad 42) \frac{1}{3} + \frac{3}{7} \text{ _____} \quad 43) \frac{11}{25} + \frac{3}{4} \text{ _____}$$

$$44) \frac{15}{8} - \frac{5}{8} \text{ _____} \quad 45) \frac{9}{11} - \frac{1}{3} \text{ _____} \quad 46) \frac{7}{5} - \frac{4}{3} \text{ _____}$$

$$47) \frac{13}{16} - \frac{5}{8} \text{ _____} \quad 48) \frac{26}{20} - \frac{2}{3} \text{ _____} \quad 49) \frac{8}{15} - \frac{2}{10} \text{ _____}$$

Perform the indicated operations on the fractions below. Express answers in mixed number form. (Note that in mixed number form, the fraction portion of the number can NOT be improper; that is, the numerator cannot be larger than the denominator.)

$$50) 5 + 4\frac{5}{7} = \text{ _____} \quad 51) 1\frac{2}{5} \times 2\frac{1}{3} = \text{ _____} \quad 52) 2\frac{3}{8} + 6\frac{11}{12}$$

Add the following decimals:

$$53) \begin{array}{r} 209.75 \\ + 17.36 \\ \hline \end{array} \quad 54) \begin{array}{r} 681.542 \\ + 16.789 \\ \hline \end{array} \quad 54) \begin{array}{r} 9.1073 \\ + 12.1561 \\ \hline \end{array}$$

$$56) \begin{array}{r} 42.009 \\ + 1.517 \\ \hline \end{array} \quad 57) \begin{array}{r} 209.316 \\ + 7.052 \\ \hline \end{array} \quad 58) \begin{array}{r} 7.1281 \\ + 0.5007 \\ \hline \end{array}$$

Subtract the following decimals:

$$\begin{array}{r} 59) \quad 24.75 \\ - \quad 11.32 \\ \hline \end{array}$$

$$\begin{array}{r} 60) \quad 582.12 \\ - \quad 111.59 \\ \hline \end{array}$$

$$\begin{array}{r} 61) \quad 35.103 \\ - \quad 31.156 \\ \hline \end{array}$$

$$\begin{array}{r} 62) \quad 42.003 \\ - \quad 3.26 \\ \hline \end{array}$$

$$\begin{array}{r} 63) \quad 103.3 \\ - \quad 4.15 \\ \hline \end{array}$$

$$\begin{array}{r} 64) \quad 7 \\ - \quad 2.501 \\ \hline \end{array}$$

Convert the following decimals to fractions in simplest (reduced) form:

$$65) \quad 0.23$$

$$66) \quad 0.60$$

$$67) \quad 0.84$$

Convert the following fractions to decimals AND to percentages:

$$68) \quad \frac{3}{4}$$

$$69) \quad \frac{9}{25}$$

$$70) \quad \frac{7}{10}$$

Convert the following percentages to decimals AND to fractions in simplest (reduced) form:

$$71) \quad 40\%$$

$$72) \quad 60\%$$

$$73) \quad 32\%$$

Solve the following percentage problems as indicated:

$$74) \quad \text{What is } 20\% \text{ of } 70?$$

$$75) \quad \text{What is } 15\% \text{ of } 80?$$

$$76) \quad \text{What is } 8\% \text{ of } 25?$$

## Grade 8 Mathematics content, practice exercises for placement into Math Foundations (MATH 100)

### Answer Key

- 1) 1, 2, 4      2)  $11^5$
- 3) 39      4) 47      5) 55      6) 74      7) 102
- 8) 243      9) 511      10) 239      11) 464      12) 2279
- 13) 395      14) 498      15) 736      16) 513      17) 3890      18) 38 900
- 19) 143      20) 195 R2      21) 121      22) 42 R1      23) 409      24) 604
- 25) 6      26) 38      27) 14      28) 3
- 29)  $\frac{1}{4}$       30)  $\frac{1}{5}$       31)  $\frac{1}{2}$
- 32)  $\frac{21}{32}$       33)  $\frac{20}{7}$       34)  $\frac{3}{2}$       35)  $\frac{1}{48}$       36)  $\frac{15}{32}$       37)  $\frac{7}{15}$
- 38)  $\frac{7}{5}$       39)  $\frac{11}{6}$       40)  $\frac{2}{3}$       41)  $\frac{93}{70}$       42)  $\frac{16}{21}$       43)  $\frac{119}{100}$
- 44)  $\frac{5}{4}$       45)  $\frac{16}{33}$       46)  $\frac{1}{15}$       47)  $\frac{3}{16}$       48)  $\frac{19}{30}$       49)  $\frac{1}{3}$
- 50)  $9\frac{5}{7}$       51)  $3\frac{4}{15}$       52)  $9\frac{7}{24}$
- 53) 227.11      54) 698.331      55) 21.2634      56) 43.526      57) 216.368      58) 7.6288
- 59) 13.43      60) 470.53      61) 3.947      62) 38.743      63) 99.15      64) 4.499
- 65)  $\frac{23}{100}$       66)  $\frac{3}{5}$       67)  $\frac{21}{25}$
- 68) 0.75, 75%      69) 0.36, 36%      70) 0.7, 70%
- 71)  $0.4, \frac{2}{5}$       72)  $0.6, \frac{3}{5}$       73)  $0.32, \frac{8}{25}$
- 74) 14      75) 12      76) 2