

# **Adult Upgrading**

## **PRACTICE**

### **MATHEMATICS SKILLS ASSESSMENT**

- Calculators are not to be used during the assessment.

## Fundamental Level - MATH 040, 050 & 060

Addition, subtraction, multiplication and division using whole numbers, decimals and fractions are some of the topics covered in the Fundamental level. There is also an introduction to estimation, percent, ratios and proportions.

### Sample Questions:

1. Add.

$$\begin{array}{r} 4628 \\ + 1503 \\ \hline \end{array}$$

2. Subtract.

$$\begin{array}{r} 356 \\ - 235 \\ \hline \end{array}$$

3. Subtract.

$$\begin{array}{r} 607 \\ - 324 \\ \hline \end{array}$$

4. Multiply.

$$\begin{array}{r} 14 \\ \times 57 \\ \hline \end{array}$$

5. Divide.

$$6 \overline{)894}$$

6. Round 45.678 to the hundredths place.

7. Add.

$$54.6 + 7.89$$

8. Multiply.

$$12.427 \times 4$$

9. Divide.

$$0.08 \overline{)64}$$

10. Add.

$$\frac{1}{8} + \frac{3}{8}$$

11. Subtract.

$$\frac{3}{4} - \frac{2}{6}$$

12. Add.

$$5\frac{1}{3} + 2\frac{1}{6}$$

13. Subtract.

$$3\frac{1}{4} - 2\frac{1}{8}$$

14. Multiply.

$$\frac{2}{3} \times \frac{3}{8}$$

15. Divide.

$$\frac{1}{15} \div \frac{2}{5}$$

16. Convert 18.75% to a decimal.

17. Convert  $\frac{2}{25}$  to a percent.

18. How much is 15% of 30?

## Intermediate Level - MATH 070

Intermediate level math offers a review and further study of decimals, fractions, ratios, proportions, percent and the metric system. Perimeter, area and volume are studied from a formula approach. Integers, powers, roots and scientific notation are introduced. Basic algebraic expressions, equations and formulas are also introduced.

### Sample Questions:

1. Solve the following proportion.

$$\frac{6}{8} = \frac{15}{x}$$

2. If 1 g = 1000 mg,  
How many g are in  
700 mg?

3. Simplify  $\sqrt{16}$ .

4. Evaluate using the  
correct order of  
operations.  
(i.e. BEDMAS)

$$40 - 2^2 \times 3^2 + 5$$

5. Find the area and  
the perimeter of the  
rectangle.



6. Find the average of  
6, 8 and 16.

7. Divide.

$$-35 \div 7$$

8. Subtract.

$$-5 - (-4)$$

9. Write the correct  
symbol, > (greater  
than) or < (less  
than)

$$-70 \quad \_\_\_\_ \quad -75$$

10. Evaluate the  
expression

$$\frac{x}{2} - 5 \text{ when } x = -8$$

11. Solve.

$$5x - 8 = 12$$

12. Solve.

$$x + 4 = 2x - 3$$

### Advanced Level - MATH 080/IALG 011 & MATH 011

MATH 080/IALG 011 is an introductory course at the Advanced level. This course refreshes basic numerical skills and prepares students for further studies in algebra. Some topics in this course include graphing linear equations, first-degree equations and inequalities, polynomials, factoring, systems of linear equations, rational expressions and equations, radical expressions and equations, quadratic equations, and trigonometry.

MATH 011 is equivalent to Pre-Calculus 11 and builds upon the skills in MATH 080/IALG 011. This Advanced level course includes a study of polynomials, rational expressions and equations, powers and radicals, related equations, second-degree equations, systems of linear equations, relations, functions and graphing, and trigonometry.

### Sample Questions:

1. Simplify.

$$-(7x + 4 - 28y)$$

2. Collect like terms.

$$2y + 3y^2 - 3y + y^2$$

3. Solve.

$$-4x - 2 = 3x + 4 + 5x$$

4. Solve.

$$-3(x + 1) = 2x + 4$$

5. Simplify.

$$(3y^4)^2$$

6. Identify the slope  
and y-intercept of  
 $6x + 3y = 9$ .

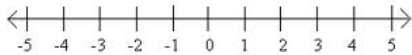
7. Find an equation of the line containing the points (1,6) and (-1,2).
8. Determine whether the graphs of the given pair of lines are parallel or perpendicular.

$$4y + 2 = 3x$$

$$-3x + 4y = -12$$

9. Solve and graph on a number line.

$$5(t + 3) + 9 > 3(t - 2) + 20$$



10. Multiply and simplify.

$$(2x - 4)(3x^2 + 5x - 1)$$

11. Solve.

$$6x + y = 16$$

$$-2x + 3y = -12$$

12. Factor completely.

$$2x^2 - 32$$

13. Factor completely.

$$4x^2 - 12x + 9$$

14. Factor completely.

$$27x^3 - 8$$

15. Solve.

$$x(x - 2) = 8$$

16. Solve  $m = n - nt$  for  $n$ .

17. Find  $f(-2)$  if  $f(x) = x^3 - 3x + 4$ .

18. Find  $f(a + 1)$  if  $f(x) = x^2 - 3x$ .

19. Simplify.

$$\sqrt{75}$$

20. Divide and simplify.

$$\frac{\sqrt[3]{40x^2}}{\sqrt[3]{5x}}$$

21. Simplify.

$$(6 + \sqrt{5})^2$$

22. Subtract and simplify.

$$2\sqrt{10} - 7\sqrt{40}$$

23. Rationalize the denominator.

$$\frac{1}{\sqrt{3} - 2}$$

24. Solve.

$$\sqrt{2y + 9} = 5$$

25. Write a quadratic equation having 2 and -3 as solutions.

26. Solve  $2x^2 + 5x - 3 = 0$  using the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

27. Divide and simplify.

$$\frac{y^2 + 10y + 25}{2y} \div \frac{y^2 - 25}{4y^2}$$

28. Solve.

$$\frac{4}{x} - \frac{4}{x-1} = -2$$

29. Subtract and simplify.

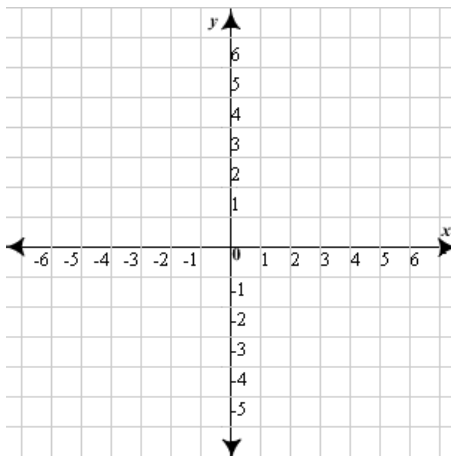
$$\frac{x-9}{x-2} - \frac{x-6}{2-x}$$

30. Simplify.

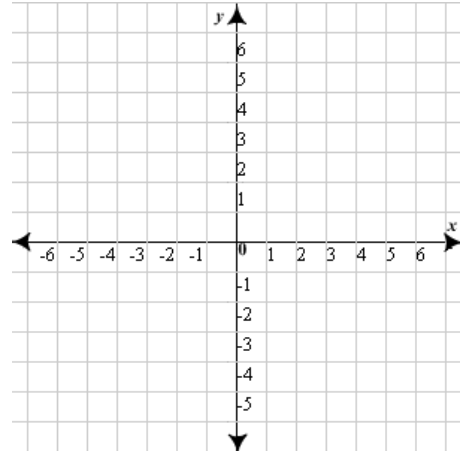
$$\frac{1 + \frac{1}{x}}{1 - \frac{1}{x^2}}$$

31. Graph.

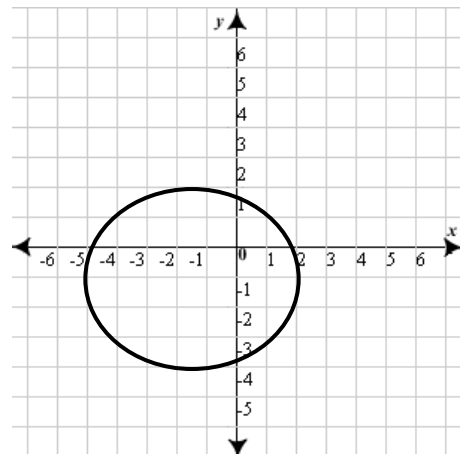
$$y = \frac{1}{3}x + 2$$



32. Graph  $f(x) = -2(x-1)^2 + 2$ . Find the vertex, the line of symmetry, and the maximum or minimum value.



33. Find the domain and the range.



### Provincial Level - MATH 012

MATH 012 is equivalent to Pre-Calculus 12. Students who complete most of the questions on the Math Skills Assessment correctly may be placed into MATH 012.

**Sample Question Solutions:**

**Fundamental Level**

1. 6131
2. 121
3. 283
4. 798
5. 149
6. 45.68
7. 62.49

8. 49.708
9. 800
10.  $\frac{1}{2}$
11.  $\frac{5}{12}$
12.  $7\frac{1}{2}$  or  $\frac{15}{2}$
13.  $1\frac{1}{8}$  or  $\frac{9}{8}$

14.  $\frac{1}{4}$
15.  $\frac{1}{6}$
16. 0.1875
17. 8%
18. 4.5

**Intermediate Level**

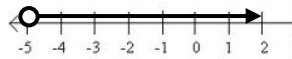
1. 20
2. 0.7g
3. 4
4. 9

5. Perimeter = 26 cm  
Area = 36 cm<sup>2</sup>
6. 10
7. -5

8. -1
9. >
10. -9
11. 4
12. 7

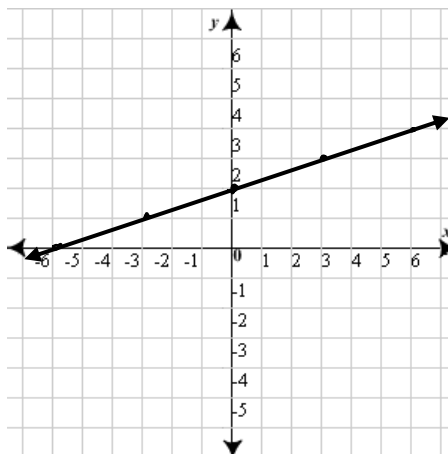
**Advanced Level**

1.  $-7x - 4 + 28y$
2.  $4y^2 - y$
3.  $x = -\frac{1}{2}$
4.  $x = -\frac{7}{5}$
5.  $9y^8$
6. slope = -2  
y-intercept = (0,3)
7.  $y = 2x + 4$
8. Parallel
9.  $t > -5$

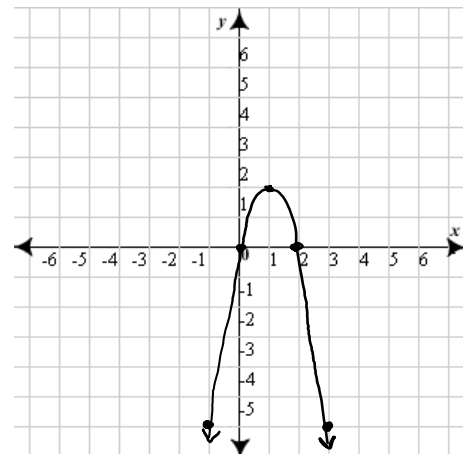


10.  $6x^3 - 2x^2 - 22x + 4$
11. (3, -2)
12.  $2(x - 4)(x + 4)$
13.  $(2x - 3)^2$
14.  $(3x - 2)(9x^2 + 6x + 4)$
15.  $x = -2, 4$
16.  $n = \frac{m}{1-t}$
17. 2
18.  $a^2 - a - 2$
19.  $5\sqrt{3}$

20.  $2\sqrt[3]{x}$
21.  $41 + 12\sqrt{5}$
22.  $-12\sqrt{10}$
23.  $-\sqrt{3} - 2$
24.  $y = 8$
25.  $x^2 + x - 6 = 0$
26.  $x = -3, \frac{1}{2}$
27.  $\frac{2y(y+5)}{y-5}$
28.  $x = -1, 2$
29.  $\frac{2x-15}{x-2}$
30.  $\frac{x}{x-1}$
31.  $y = \frac{1}{3}x + 2$



32. vertex: (1,2)  
line of symmetry:  $x = 1$   
maximum:  $y = 2$



33. domain:  
 $\{x | -5 \leq x \leq 2\}$   
range:  
 $\{y | -4 \leq y \leq 2\}$