

Mathematics Assessment

No calculators allowed

General Instructions

1. The assessment is in a multiple choice format. The number of questions is limited for overall simplicity and efficiency. Thus, each question is very important.
2. The assessment is divided into 9 levels. The questions are numbered 1.1, 1.2 etc. As a general guideline only, Level 1 is the easiest and level 9 is the most difficult.
3. Complete as many questions as you can. Circle the correct answers clearly **and** copy them onto the answer sheet. Leave questions blank if you do not know the answers.

Assessment Results

1. Each correct answer will be given 1 mark. Each wrong answer will be given a 1/3 mark penalty. Thus, do NOT guess the answers.
2. The mathematics assessor may ask you to justify any of your answers. If you are unable to do so, the assessment may be given a total score of zero.
3. A mathematics assessor will mark your assessment. Your total score will assist in determining what mathematics course you may take at City Adult Learning Centre. It is our intention to place the students in classes that are best suited to them and their fellow classmates.
4. A scoring rationale is provided below but the assessors are encouraged to use their professional judgment if/when needed. Also, the Total Score benchmarks might be adjusted if necessary to accommodate desired course placements.

Total Score	Entry to Courses	Course Code
1 to 4	9 Workplace	MAT1L
5 to 8	10 Workplace	MAT2L
9 to 11	9 Applied/Academic or 11 Workplace	MFM1P or MEL3E
12 to 14	10 Applied or 12 Workplace	MFM2P or MEL4E
15 to 17	10 Academic or 11 College	MPM2D or MBF3C
18 to 20	11 College/University or 12 College	MCF3M or MAP4C
21 to 23	11 Functions or 12 College Technology	MCR3U or MCT4C
24 to 26	12 Data Management	MDM4U
25 to 28	12 Advanced Functions	MHF4U
29 to 30	12 Calculus and Vectors	MCV4U

ANSWERS:

Level 1

Q 1.1	
Q 1.2	
Q 1.3	
Q 1.4	
Q 1.5	
Q 1.6	

Level 2

Q 2.1	
Q 2.2	
Q 2.3	

Level 3

Q 3.1	
Q 3.2	
Q 3.3	

Level 4

Q 4.1	
Q 4.2	
Q 4.3	

Level 5

Q 5.1	
Q 5.2	
Q 5.3	

Level 6

Q 6.1	
Q 6.2	
Q 6.3	

Level 7

Q 7.1	
Q 7.2	
Q 7.3	

Level 8

Q 8.1	
Q 8.2	
Q 8.3	

Level 9

Q 9.1	
Q 9.2	
Q 9.3	

Level 1		/6 marks
Q1.1	A pair of socks costs \$2.60 . How much do 6 pairs of socks cost? [A] \$15.00 [B] about \$12.40 [C] \$ 14.06 [D] \$ 15.60	
Q1.2	Add $7 + (-12)$ [A] 19 [B] - 19 [C] -5 [D] 5	
Q1.3	Evaluate: $\frac{-18}{6}$ [A] 3 [B] 10 [C] -3 [D] -10	
Q 1.4	2^3 is equal to [A] 6 [B] 8 [C] 9 [D] 23	
Q 1.5	Calculate: $3.7 - 1.9$ [A] 1.8 [B] 2.0 [C] 2.2 [D] 1.2	
Q 1.6	Evaluate $\frac{4}{-3} \times \frac{-7}{9}$ [A] $\frac{36}{-21}$ [B] $\frac{28}{27}$ [C] $\frac{21}{-36}$ [D] $\frac{-3}{6}$	
Level 2		/3 marks
Q2.1	Which of the following statements is false? [A] $-7 \geq -3$ [B] $7 \geq 3$ [C] $3 \geq 0$ [D] $-3 \leq 7$	
Q2.2	Evaluate $2x + y$ for $x = 2$ and $y = -5$. [A] 7 [B] 14 [C] -1 [D] -6	
Q2.3	Evaluate $\frac{2}{3} - 2\left(1 + \frac{3}{4}\right)$ [A] $\frac{13}{4}$ [B] $\frac{38}{12}$ [C] $2\frac{5}{6}$ [D] $-2\frac{5}{6}$	

Level 3**/3 marks**

Q3.1 Simplify. Leave your answer in the exponential form.

$7^3 \times 7^5 \times 7^2$

[A] 7^{15}

[B] 7^{10}

[C] 7^{49}

[D] 49^{30}

Q3.2 Simplify

$3m + (-3) + 5n + (-8m) - 2n$

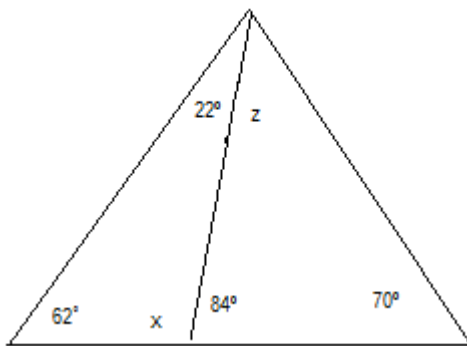
[A] $-3m + 3n - 3$

[B] $5m + 3n - 3$

[C] $-5m + 3n - 3$

[D] $-11m + 7n - 3$

Q3.3 Find the values of x and z.



[A] $x = 98^\circ, z = 26^\circ$

[B] $x = 96^\circ, z = 26^\circ$

[C] $x = 84^\circ, z = 154^\circ$

[D] $x = 96^\circ, z = 16^\circ$

Level 4**/3 marks**Q4.1 Expand and simplify. $(3x^2 + 7x - 5) + 3(-7x^2 + 4x + 3)$

[A] $24x^2 - 19x - 4$

[B] $-13x^2 + 13x + 9$

[C] $-18x^2 + 19x - 4$

[D] $-18x^2 + 19x + 4$

Q4.2 Multiply

$(-3b^6)(7b^3)$

[A] $10b^6$

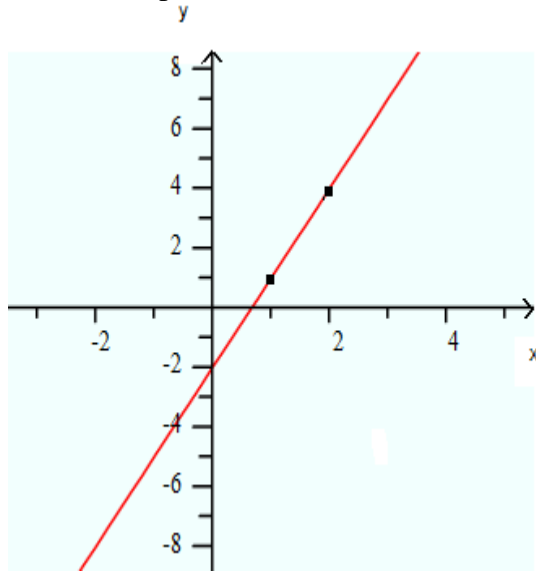
[B] $-21b^9$

[C] $-21b^{18}$

[D] $4b^9$

Q4.3

Find the slope of the line.



- [A] 1 [B] $\frac{2}{4}$ [C] -2 [D] 3

Level 5

/3 marks

Q5.1

Solve the system of equations using the substitution method.

$$x - 3y = 1$$

$$2x - y = 7$$

- [A] (4, 1) [B] (4, -1) [C] (1, -4) [D] (2,1)

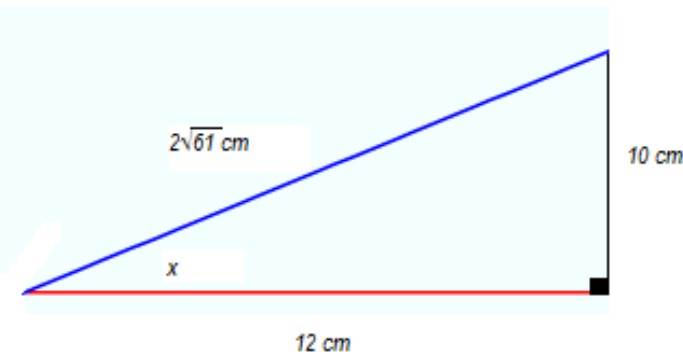
Q5.2

Expand the expression $(x - 4)(2x + 7)$

- [A] $x^2 + 14x - 28$ [B] $2x^2 - x - 28$ [C] $2x^2 + 15x - 28$ [D] $2x^2 + x - 28$

Q 5.3

Use the diagram to find $\cos x$. Express it as a fraction in the simplest form.



- [A] $\frac{12}{10}$ [B] $\frac{10}{2\sqrt{61}}$ [C] $\frac{6}{\sqrt{61}}$ [D] $\frac{\sqrt{61}}{5}$

Level 6

/3 marks

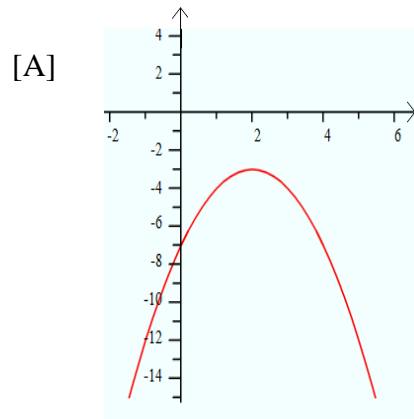
Q6.1

Factor fully: $3x^2 - 15x - 18$

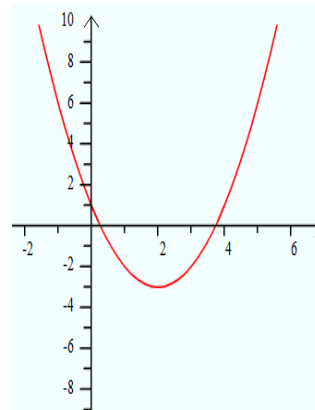
- [A] $3(x + 3)(x - 1)$ [B] $3(x - 6)(x + 1)$
[C] $(3x + 3)(x - 1)$ [D] $3(x + 3)(x - 6)$

Q6.2

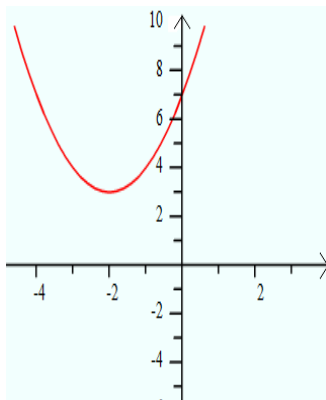
Graph $y = -(x - 2)^2 - 3$



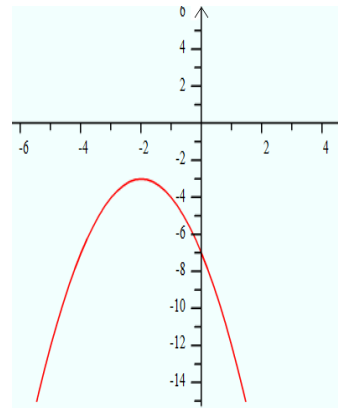
[B]



[C]



[D]



Q6.3

Use the quadratic formula to find the exact roots of $2x^2 = 5x + 2$

[A] $2, \frac{1}{2}$

[B] $\frac{5 + \sqrt{41}}{4}, \frac{5 - \sqrt{41}}{4}$

[C] $\frac{-5 + \sqrt{41}}{2}, \frac{-5 - \sqrt{41}}{2}$

[D] $\frac{5 + \sqrt{41}}{2}, \frac{5 - \sqrt{41}}{2}$

Level 7**/3 marks**

Q7.1 Using finite differences classify the set of data

x	y
-2	56.4
-1	50.6
0	45.0
1	39.6
2	34.4

[A] Quadratic

[B] Linear

[C] Exponential

[D] Other

Q7.2

Factor fully: $x^4 - 6x^3 + 2x^2 - 12x$ [A] $(x-6)(x^3 + 2x)$ [B] $x(x^3 - 6x^2 + 2x - 12)$ [C] $x(x-6)(x^2 + 2)$ [D] $x^2(x-6)(x+2)$

Q7.3

Given the graph of $y = -2(x+3)^2 + 4$, what is the vertex?

a. (-2,4)

c. (2,3)

b. (-3,4)

d. (3,4)

Level 8**/3 marks**

Q8.1

The path of a basketball shot can be modelled by the equation $h = -x^2 + 10x - 1$

Find the maximum height reached by the ball.

[A] 24 at $x=5$ [B] 2.4 at $x=-5$ [C] 12 at $x=3$ [D] 10 at $x=-1$

Q8.2

What is the maximum value of $y = -3.4\sin(x - 60^\circ)$?

[A] -3.4

[B] 1

[C] 60°

[D] 3.4

ANSWERS:

Level 1

Q 1.1	D
Q 1.2	C
Q 1.3	C
Q 1.4	B
Q 1.5	A
Q 1.6	B

Level 2

Q 2.1	A
Q 2.2	C
Q 2.3	D

Level 3

Q 3.1	B
Q 3.2	C
Q 3.3	B

Level 4

Q 4.1	D
Q 4.2	B
Q 4.3	D

Level 5

Q 5.1	A
Q 5.2	B
Q 5.3	C

Level 6

Q 6.1	B
Q 6.2	A
Q 6.3	B

Level 7

Q 7.1	A
Q 7.2	C
Q 7.3	B

Level 8

Q 8.1	A
Q 8.2	D
Q 8.3	A

Level 9

Q 9.1	A
Q 9.2	B
Q 9.3	D