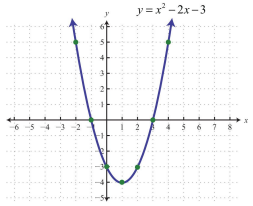
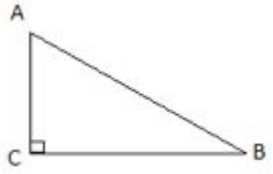
Self-Assessment for Grade 11 College Math (MBF3C)

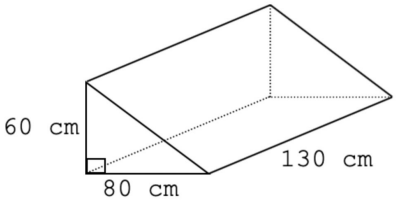
Students who are registered for Grade 11 College Math (MBF3C) may benefit from a self evaluation and review of the following expectations from Grade 10 Applied Math (MFM2P).

The questions in this self-assessment reflect some of the key ideas learned in prerequisite courses. They do not represent the problem solving approach or the rich experience that students would be exposed to in a classroom. The intention is for students to revisit some key concepts and, if needed, access review materials in an informal environment at a pace that is comfortable for the student.

Concept(s)	Sample Question	How comfortable do you feel with this concept?	Link(s) to explore concept further
I can solve first-degree equations involving one variable	1. Solve: a) $8x - 13 = -61$ b) $3(2x - 3) = 12x - 57$	 ☐ **Very comfortable**  ☐ **Somewhat comfortable**  ☐ **Not at all comfortable**	Solving Two-Step Equations Solving Multi-Step Equations
I can simplify second-degree polynomial expressions involving one variable that consist of the product of two binomials or the square of a binomial, using a variety of tools and strategies	2. Expand and simplify: a) $(2x + 3)(x + 4)$ b) $(x - 5)^2$	 ☐ **Very comfortable**  ☐ **Somewhat comfortable**  ☐ **Not at all comfortable**	Distributive Property

I can factor using common factoring	3. Factor fully: $9x - 18$	 ☐ **Very comfortable**  ☐ **Somewhat comfortable**  ☐ **Not at all comfortable**	Common Factoring
I can factor simple trinomials of the form $x^2 + bx + c$	4. Factor fully: $x^2 - 11x + 28$	 ☐ **Very comfortable**  ☐ **Somewhat comfortable**  ☐ **Not at all comfortable**	Factoring x2 + bx + c
I can factor the difference of squares of the form $x^2 - a^2$	5. Factor fully: $x^2 - 16$	 ☐ **Very comfortable**  ☐ **Somewhat comfortable**  ☐ **Not at all comfortable**	Factoring Difference of Squares

I can identify the key features of a graph of a parabola	6. For the quadratic relation graphed below, state the: a) direction of the opening; b) coordinates of the vertex; c) equation of the axis of symmetry; d) x-intercepts; e) y-intercept; f) maximum or minimum value (and state which). 	 ☐ **Very comfortable**  ☐ **Somewhat comfortable**  ☐ **Not at all comfortable**	Properties of Parabolas
I can solve problems involving right-angled triangles using the Pythagorean Theorem	7. Determine the measures of side BC if the length of AC is 6cm and AB is 10cm. 	 ☐ **Very comfortable**  ☐ **Somewhat comfortable**  ☐ **Not at all comfortable**	The Pythagorean Theorem
I can solve problems involving right-angled triangles using trigonometry	8. A surveyor is 40m from the base of a building. The angle of elevation from the surveyor to the top of the building is 55°. What is the height of the building?	 ☐ **Very comfortable**  ☐ **Somewhat comfortable**  ☐ **Not at all comfortable**	Tangent Ratio Trigonometric Ratios

I can solve problems involving the surface area of prisms and pyramids using the metric system or the imperial system, as appropriate	9. To make it easier to store and ship, an auto part is packaged in a triangular-prism box. How much cellophane would be required to cover this box?  	 ☐ **Very comfortable**  ☐ **Somewhat comfortable**  ☐ **Not at all comfortable**	Surface Area of Pyramids

Solutions to Sample Questions:

1. Solve:

a. $8x - 13 = -61 \qquad x = -6$

b. $3(2x - 3) = 12x - 57 \qquad x = 8$

2. Expand and simplify:

a. $(2x + 3)(x + 4) = 2x^2 + 11x + 12$

b. $(x - 5)^2 = x^2 - 10x + 25$

3. Factor fully: $9x - 18 = 9(x - 2)$

4. Factor fully: $x^2 - 11x + 28 = (x - 4)(x - 7)$

5. Factor fully: $x^2 - 16 = (x + 4)(x - 4)$

6. For the quadratic relation graphed below, state the:

a. direction of the opening; **The parabola opens upward.**

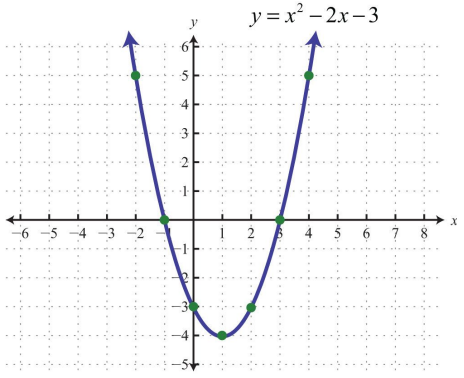
b. coordinates of the vertex; **The vertex is (1, -4)**

c. equation of the axis of symmetry; **The equation of the axis of symmetry is x=1**

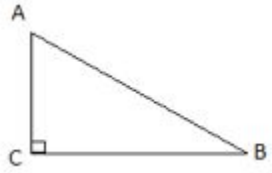
d. x-intercepts; **The x-intercepts are -1 and 3**

e. y-intercept; **The y-intercept is -3**

f. maximum or minimum value (and state which). **The *minimum* value is -4**



7. Determine the measures of side BC if the length of AC is 6cm and AB is 10cm.

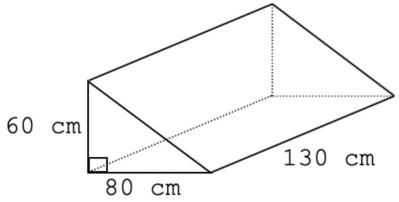


The length of BC is 8cm. (Use the Pythagorean Theorem.)

8. A surveyor is 40m from the base of a building. The angle of elevation from the surveyor to the top of the building is 55°. What is the height of the building?
The building is 57.1 metres high.

Use SOH CAH TOA. Solve for h in the equation $\tan 55^\circ = \frac{h}{40}$ **.**

9. To make it easier to store and ship, an auto part is packaged in a triangular-prism box. How much cellophane would be required to cover this box?



Since the entire box will be covered by the cellophane, we must add the areas of all of the faces.
Area of triangle face: 2400cm^2 and there in an identical one on the other side
Area of bottom face: 10400 cm^2
Area of back face: 7800 cm^2
Area of slanted face: 13000 cm^2
(The hypotenuse of the triangle is 100cm long, using the Pythagorean Theorem. Therefore the slanted face is 100 cm by 130 cm.)

Surface area = 2(2400) + 10400 + 7800 + 13000 = 36000cm^2

It will require 36000cm^2 of cellophane to cover the box.