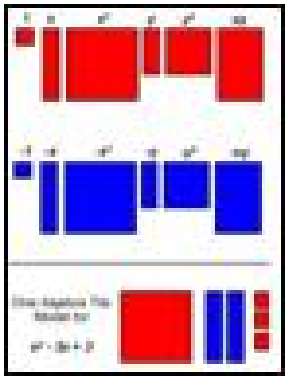
# TIPS4RM

## Targeted Implementation and Planning Supports for Revised Mathematics

*Grades 7, 8, 9 Applied, 10 Applied*

Course: Grade 9 Applied Mathematics (MFM1P)

Unit 7: Algebraic Models: Making Connections



Dufferin-Peel Catholic District School Board

**Student**

**REVISED**

July 2008

# Unit 7
# Algebraic Models: Making Connections


| Section | Activity | Page |
|---|---|---|
| 7.1.1 | Linear and Non-Linear Investigations | 3 |
| 7.1.2 | We're All Correct | 5 |
| 7.1.3 | Feeding Frenzy | 6 |
| 7.2.1 | Equivalent Algebraic Expressions | 8 |
| 7.2.2 | Exploring The Distributive Property | 9 |
| 7.3.3 | Adding and Subtracting Polynomials | 12 |
| 7.3.P | Practice | 15 |
| 7.4.3 | Algebraic Expressions | 16 |
| 7.4.P | Practice | 17 |
| 7.5.1 | Practice | 18 |
| 7.5.2 | We're All Correct Using Algebra | 19 |
| 7.5.3 | The Frame Problem | 20 |
| 7.5.4 | The Walkway Problem | 21 |
| 7.6.2 | Powers with Variable Bases | 22 |
| 7.6.P | Practice | 25 |
| 7.7.1 | Solving Measurement Problems | 26 |
| 7.7.2 | Connecting Algebra to Geometry | 29 |
| 7.7.P | Practice | 34 |
| 7.7.J | Journal Activity | 36 |
| 4.W | Definitions | 37 |
| 4.S | Unit Summary | 38 |
| 4.R | Reflecting on My Learning (3, 2, 1) | 39 |
| 4.RLS | Reflecting on Learning Skills | 40 |

# 7.1.1: Linear or Non-Linear

Complete the tables of values and determine if the relationship is linear or non-linear. Give reasons for your answers.

| Figure Number | Number of Shaded Circles | First Differences |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

This relationship is _____ because _____
*linear or non-linear*

If Linear, write equation: _____

| Figure Number | Number of Unshaded Circles | First Differences |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

This relationship is _____ because _____
*linear or non-linear*

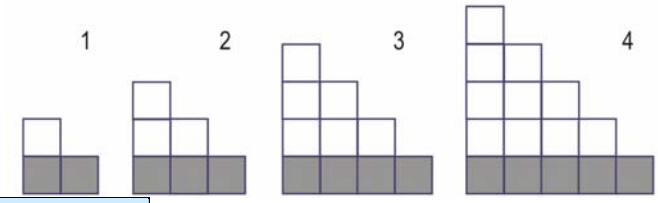
If Linear, write equation: _____

| Figure Number | Total Number of Circles | First Differences |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

This relationship is _____ because _____
*linear or non-linear*

If Linear, write equation: _____

# 7.1.1: Linear or Non-Linear




Complete the tables of values and determine if the relationship is linear or non-linear.
Give reasons for your answers.

| Figure Number | Number of Shaded Squares | First Differences |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

This relationship is _____ because _____
*linear or non-linear*

If Linear, write equation: _____

| Figure Number | Number of Unshaded Squares | First Differences |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

This relationship is _____ because _____
*linear or non-linear*

If Linear, write equation: _____

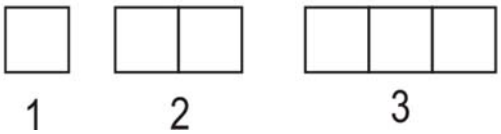
| Figure Number | Total Number of Squares | First Differences |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

This relationship is _____ because _____
*linear or non-linear*

If Linear, write equation: _____

# 7.1.2: We're All Correct!

## Reconciling Equivalent Algebraic Expressions




How many toothpicks are needed for *n* squares?

Show a picture of each student's thinking. Explain why each solution is correct.

**Anju's Solution**

"If *T* is the number of toothpicks and *n* is the number of squares, then the number of toothpicks is equal to 1 plus three times the number of squares."

My equation is $T = 1 + 3n$.

| n | T |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

**Erin's Solution**

"If *T* is the number of toothpicks and *n* is the number of squares, then the number of toothpicks is equal to 4 plus three times one less than the number of squares."

My equation is $T = 4 + 3(n - 1)$.

| n | T |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

**Silva's Solution**

"If *T* is the number of toothpicks and *n* is the number of squares, then the number of toothpicks is equal to 2 times the number of squares plus one more than the number of squares."

My equation is $T = 2n + (n + 1)$.

| n | T |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

**Bijuan's Solution**

"If *T* is the number of toothpicks and *n* is the number of squares, then the number of toothpicks is equal to 4 times the number of squares minus one less than the number of squares."

My equation is $T = 4n - (n - 1)$.

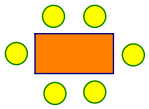
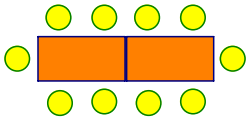
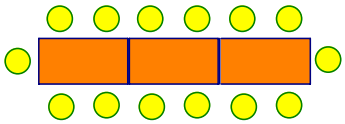
| n | T |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

# 7.1.3: Feeding Frenzy – Patterning to Algebraic Modelling

**Part A**

Frieda runs a catering business. She often has to set up table arrangements like the ones shown below.
Help her determine the number of chairs and/or tables that she needs.

1. Start by completing the Number of Chairs column.
   (You may wish to use the algebra tiles to create physical models for terms 4, 5, and 6.)

| Term Number | Picture | Number of Chairs | Expression | |
|---|---|---|---|---|
| | | | #1 | #2 |
| 1 |  | 6 | | |
| 2 |  | | | |
| 3 |  | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |

2. a) Build a number pattern in the last column.
   b) Use the number pattern to find an expression for the Number of Chairs if the term number is *n*.

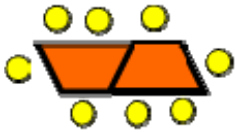
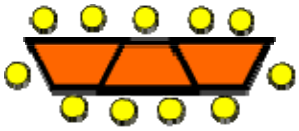
3. Find a different but equivalent algebraic model. Explain how it relates to the picture model.

# 7.1.3: Feeding Frenzy (continued)

**Part B**

Frieda runs a catering business. She often has to set up table arrangements like the ones shown below. Frieda sometimes uses trapezoidal tables.
Help her determine the number of chairs and/or tables that she needs.

1. Start by completing the Number of Chairs column. (You may wish to use pieces from the pattern blocks set to create physical models for terms 4 and 5.)

| Term Number | Picture | Number of Chairs | Expression | |
|---|---|---|---|---|
| | | | #1 | #2 |
| 1 | | 5 | | |
| 2 |  | | | |
| 3 |  | | | |
| 4 | | | | |
| 5 | | | | |

2. a) Build a number pattern in the last column.

   b) Use the number pattern to find an expression for the Number of Chairs for *n* tables.

   c) Explain how your answer to part (b) relates to the picture model.

3. Find a different but equivalent algebraic model. Explain how it relates to the picture model.

# 7.2.1: Equivalent Algebraic Expressions

1. Complete the following tables of values:

a) $y = 3(x - 1)$

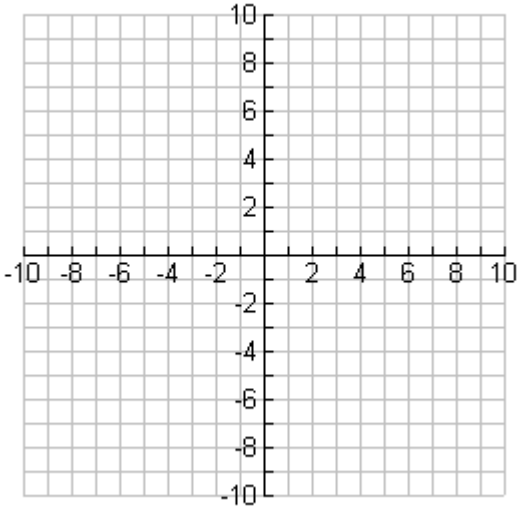
| $x$ | $y$ |
|---|---|
| 0 | |
| 1 | |
| 2 | |
| 3 | |
| 4 | |

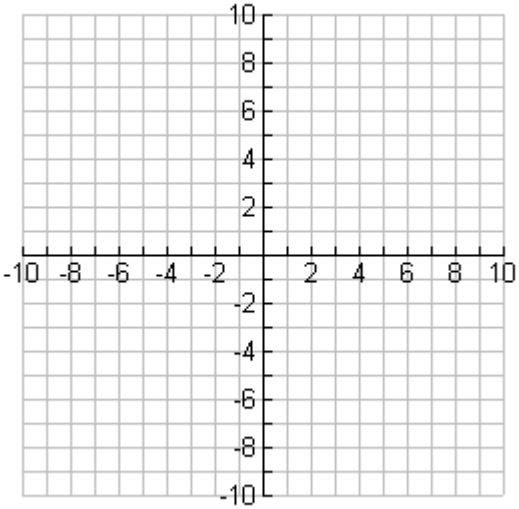
b) $y = 3x - 3$

| $x$ | $y$ |
|---|---|
| 0 | |
| 1 | |
| 2 | |
| 3 | |
| 4 | |

2. How do the tables compare? _____

3. Graph the two relations below.

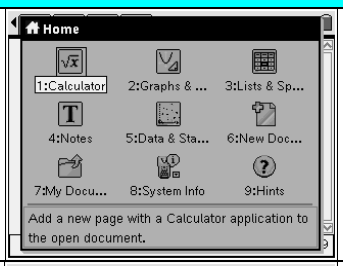
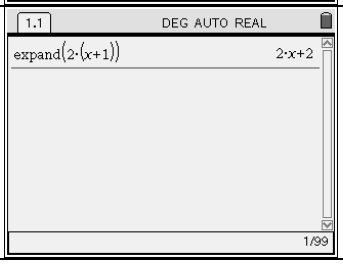



**4.** What do you notice about the lines? Do you think the lines are the same or different? *(Make sure you make the scale the same)*

# 7.2.2: Exploring the Distributive Property (Using CAS or Algebra Tiles)

**Goal:** Using the Nspire CAS Handheld, expand **2(x + 1)**

| Instructions | Screenshot |
|---|---|
| • Turn on the Nspire CAS handheld<br>• Open a New Document (**HOME** + **6: New Document**)<br>• Choose **NO** to **"Do you want to save this document?"**<br>• Insert a **1. Calculator** page. |  |
| • Using the green keys, type **expand(2(x+1))** | |
| • Press **Enter**<br>• An equivalent expanded expression is displayed on the right. |  |

**Source:** http://www.ti-nspire.com/tools/nspire/index.html

# 7.2.2: Exploring the Distributive Property (Using CAS or Algebra Tiles)

Using Nspire CAS or Algebra Tiles, complete the table by expanding each expression:

| | | | |
|---|---|---|---|
| 2 (3) | | 3 (4) | |
| 2 (x + 1) | | 3 (x + 1) | |
| 2 (2x – 1) | | 3 (2x – 1) | |
| 2 (3x + 4) | | 3 (3x + 4) | |
| 2 (5x – 10) | | 3 (6x – 12) | |
| 2 (4m + 3n) | | 3 (5d + 4g) | |
| 2 ($x^2$ – 2x) | | 3 ($x^3$ – 2x) | |
| 2 ($2m^2$ – 3m + 5) | | 3 ($2m^2$ – 3m + 6) | |
| 2 (4g – 5h + 3k – 2l) | | 3 (4g – 5h + 3k – 2l) | |
| What happens when you multiply the monomial 2 by each bracket? | | What happens when you multiply the monomial 3 by each bracket? | |

| | | | |
|---|---|---|---|
| 4 (3) | | 5 (4) | |
| 4 (x + 1) | | 5 (x + 1) | |
| 4 (2x – 1) | | 5 (2x – 1) | |
| 4 (3x + 4) | | 5 (3x + 4) | |
| 4 (5x – 10) | | 5 (6x – 12) | |
| 4 (4m + 3n) | | 5 (5d + 4g) | |
| 4 ($x^2$ – 2x) | | 5 ($x^3$ – 2x) | |
| 4 ($2m^2$ – 3m + 5) | | 5 ($2m^2$ – 3m + 6) | |
| 4 (4g – 5h + 3k – 2l) | | 5 (4g – 5h + 3k – 2l) | |
| What happens when you multiply the monomial 4 by each bracket? | | What happens when you multiply the monomial 5 by each bracket? | |

Describe how to multiply a monomial by a polynomial.

# 7.2.2: Exploring the Distributive Property (Using CAS or Algebra Tiles)

Expand the following expressions to write an equivalent algebraic expression for each. Then verify using Nspire CAS or Algebra Tiles.

a) $2(x - 5)$ b) $5(x + 1)$ c) $4(3x - 1)$

d) $-3(2x + 4)$ e) $2(4x - 5)$ f) $-5(x + 4)$

g) $6(3x^2 - 2x + 4)$ h) $2(5 - 5m + 6n)$ i) $-3(3x - 4y + 5z)$

# 7.3.3: Adding and Subtracting Polynomials

## Part A: Picture Representation

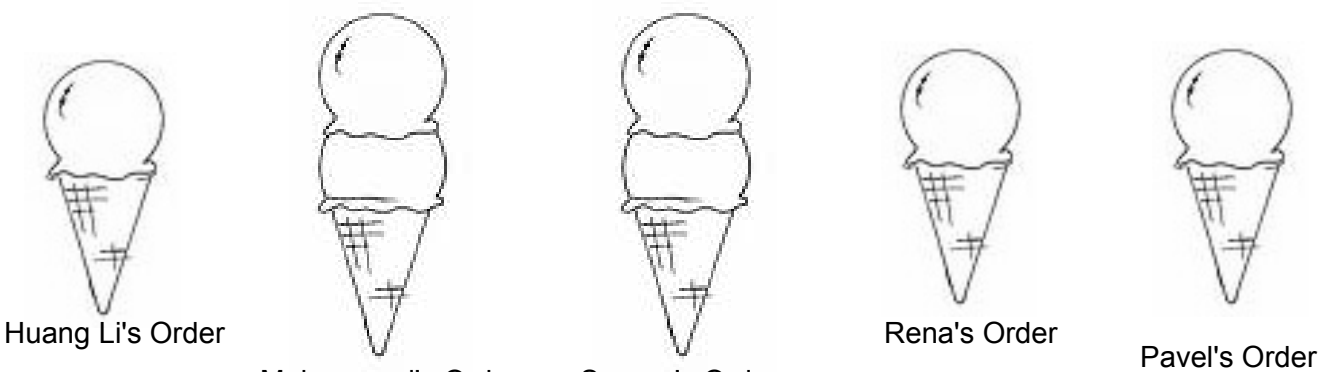
1.

What do you have? Explain in words.

2.

What do you have? Explain in words.

3.



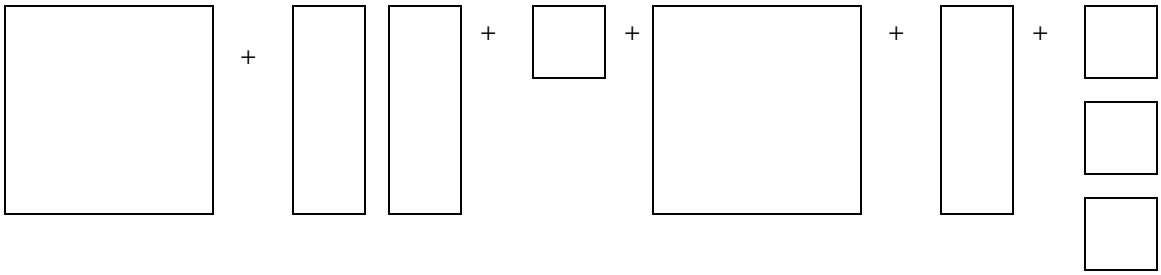

What do you have to order? Explain in words.

4.

What do you have to order? Explain in words.

# 7.3.3: Adding and Subtracting Polynomials (Continued)

## Part B: Algebra Tiles

1. 

What do you have? Explain in words, and explain using algebra tiles.

2. $2x^2 + 5x – 1 + 3x + 4$. Using algebra tiles or draw pictures to represent this algebraic expression.

3. $(x^2 - 3x + 2) + (2x^2 - 3x - 4)$. Using algebra tiles or draw pictures to represent this algebraic expression.

4. $(2x^2 - 5x + 3) - (x^2 - 3x + 2)$. Using algebra tiles or draw pictures to represent this algebraic expression.

5. $(3x^2 - 3x + 2) + (2x^2 - 3x - 4)$. Using algebra tiles or draw pictures to represent this algebraic expression.

# 7.3.3: Adding and Subtracting Polynomials (Continued)

## Part C: Algebraic Model

| A Coaches B | B Coaches A |
|---|---|
| 1. $(x + 1) + (2x + 3)$ | 2. $(4x – 5) - (2x + 3)$ |
| 3. $(x^2 + 5x + 3) + (x^2 + 6x – 2)$ | 4. $(x^2 + x + 2) + (x^2 + x + 1)$ |
| 5. $2x^3 – 5x^2 + 6x – 8 + 3x^2 – 8x + 2$ | 6. $2x – 3y + 5x^2 – 6y^2 – 3y + 2x – 2x^2$ |
| 7. $12a – 15b + 22a – 16b – 2a – 6b$ | 8. $2a – 21a + 32b – 6b – 12b – 16a$ |

## 7.3.P: Practice

1. Use algebra tiles to show that the given three expressions are equivalent:

   (a) $2+4n$ (b) $1+2n+2n+1$ (c) $6+(n-1)(4)$

2. Simplify each of the following using algebra:

   (a) $3x+2x+4x$ (b) $3x+4+2x+1$

   (c) $2x+5-2x-3$ (d) $-3x+6-x-8$

3. Simplify first then evaluate where x = 2 and y = -1.

   (a) $9x+2y-4x+3y$ (b) $8y-4y+3x+2y$

# 7.4.3: Algebraic Expressions

Simplify each algebraic expression.
Create a word statement for your answer.
The first question is completed as an example.

| | Algebraic Expression | Word Statement |
|---|---|---|
| **1.** | $4x + 20 - 3x + 6$<br>$= x + 26$ | twenty-six more than a number |
| **2.** | $3(2x - 4)$ | |
| **3.** | $2(x + 4)$ | |
| **4.** | $5x - 3 + 2(x + 1)$ | |
| **5.** | $3(2x + 3) - 2(2x + 3)$ | |
| **6.** | $(3x^2 + 4x - 3) + (2x^2 - 2x + 1)$ | |

## 7.4.P: Practice

1. Simplify.

(a) $4x+8-2x+3$

(b) $2(3x-5)$

(c) $2(x-3)+4x$

(d) $3x-2(x-4)$

(e) $4(2x-3)-3(x+5)$

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

(g) $(3x^2+5x-6)-(x^2+2x-8)$

2. Write an algebraic expression for each of the following:

(a) three more than a number _____

(b) eight less than twice a number _____

(c) a number increased by six times a different number _____

## 7.5.1: Practice

1. Simplify.

(a) $3x + 2 - 5 + 4x$

(b) $y - 6 + 2 - 3y$

(c) $2(x + 10)$

(d) $2(5m + 3) - 3(2m - 6)$

2. a) Describe the pattern in the Output column.

| Input | Output |
|---|---|
| 1 | 8 |
| 2 | 11 |
| 3 | 14 |
| 4 | 17 |
| 5 | 20 |
| n | ? |

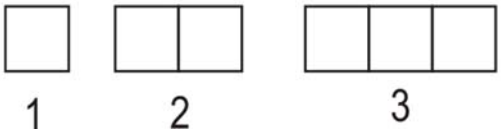
b) Determine two equations to represent the relationship between the input, n, and the output.

c) If the input value is 20, what is the output value? Use the equations from part (b).

d) If the output value is 41, determine the input value.

# 7.5.2: We're All Correct! Using Algebra

## Reconciling Equivalent Algebraic Expressions




How many toothpicks are needed for *n* squares?

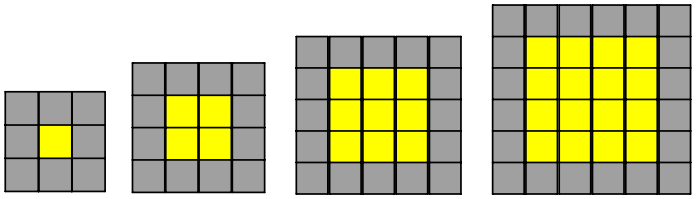
Expand and simplify to show why each solution is correct.

| | |
|---|---|
| **Anju's Solution**<br> <br>"If *T* is the number of toothpicks and *n* is the number of squares, then the number of toothpicks is equal to 1 plus three times the number of squares."<br><br>My equation is $T = 1 + 3n$. | **Erin's Solution**<br> <br>"If *T* is the number of toothpicks and *n* is the number of squares, then the number of toothpicks is equal to 4 plus three times one less than the number of squares."<br><br>My equation is $T = 4 + 3(n - 1)$. |
| **Silva's Solution**<br> <br>"If *T* is the number of toothpicks and *n* is the number of squares, then the number of toothpicks is equal to 2 times the number of squares plus one more than the number of squares."<br><br>My equation is $T = 2n + (n + 1)$. | **Bijuan's Solution**<br> <br>"If *T* is the number of toothpicks and *n* is the number of squares, then the number of toothpicks is equal to 4 times the number of squares minus one less than the number of squares."<br><br>My equation is $T = 4n - (n - 1)$. |

# 7.5.3: The Frame Problem

## Problem

The Capture-It Company makes picture frames.
Tiles are used for the border of the frames.
The light area represents the square space for the picture.



## Procedure

Marla and Tim work together to find an algebraic model to represent this problem.
They build models with colour tiles and count the number of dark tiles needed on pictures of different sizes.

| Frame Number ($n$) | Number of Dark Tiles ($d$) |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

Marla and Tim determined different equations to represent the relationship between the frame number ($n$) and the number of dark tiles ($d$).

Marla's equation: $d = 2(n + 2) + 2n$

Tim's equation: $d = 4(n + 1)$

1) Determine your own equation to represent the relationship between the frame ($n$) and the number of dark tiles ($d$).

2) Compare your equation with Marla's and Tim's to determine that they represent equivalent algebraic models.

# 7.5.4: The Walkway Problem

## Problem

The Larry's Landscaping Company makes walkways. One walkway starts with a hexagonal piece of concrete. To make the walkway longer, square pieces are added.

This walkway begins with a hexagon and has three square pieces added. The length of each side is the same. The perimeter of this walkway is 12.

## Procedure

Cara and Cal work together to find an algebraic model to represent this problem. They build a model with pattern blocks and determine the perimeter of the walkway. The perimeter only includes sides on the outer edge of the walkway.

| Number of Squares ($n$) | Perimeter ($P$) |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

Cara and Cal determined different equations to represent the relationship between the number of squares ($n$) and the perimeter ($P$).

Cara's equation: $P = 5 + 2n + 1$

Cal's equation: $P = 6 + 4n - 2n$

1) Determine your own equation to represent the relationship between the number of squares ($n$) and the perimeter ($P$)?

2) Compare your equation with Cara's and Cal's to determine that they represent equivalent algebraic models.

# 7.6.2: Powers with Variable Bases (Numeric, Graphical, and Algebraic Models)

Part 1

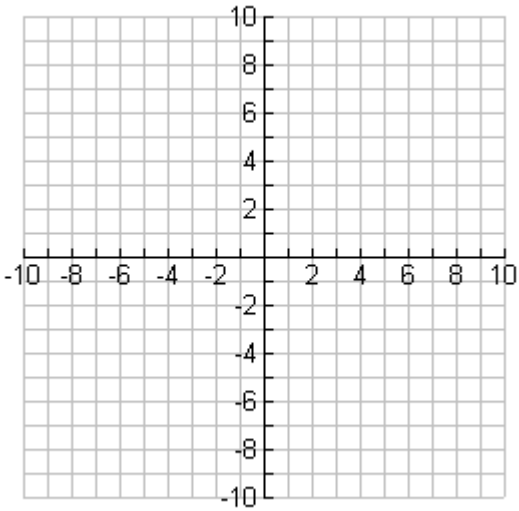
a) Complete the table of values for:

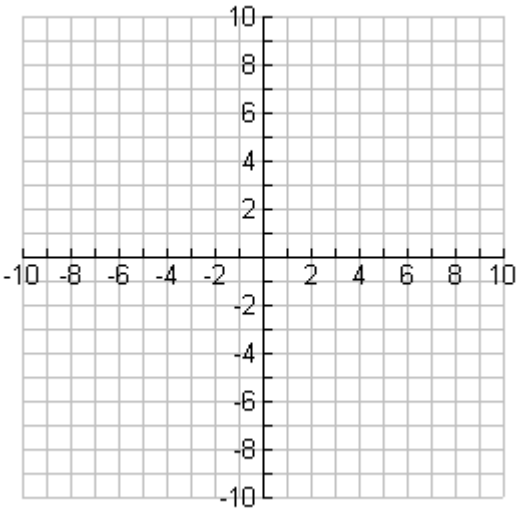
| $y = x(x + 3)$ | |
|---|---|
| $x$ | $y$ |
| -2 | |
| -1 | |
| 0 | |
| 1 | |
| 2 | |

| $y = x^2 + 3x$ | |
|---|---|
| $x$ | $y$ |
| -2 | |
| -1 | |
| 0 | |
| 1 | |
| 2 | |

b) How do the tables compare?

c) Graph both relations on the grids below. Graph $y = x(x + 3)$ in blue and graph $y = x^2 + 3x$ in red.




d) How do the graphs compare?

e) The tables of values in a) and the graphs in b) are _____.

f) What must this mean about the expressions $x(x + 3)$ and $x^2 + 3x$?

g) What process would transform $x(x + 3)$ into $x^2 + 3x$?

# 7.6.2: Powers with Variable Bases (Numeric, Graphical, and Algebraic Models) (continued)

Part 2

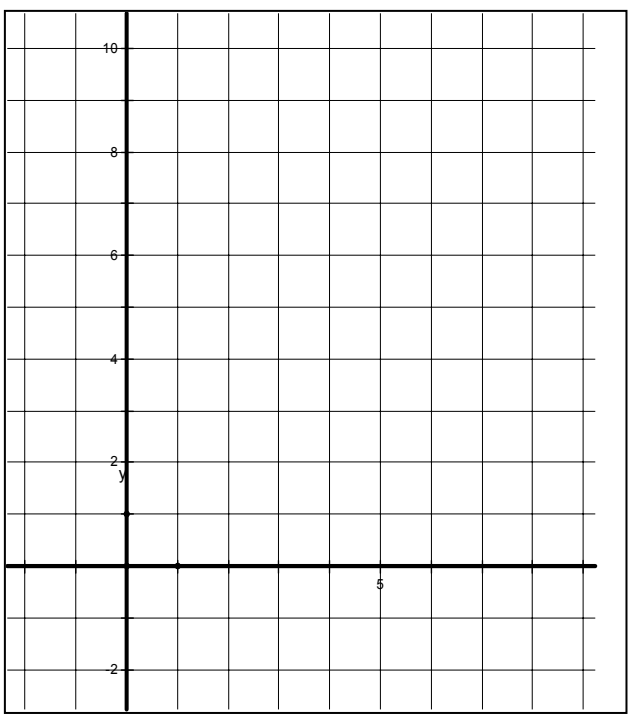
a) Complete tables of values and compare them for:
$y = x(x^2 + 2)$ $\qquad$ $y = x^3 + 2x$

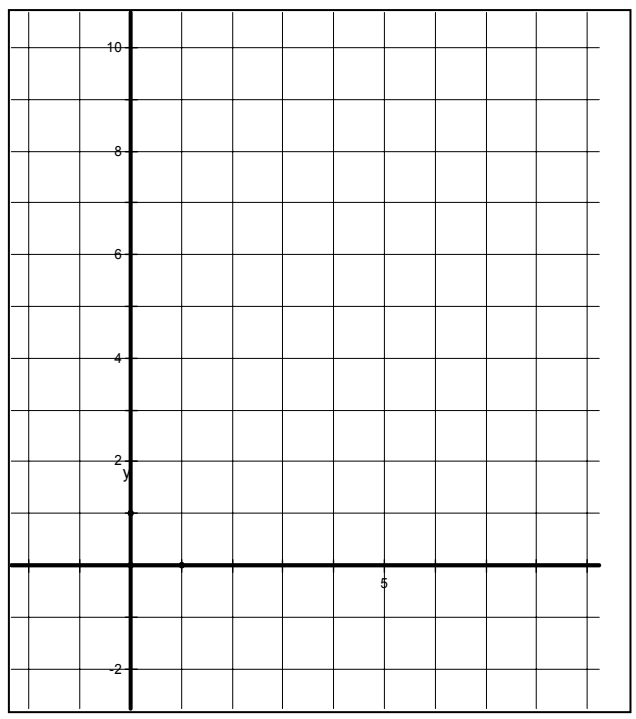
| $Y = x(x^2 + 2)$ | |
|---|---|
| ***x*** | ***y*** |
| -2 | |
| -1 | |
| 0 | |
| 1 | |
| 2 | |

| $y = x^3 + 2x$ | |
|---|---|
| ***x*** | ***y*** |
| -2 | |
| -1 | |
| 0 | |
| 1 | |
| 2 | |

b) What process would transform $x(x^2 + 2)$ into $x^3 + 2x$?

c) Graph $y = 2x(x – 2)$ and $y = 2x^2 – 4x$ on the same axes and compare the graphs.
What process would transform $2x(x – 2)$ into $2x^2 – 4x$?




d) Explain why $\boldsymbol{y = x(x)(x)}$ <u>and</u> $\boldsymbol{y = x(x^2)}$ <u>and</u> $\boldsymbol{y = x^3}$ have identical graphs.

# 7.6.2: Powers with Variable Bases (Numeric, Graphical, and Algebraic Models) (continued)

The process of distributing through the brackets is called "expansion" or "distribution."

Expand the following:

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

**Check your understanding**

Three students were asked to expand this expression: $x(x^2 – 2x + 3x)$

| Kevin's answer | Sal's answer | Ari's answer |
|---|---|---|
| $x(x^2 – 2x + 3x)$<br>$= x^3 – 2x^2 + 3x^2$ | $x(x^2 – 2x + 3x)$<br>$= x(x^2 + x)$<br>$= x^3 + x^2$ | $x(x^2 – 2x + 3x)$<br>$= x^3 – 2x^2 + 3x^2$<br>$= x^3 + x^2$ |

Which solution is the most efficient?
Explain your choice.

# 7.6.P: Practice

Expand the following:

1. Expand and simplify.

(a) $r(r+2)$

(b) $2c(c^2-5c+6)$

(c) $3x(2x^2-4x-3)$

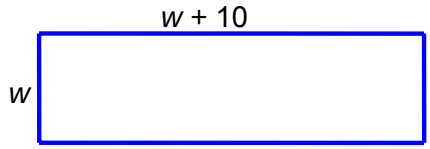
(d) $2x(x^2+3x)+x(3x-x^2)$

(e) $d(d^2-2d)-d^2(d-5)$

(f) $3(x^2-5x-6)-2x(x^2-8)$

# 7.7.1: Solving Measurement Problems

**Problem A**: Sam makes rectangular paving stones that are 10 cm longer than they are wide.

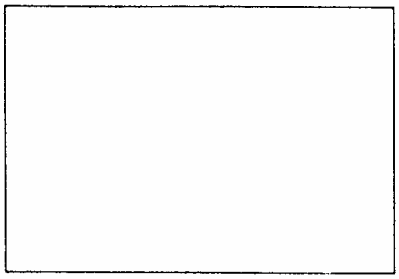



1. Determine a formula for the **perimeter** in terms of *w*.
   (Hint: formula for finding the perimeter of a rectangle is $P = 2(l + w)$)

2. Use this formula to calculate the perimeter when the width is 6.75 cm.

3. Use a graphing calculator to graph the equation describing the perimeter.
   a) Write the equation you entered: $Y =$ _____

   b) Sketch a graph in the space provided below.



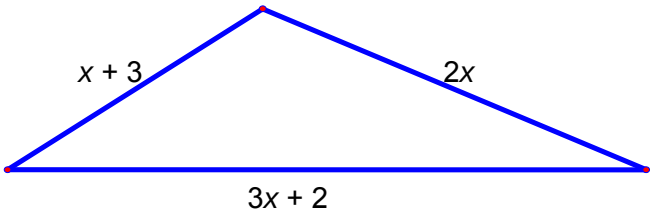
WINDOW
Xmin =
Xmax =
Xscl =
Ymin =
Ymax =
Yscl =
Xres =

   c) Trace to locate the (width, perimeter) corresponding to the calculation in question 2.
   $X =$ _____ $Y =$ _____

4. Use the formula to calculate the width when the perimeter is 60 cm.

# 7.7.1: Solving Measurement Problems (continued)

**Problem B**: This diagram shows the size of the sides in terms of $x$.




1. Determine a formula for the perimeter in terms of $x$.
   (Hint: formula for finding the perimeter of a triangle is $P = a + b + c$)

2. Use this formula to calculate
   a) the perimeter when $x$ is 3 cm

   b) the length of each of the sides when $x = 3$.

3. Use the graphing calculator to graph the equation describing the perimeter.
   a) Write the equation you entered: $Y =$ _____

   b) Sketch a graph in the space provided below.

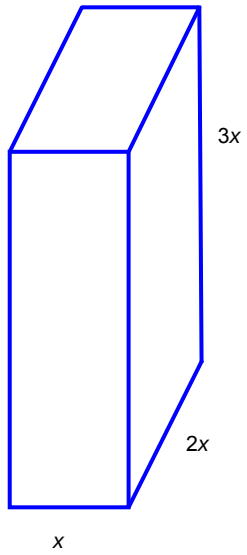
| WINDOW |
|---|
| Xmin = |
| Xmax = |
| Xscl = |
| Ymin = |
| Ymax = |
| Yscl = |
| Xres = |

   c) Use Trace to locate the point ($x$, perimeter) corresponding to the calculation in question 2a). You can also use [2nd] TABLE (over the GRAPH key) to see the table of values.
   $X =$ _____ $Y =$ _____

4. Use the formula to calculate the value of $x$ when the perimeter is 41 cm.

# 7.7.1: Solving Measurement Problems (continued)

**Problem C**: Explain how this model shows that the length is 2 times the width and the height is 3 times the width.




1. Determine a formula for the volume.

2. Use this formula to calculate the volume when the width is 225 m.

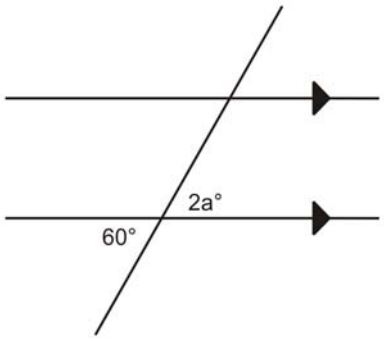
## Challenge

Can you find the width of the shape that has a volume of 162 $cm^3$?

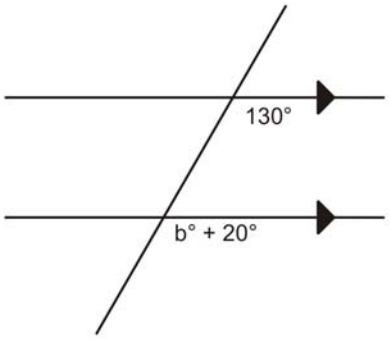
# 7.7.2: Connecting Algebra to Geometry

1. Write an equation and solve for the unknown. State the theorem used to make the equation.

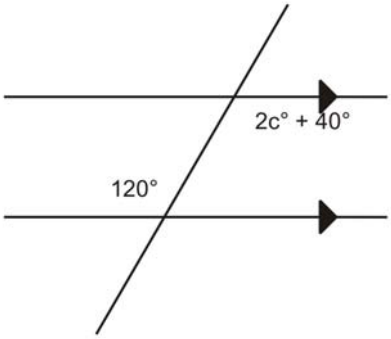
a)



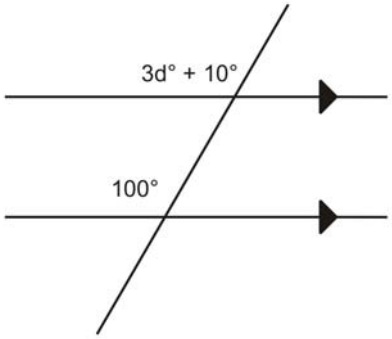

b)




c)

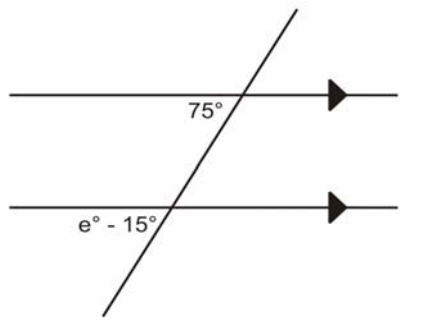



d)

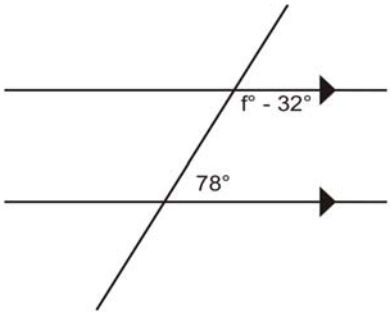


# 7.7.2: Connecting Algebra to Geometry (continued)

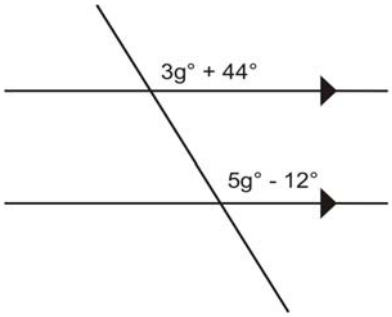
e)



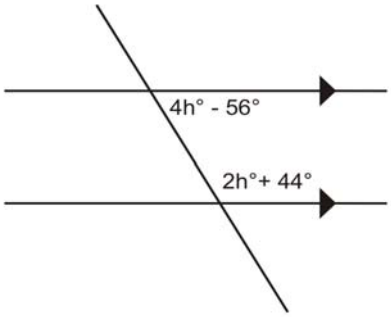

f)




g)

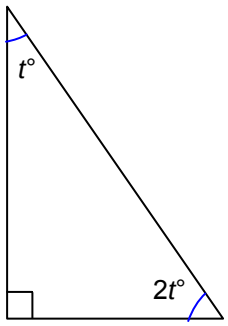



h)

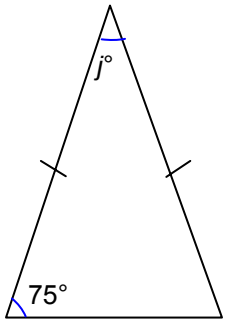


# 7.7.2: Connecting Algebra to Geometry (continued)

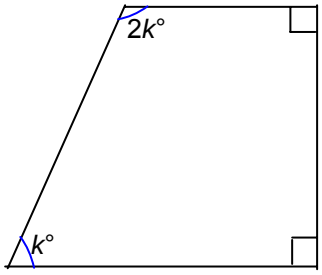
i)



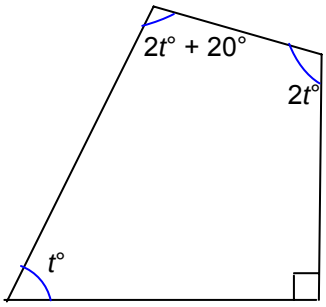

j)



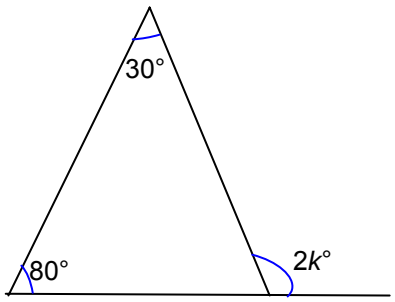
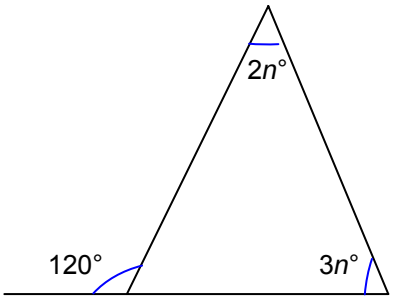

k)




l)

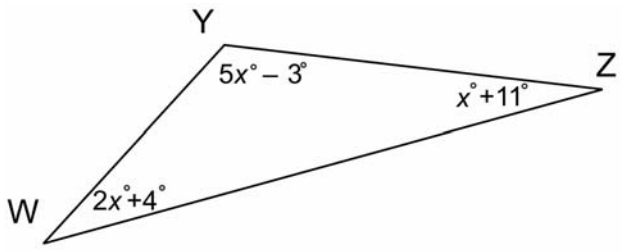


# 7.7.2: Connecting Algebra to Geometry (continued)

| | |
|---|---|
| m)   | n)   |

# 7.7.2: Connecting Algebra to Geometry (continued)

2. a) The sum of the interior angles in a triangle is:



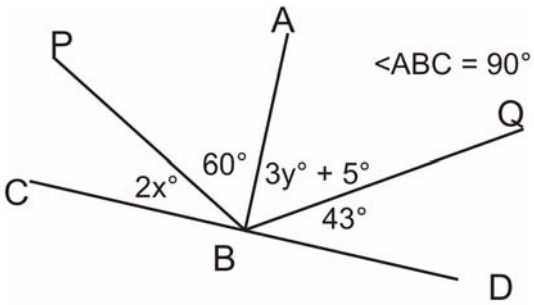

b) An equation that models the sum of the interior angles in this triangle is:

c) Solve the equation to determine the value of *x*.

d) Use the value of *x* to calculate the size of:

∠W: ∠Y: ∠Z:

3. a) The sum of the angles in a right angle is:




b) Write 2 equations to model the sums of the 2 sets of angles that add to 90º:

(i)

(ii)

c) Solve these equations to determine the values.

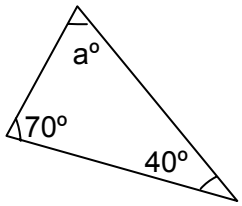
(i) solve for *x*º (ii) solve for *y*º

d) Use the values of x and y to calculate the size of:

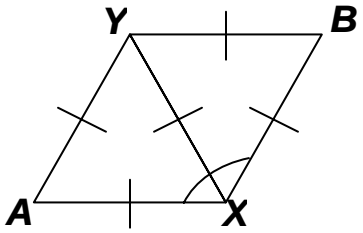
∠CBP: ∠ABQ:

# 7.7.P: Practice

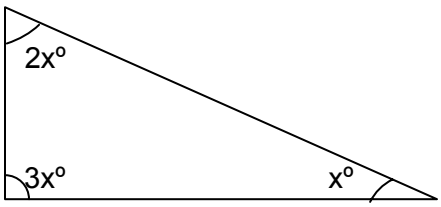
1. Find the value of ***a***.



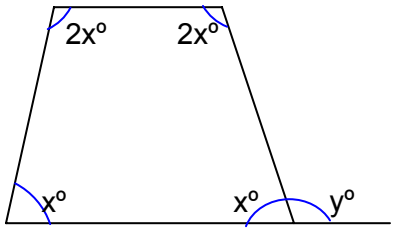

2. Find the value of $\angle AXB$ .




3. Find the value of each angle.

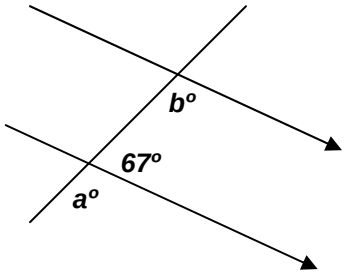



4. Solve for ***x*** and ***y***.

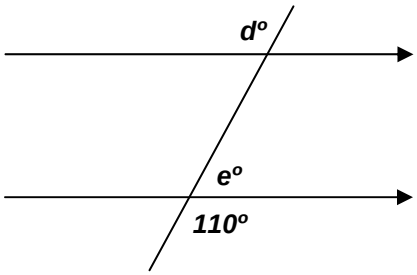


# 7.7.P: Practice (continued)

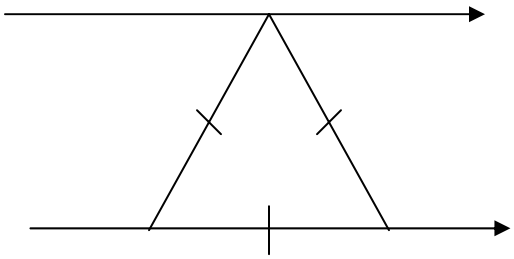
5. Find the values of ***a*** and ***b***.



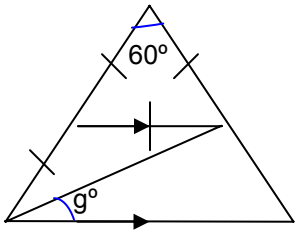

6. Find the value of the missing angles.




7. Solve for ***f***.



8. Determine the value of ***g***.



## 7.7.J: Journal Activity

Respond to the following question:

What jobs might use algebra to model measurement relationships?

# 7.W: Definition Page

| Term | Picture / Sketch / Examples | Definition |
|---|---|---|
| Equivalent | | |
| Expand | | |
| Like Terms | | |
| Simplify | | |
| Polynomials | | |
| Base | | |
| Exponent | | |
| Power | | |

# 7.S: Unit Summary Page

**Unit Name:** _____

Using a graphic organizer of your choice create a unit summary.

# 7.R: Reflecting on My Learning (3, 2, 1)

| |
|---|
| **3** Things I know well from this unit |
| **2** Things I need explained more |
| **1** Question I still have |

# 7.RLS: Reflecting on Learning Skills

Students should be aware of the importance that these skills have on your performance. After receiving your marked assessment, answer the following questions. Be honest with yourself. Good Learning Skills will help you now, in other courses and in the future.

- E – Always
- G – Sometimes
- S – Need Improvement
- N – Never

**Organization**

- E G S N I came prepared for class with all materials
- E G S N My work is submitted on time
- E G S N I keep my notebook organized.

**Work Habits**

- E G S N I attempt all of my homework
- E G S N I use my class time efficiently
- E G S N I limit my talking to the math topic on hand
- E G S N I am on time
- E G S N If I am away, I ask someone what I missed,
- E G S N I complete the work from the day that I missed.

**Team Work**

- E G S N I am an active participant in pairs/group work
- E G S N I co-operate with others within my group
- E G S N I respect the opinions of others

**Initiative**

- E G S N I participate in class discussion/lessons
- E G S N When I have difficulty I seek extra help
- E G S N After I resolve my difficulties, I reattempt the problem
- E G S N I review the daily lesson/ideas/concepts

**Works Independently**

- E G S N I attempt the work on my own
- E G S N I try before seeking help
- E G S N If I have difficulties I ask others but I stay on task
- E G S N I am committed to tasks at hand

Yes No I know all the different ways available in my school, where I can seek extra help.

Yes No I tried my best.

What will I do differently in the next unit to improve?

_____

_____

_____

_____