MINISTRY
OF
EDUCATION, YOUTH & INFORMATION
Every Child Can Learn, Every Child Must Learn

MATH
COUNTS

Subject: Mathematics	**Grade**: Four (4)	**Strand**: Algebra	**Duration:** 60 Minutes
Topic: Algebraic Expression		**Focus Question**: How do I use variables to represent unknown numbers?	
Standard:	Employ algebraic reasoning through the use of expressions, equations and formulae to interpret, model and solve problems involving unknown quantities.		
Attainment Targets:	Explain the meaning and use of simple formulae		
Benchmarks:	Represent and analyze algebraic expressions and equations		
Materials:	Learning Activity 4: Arithmagons on pages 6 and 7 of the Resource Document		

Specific Objectives

o *By the end of the lesson, students will be able to:*

- create and solve simple algebraic equations

Prior Learning

o *Students should already be able to:*

- Knowledge of variables and algebraic expressions.

Content Summary

An algebraic equation is a statement that contains at least one variable and an equal sign. An example of an algebraic equation is $a + 4 = 6$. The solution to an equation is a value that when substituted for the variable in the equation results in a true mathematical sentence.

Engage

o Introduce students to arithmagons:

- Show students the arithmagons below and ask them to say how they think an arithmagon is created.


A.

B.

C.
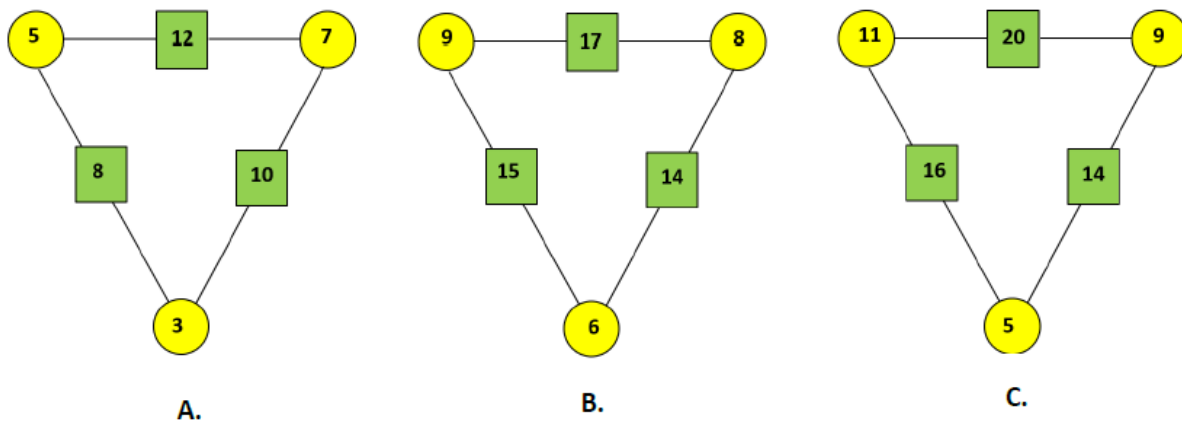
- Ask students to look at the numbers in the rectangles and the numbers in the circles and say how they are related.

o Once students have identified the principle that governs how an arithmagon is created, then allow them to complete 3 to 4 of the following arithmagons (if additional practice is needed, then allow students to attempt all of them).
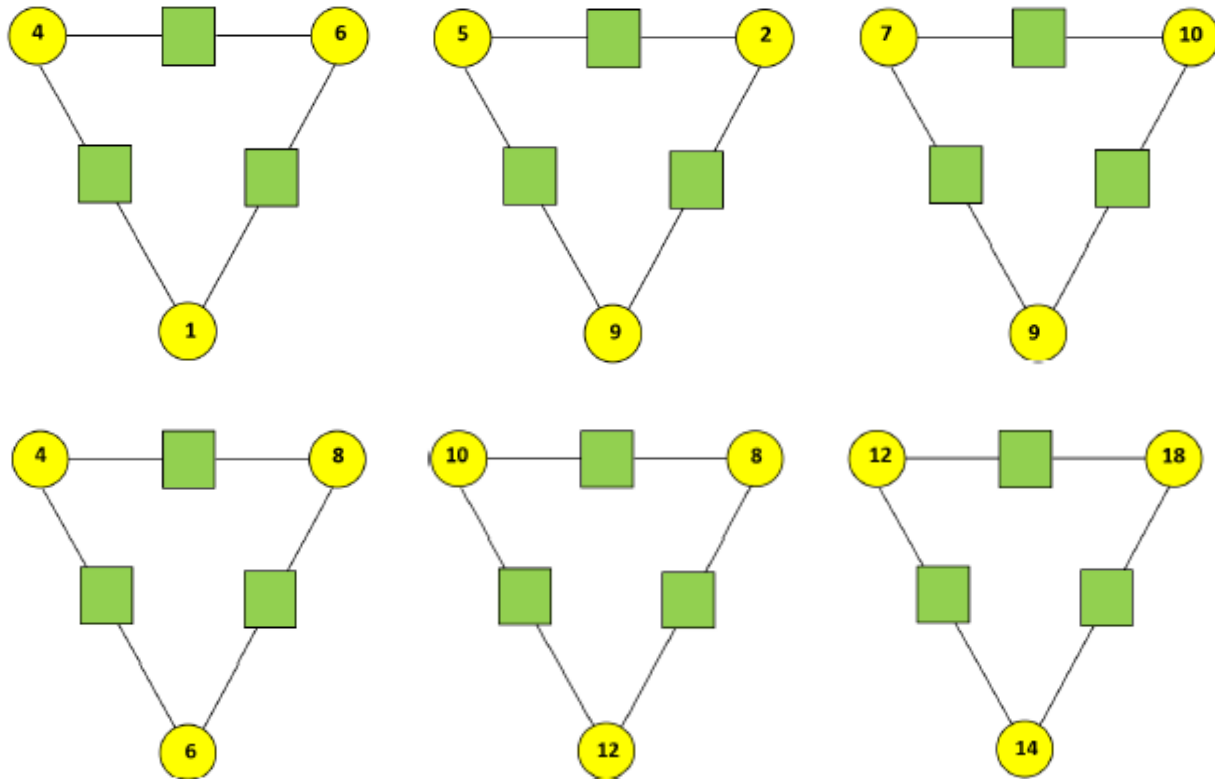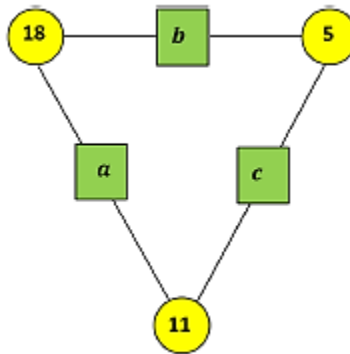

Explore

o Show students a completed arithmagon and discuss the various number sentences that could be created from the arithmagon:
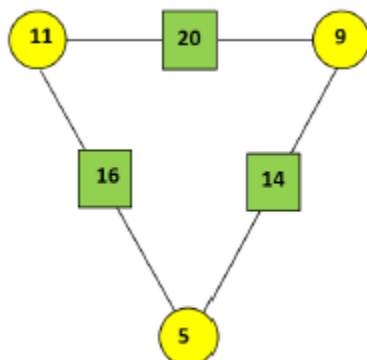
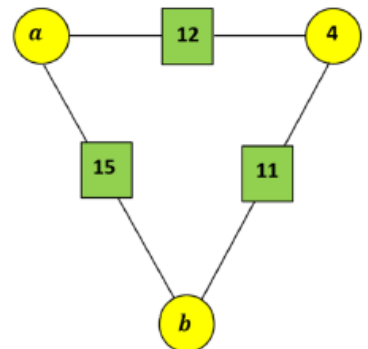| Number sentences	
$11 + 9 = 20$	$16 - 11 = 5$
$20 - 9 = 11$	$16 - 5 = 11$
$20 - 11 = 9$	$9 + 5 = 14$
$11 + 5 = 16$	$14 - 9 = 5$

o   Place students in groups of four to five. Give each group a copy of the following arithmagon:

o   Discuss in their groups the arithmagon by answering questions such as:

- What does each letter represent?

- How would the arithmagon be correctly completed?

- What number sentences can you write from the arithmagon?

- Use the arithmagon to determine the value of the unknown.

o   Provide each group with copies of each of the following arithmagons. Instruct groups to:

- discuss each arithmagon;

- use each arithmagon to write and solve a number sentence for each variable;

- correctly complete each arithmagon.

NUMBER SENTENCES

(1) _____ $a =$ ⬜

(2) _____ $b =$ ⬜

(3) _____ $c =$ ⬜

NUMBER SENTENCES

(4) _____ $p =$ ⬜

(5) _____ $n =$ ⬜

(6) _____ $x =$ ⬜

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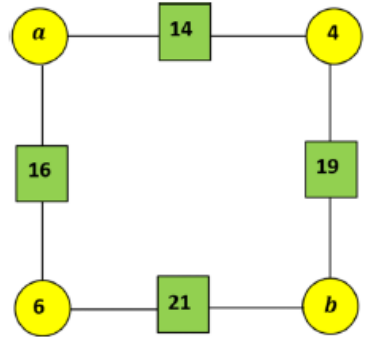
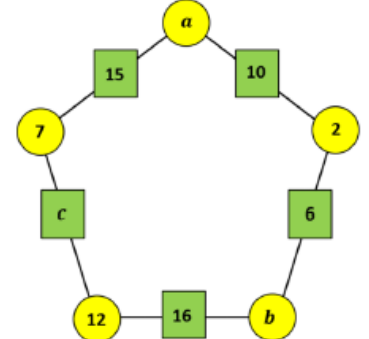

NUMBER SENTENCES

(7) _____ $a =$ ◯

(8) _____ $b =$ ◯

Explain

o As a whole class, each group explain how the members approached the arithmagons and share the answers they arrived at for the questions above.

Extension

o correctly complete each arithmagon as individual work

NUMBER SENTENCES

(9) _____ $a =$ ◯

(10)_____ $b =$ ◯

NUMBER SENTENCES

(11)_____ $a =$ ◯

(12)_____ $b =$ ◯

(13)_____ $c =$ ☐

Evaluation

Students' Evaluation

Allow students to solve the following number sentences:

1) $8 + n = 19$　　　2) $d + 11 = 13$　　　3) $a - 13 = 10$　　　4) $15 - b = 4$

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Teacher Evaluation

What percentage of students able to:	0% - 50%	51% - 80%	81% - 100%
Identified the principle that governs how an arithmagon is created			
Write number sentences from an arithmagon			
Solve a number sentence for each variable			

Comments:
Areas of strengths

Areas of weaknesses

Actions to be taken