PATTERNING AND ALGEBRA

- describe and represent relationships in growing and shrinking patterns (where the terms are whole numbers),and investigate repeating patterns involving rotations

- use variables in simple algebraic expressions and equations to describe relationships

#1 Find the value of the Unknown letter m. Show a step.

a) $16 = m \times 2 + 4$ b) $m + 10 = 15 \times 2$

c) $4 \times m = 20$ d) $3 \times 4 = m + 2$

#2 Each week I get $2.00 from my parents for doing my homework and I already have $4.00 saved.

a)   How many weeks will I have to do my homework for me to earn enough to have saved up $16.00? Show your thinking.

b) What did you do wrong if you got an answer of 8 weeks?

#3 A movie theatre charges $8.00 for admission.
The equations $C = 8 \times p$ and $8 \times p = C$ can both be used to calculate the total cost of admission.

a) What does the variable 'C' represent?

b) What does the variable 'p' represent?

c) If 5 people need to pay for admission, what will it cost?

#4 If both of the equations below are true, find the value of 'a'

$$c + c = 8 \qquad a + c = 10$$

a) 8   b) 4   c) 2   d) 6

#1 If both of the equations below are true, find the value of 'm'

$$4 \times p = 8 \qquad 4 \times p + m = 18$$

a) 8   b) 4.5   c) 10   d) 6

> **Show your work here.**

#2 The total number of books Mitza reads over the summer can be found using the expression **2 x n + 3**, where 'n' represents the number of weeks. After how many weeks will she have read 11 books?

a) 3   b) 4   c) 7   d) 8

> **Justify here.**

#3 Using the following equation, find 3 different possible solutions.

$$y + z = 32$$

y = _____ and z = _____

or

y = _____ and z = _____

or

y = _____ and z = _____

#4 Circle the equation that represents the problem. Then find the value of the unknown.

a) Jonas has 15 hockey cards and needs 16 more to make a complete set. How many cards make a complete set?

A $15 + c = 16$ B $15 + 16 = c$ C $15 = 16 - c$

$c =$

b) Neeva is saving money to buy a DVD that costs $25.00.
She has $10.00 and her brother is giving her $8.00.
How much money does Neeva still need in order to buy the DVD?

A $25 + m = 10$ B $10 + 8 + 25 = m$ C $10 + 8 + m = 25$

$m =$

Name: _____ **Date:** _____

Performance Task 2: Babysitting (page 1)

For babysitting her neighbour's children, Callie gets paid per hour based on the equations below. She gets paid $2.00 per hour more after 9:00 p.m. because it is late at night.

Time	Equation
Before 9:00 p.m.	$P = \$4 \times h$
After 9:00 p.m.	$P = \$6 \times h$

1. What are the variables in these equations and what do they represent?

2. Callie was babysitting one evening from 6:00 p.m. until 11:00 p.m. How much should she be paid? Use the equations above to help you determine your answer.

3. Callie received a total of $60.00 for babysitting. Use the equations above to help determine how many hours before 9:00 p.m. and how many hours after 9:00 p.m. she could have worked in total to earn this amount of pay. Try to find many possibilities.

#1 Consider the equation below.

$5 \times n + 12 = 32$

What is the value of 'n' in the above equation?

n = _____

Justify your answer using substitution.

#2 Two equations are shown below.

$n + 3 = 9$ $n + 7 + k = 23$

If both equations are true, what is the value of 'k'?

a) a) 8   b) 4.5   c) 10   d) 6

Show your work here.

#3a If you used a calculator to solve 4 x a = 56,
describe what you would do with the calculator.

#3b If **6 x m = 54** and **k - m = 14**, what is the value of **k x m**?

a) 32   b) 45   c) 126   d) 207

Show your thinking here.

#3c If **a + c = 24**,
        what is the value of 'e' in the equation **a + c + e = 27**

a) 3   b) 9   c) 15   d) 51

Show your thinking here.

#4 When Jennifer and Tom visit another country, they find two types of coins are used there. One coin has a 'Q' on it, and the other coin has an 'E' on it.

Jennifer has 13 'Q' coins

Tom has 5 'Q' coins and 7 'E' coins.

If Jennifer's coins have a total value of $0.65 and Tom's coins have a total value of $3.75, what is the value of each type of coin.

Show your work.

The value of the 'Q' coin is _____

The value of the 'E' coin is _____