Grade 7 Numeracy
Learning at Home
ISSUE 2

Keep the learning going!

The following activities support learning at home and connect to the mathematics that you have been learning. Choose activities that are interesting and challenging. Have fun!

Patterns and Relations: Mathematics is about recognizing, describing, and working with numerical and non-numerical patterns.

What do you notice about the tiling pattern below?

What might pictures 1 and 2 look like?

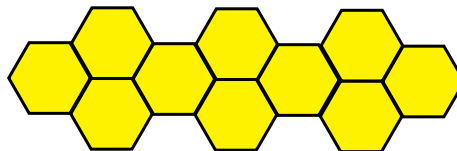How would you extend this pattern? Draw the next three pictures.

> What is staying the same? What is changing? How is it changing?

> How many tiles are needed for each picture?

> Describe how you can determine the number of tiles for each picture without counting. Describe the pattern using calculations.
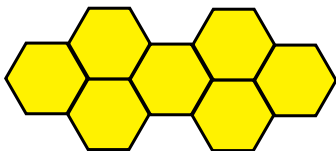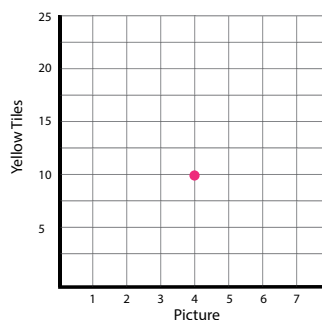

PICTURE 3   PICTURE 4

Predict how many yellow tiles you will need for the 20th picture.

Complete the table and graph below.

How do these mathematical tools help you check how close your prediction was to the actual number?

Picture	Number of Tiles	Calculations
1		
2		
3		
4		
5		
6		

Do you think this pattern of tiles will ever use exactly 100 tiles? Support your thinking using a table, a graph, or calculations.

Manitoba

Building
Number Sense

Number sense is an awareness and understanding of numbers. Number sense involves knowing different ways of representing numbers, understanding the relationships among numbers, and using numbers flexibly to reason, estimate, and compute.
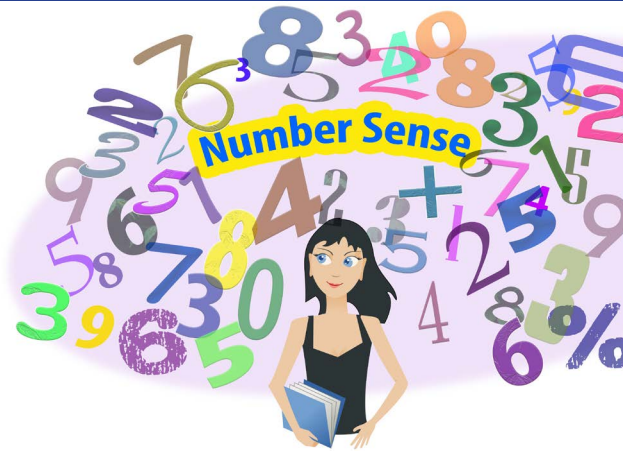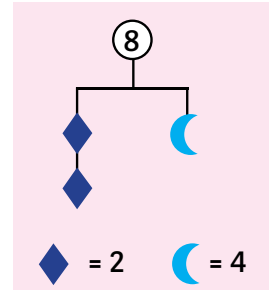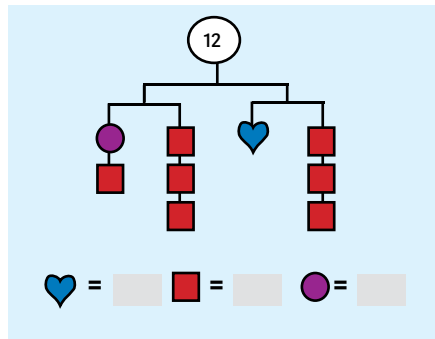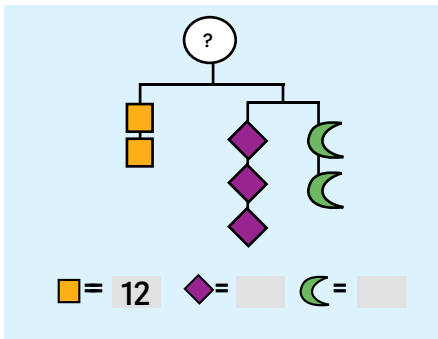
Balanced Mobile Determine the value each shape could represent on the balanced mobile. Example:

◆ = 2   ☾ = 4

These values are whole numbers.

▯ = 12   ◆ =   ☾ =

♥ =   ▮ =   ● =

## Challenge Yourself

- What if the numbers changed?
- Try each puzzle with a different value for the given shape or a different value for the total at the top.
- What numbers can you choose that make each puzzle easier?

- What do you notice about the numbers that make this puzzle more difficult?
- What is the smallest number you can choose and get this to work? (Hint: You can use fractions.)

Splat!

Splat is a thinking game. Some ink has spilled onto the picture. Look at the ink splats below and reason out how many dots are hidden beneath each one.

- The total number of dots is unknown.
- How many dots do you see?
- The splats are the same colour. When splats are the same colour, they are covering the same amount of dots.
- How many dots might the total be? What is the smallest possible total? What numbers would be impossible for the total? Describe any patterns you notice.

- What totals make this puzzle difficult? Find a total and then challenge your friends or family or create a whole new Splat puzzle for them to solve.
- Can you write an equation that represents this situation?

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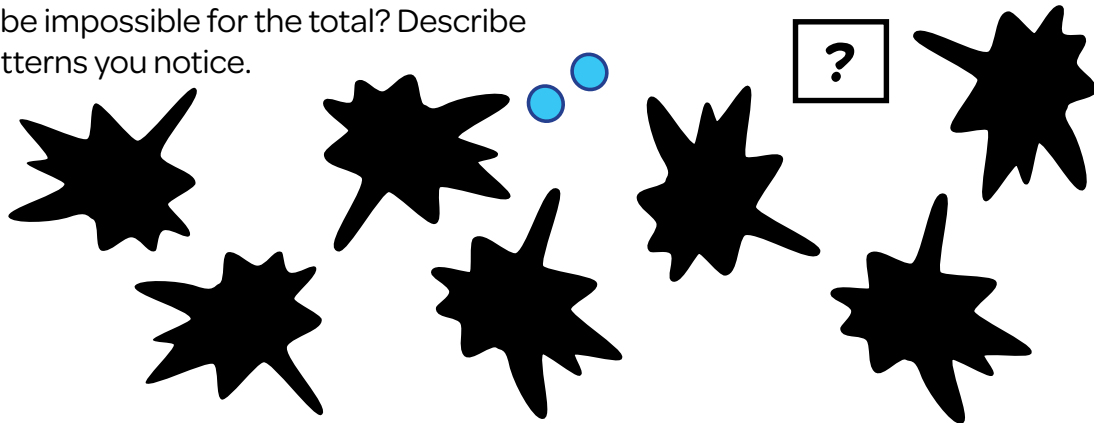
CHALLENGE: Try changing the number of blue dots.

- How does this change affect your answers?
- Why will this not work for every possible number of visible dots?

- Using a variable (a symbol or letter to represent the unknown dots behind a splat), write an equation that represents this situation?

WOULD YOU RATHER...

Use mathematics to help explain why you would rather choose one option over another.

You and two friends decide to each order a pizza for lunch. The sign says: **"10% off one pizza, 20% off two pizzas, or 30% off three pizzas!"** Would you rather have Option A or Option B?

OPTION A: ORDER YOUR THREE PIZZAS ON SEPARATE BILLS

or

OPTION B: ORDER YOUR THREE PIZZAS ON THE SAME BILL AND SPLIT THE COST

CHALLENGE: Use mathematics to help explain why each option could be the best choice.

Mental Math Strategies

Mental math strategies foster flexible thinking about numbers and operations, and help you see how relationships exist between numbers. Learning about mental math strategies helps build an awareness of numbers and makes you question if an answer does not "look" or "sound" right. Developing good mental math strategies is important because mental math strategies are a valuable life skill.
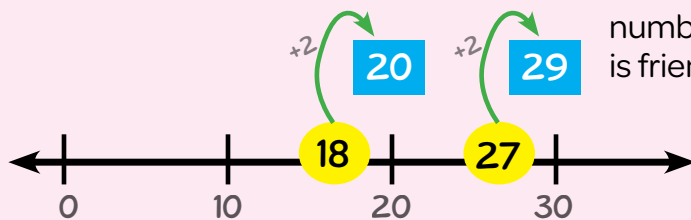
When thinking and communicating our thinking, using models and visuals can help.

Subtracting Strategy: Using Friendly Numbers

There are many strategies to make mental calculations easier, such as the one below for subtraction.

When you add the same number to the two elements of a subtraction question, the difference between the two does not change.

$$27 - 18 = \boxed{}$$

Adding 2 to both numbers because 20 is friendlier than 18.

+2 → 20   +2 → 29

You can see on the number line that the distance between the values remains the same.

27 – 18 is the same as 29 –20

29 – 20 = 9

GIVE IT A TRY!

Try solving the equations below by adding the same value to both elements in order to make one of the elements a more *friendly number.*
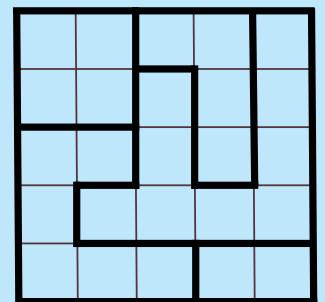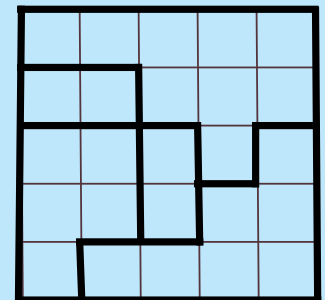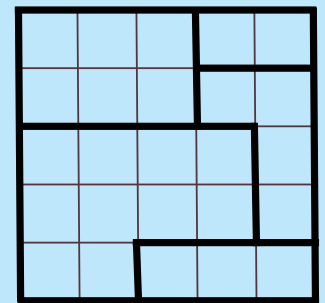
96.3 – 30.1

428.25 – 50.75

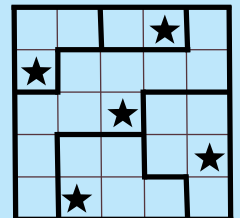0.92 – 0.45

20.38 – 2.98

Mathematical Games

Constellations are puzzles where each region on the grid requires a star. Each row, column, or region must contain the same number of stars. Stars cannot be in adjacent cells, not even diagonally.

Example:

CHALLENGE: Try creating your own Constellation puzzle.