Grade 8 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.

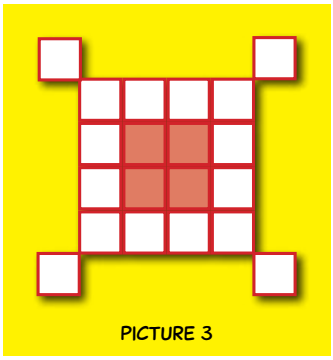
What do you notice about the tiling pattern below?

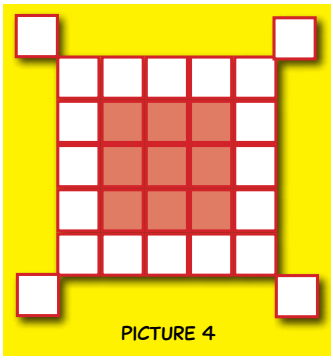
What might pictures 1 and 2 look like?

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

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

How can you calculate the number of square tiles needed for each picture?

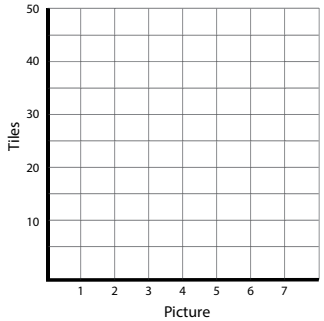




Estimate how many square tiles there will be in the 20th picture.

Complete the table and graph below. How do these mathematical tools help? You may want to change the scale of the graph.

Picture	Number of Tiles	Calculations
1		
2		
3		
4		
5		



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

Math Mindset

Mistakes are valuable.

Our brains learn through our mistakes and make adjustments through trial and error. Try another strategy or examine your work closely to exercise your brain!

Mathematics help us think logically and visualize connections.

Do you notice anything that looks familiar?

How is this similar to other math activities you have tried? How is it different?

How does this connect to other activities or events in the world around you?

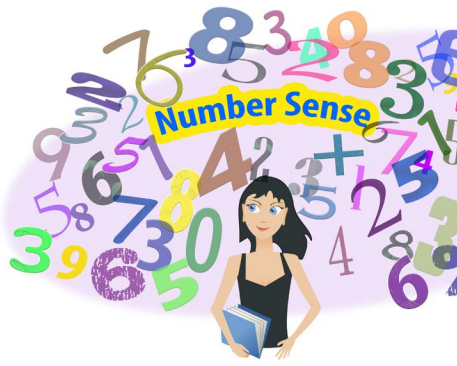
LAUGH OF THE DAY

Q. Why doesn't anyone talk to the circles?

A. Because they can't see the point.

Manitoba

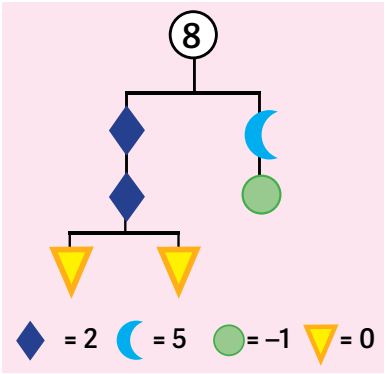
Building
Number Sense

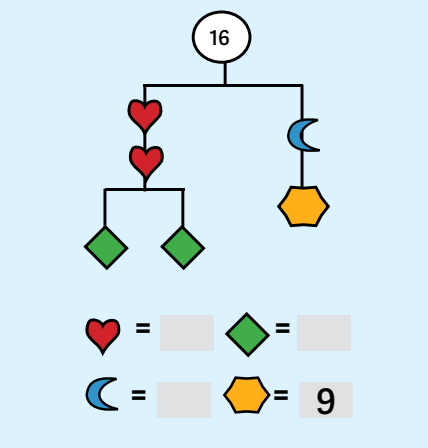


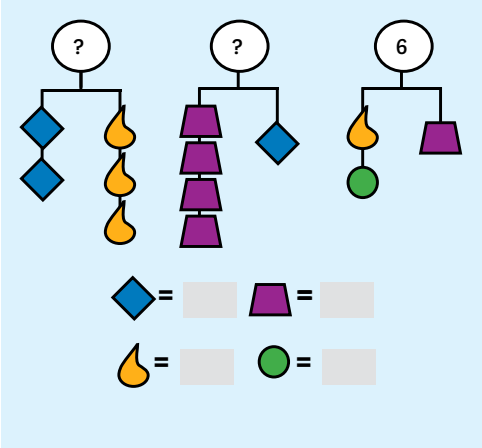
Number sense is an awareness and understanding of numbers. Number sense involves knowing different ways of representing numbers, understanding the relationships among numbers, and using numbers flexibly to reason, estimate, and compute.

Balanced Mobile

Determine the integer value each shape could represent on the balanced mobile. Remember that integers include zero and negative numbers. Example:







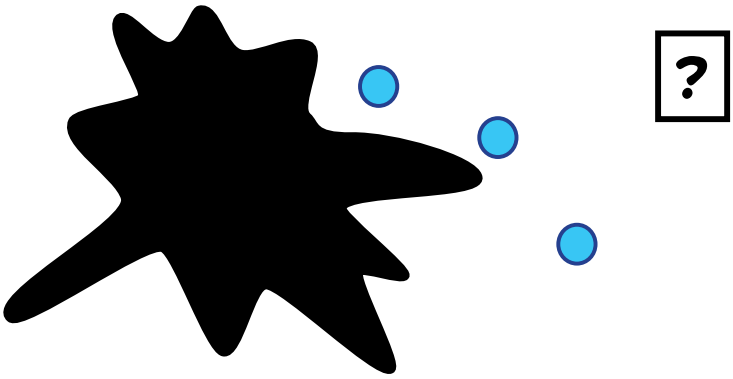
Challenge Yourself

- 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 splat below and reason out how many dots are hidden beneath it.

- The total number of dots is unknown.
- The big splat covers an unknown number of dots.
- How many dots are visible? How many dots might the total be?
- **5% of the dots are visible.**



CHALLENGE: Try changing the number of dots.

- How does this change your answers?
- What numbers will work?
- What numbers will not work?
- Describe any patterns you notice?

WOULD YOU RATHER...

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

You and four friends decide to exchange presents.

WOULD YOU RATHER
PAY FOR 3 GIFTS AND GET 1 FREE

OR

USE A COUPON FOR 20% OFF

Does your explanation hold true for both inexpensive and expensive gifts?
Why or why not?

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

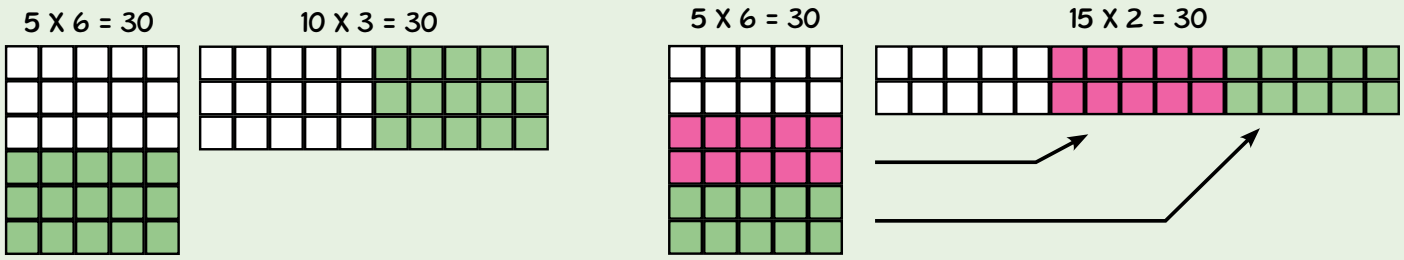
Mental Math Strategies

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.

Multiplication Strategy: Doubling and Halving, Triple and Thirds, etc.

There are many strategies to make mental calculations easier. Here is one strategy for the product of two numbers that is sometimes very helpful. A simple example of 5 x 6 is shown using an area model. Examine the pictures below, what do you notice?



In multiplication, calculations can be simplified by doubling one factor and halving the other. The result will be the same. Another multiplication strategy is tripling one factor and thirding the other. The result will be the same.

Use the strategy of *doubling and halving* or *triple and thirds to* determine what number goes in each blank.

15 x 8 = 30 x ___

40 x 27 = ___ x 9

120 x 9 = ___ x 3

Use the strategy of *doubling and halving* or *triple and thirds* to express each mathematical statement in different ways that represent the same value.

3 x 27 = ___ x ___

40 x 15 = ___ x ___

3 x 36 = ___ x ___

4 x 16 = ___ x ___

Mathematical Games

To play **Skyscrapers**, you must visualize each of the grids as the top view looking down. The number in the white square represents the height of that tower. The numbers in the blue arrows indicate how many towers you can see from that position.

You must place a tower in each cell on the grid. Their height ranges from 1 to the size of the grid (i.e., 1 to 4 for a 4 x 4 grid). Two same-height towers cannot be in the same row or column.

Try these three puzzles. It can be easier to see and even more fun if you use blocks. Have fun!

EXAMPLE: