Grade 8 Numeracy Learning at Home

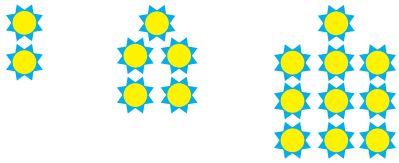
ISSUE 1

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 beading pattern below? How would you extend this pattern? Draw the next three terms. Describe how you construct each new term in the pattern using words. Describe the pattern using calculations.

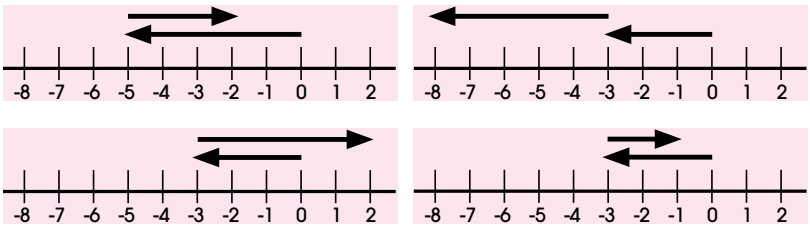


Create a graph to match this pattern for the first 10 terms. Predict how many beads you will need for the 20th term. How does your graph help you with this prediction? How do your calculations help you with this prediction? Try it! Construct the 20th term in the beading pattern. Does it match your prediction?

Create your own. Design a similar beading pattern and create a graph that would fit the pattern. Compare the designs. Compare the graphs. What is the same? What is different?

Which One Doesn't Belong? Look at what is in each box.

What do you see? What integer does each picture represent?



Choose one number line in this picture that you don't think belongs with the rest. Explain why. Can you pick another number line and give a different reason? There is at least one reason why each one does not belong.

For example, the top-left number line does not belong with the rest because it is the only one that does NOT begin with (-3).

Math Mindset

Math skills need practice.

Just like a sports skill or artistic ability, focused and deliberate practice builds math skills and confidence!

Mathematics problems are often solved using different ways or methods.

If you get an answer quickly, can you think of another way to solve the problem? If you can't quite figure it out, can you try a different method or strategy?

LAUGH OF THE DAY

Why is 6 afraid of 7?
Because 7, 8, 9 ("seven ate nine").

Why did 7 eat 9? Because it was looking for 3 squared meals a day. ($3^2 = 9$).

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.

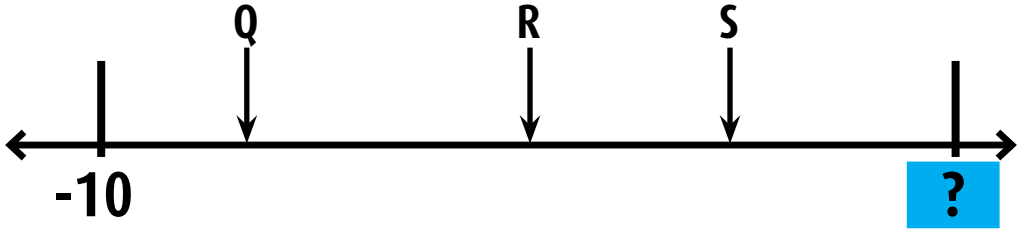
Number Line

There are many different ways to use the number line in all grade levels to foster number sense.

The number line helps develop greater flexibility in mental mathematics and construct meaning with number relationships. Use the number line to represent, compare, and order decimal numbers and fractions.

Where Does it End?

Create an open-number line like the one shown here.



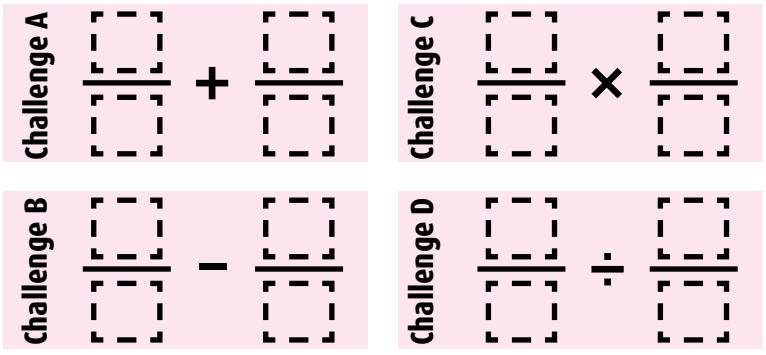
What would the end point (**?**) be if **3** was placed at the point marked **R**?

Try this again by placing **3** at the point marked **S** or the point marked **Q**.

Challenge yourself by starting with more interesting fractions or decimal numbers.

Fun with Fractions!

For each question, choose 4 digits from 1 to 9 (without repeats) to make the value of each expression **as large as you can**.



For example, using the digits 9, 1, 8 and 2, Challenge **C** becomes

$$\frac{9}{1}\times\frac{8}{2}=36$$

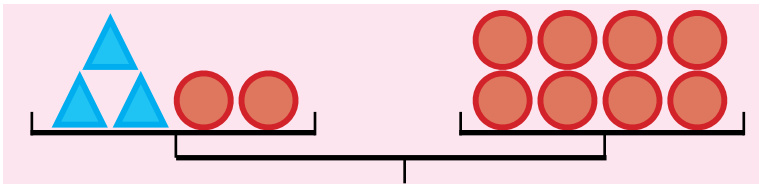
Do not rush this. It is not a race. Think carefully. Try it. Look at how changing one digit changes the value. Next, try to make the value of each expression as small as you can OR as close to 1 as you can.

3-D Shapes

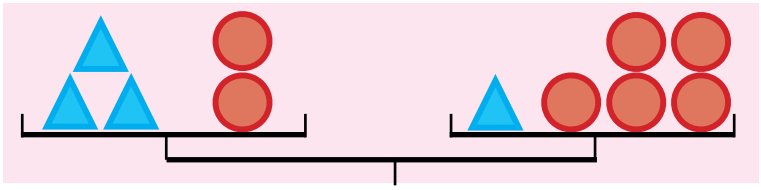
The weights of the triangles on the equal-arm balances are unknown. The weight of each marble (circle) is 5 grams. For each scale below, do the following:

1. Determine the triangle weight without using algebra.
2. Describe, in words, the steps you took to determine the triangle weight.
3. Write an equation to represent the scenario and solve the equation algebraically.
4. Explain how your description in words connects with your algebraic steps.

Scale A



Scale B



Patterns

Fill-in-the-blanks with numbers to establish a pattern rule: "Start at _____, then add _____ for the next new term."

1. Show your pattern in a **table of values**.
2. Plot the pattern as a set of points on a **graph** (term number, pattern value).
3. Establish a 2nd rule by changing **only** the start number. This could be a positive or negative integer. Create a new table of values. Plot the new set of points on the same graph with the pattern from the first rule.

Term Number	Pattern A	Pattern B	Pattern C
Start			
First term			
2			
3			

4. Establish a 3rd rule by changing **only** the number you add each time. This could be a positive or negative integer. Create a new table of values. Plot the new set of points on the same graph with the patterns from the first and the second rule.
5. What do you notice about the data in the tables and the graphs associated with the three rules?
6. Tell a story that matches each of the patterns you created. For example, "Start at 12, then add (-2) for the next new term," could represent "Starting with having $12 saved up and spending $2 each day."