

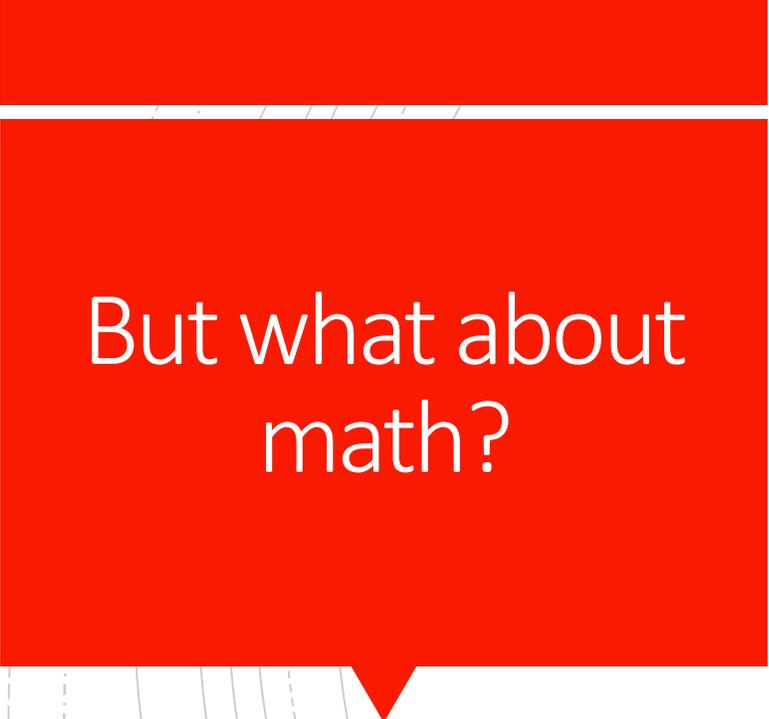
The background features a series of concentric circles in light gray, some solid and some dashed, creating a ripple effect. A large, solid red speech bubble shape is centered on the page, containing the title and author information.

The Global Competencies

Marian Small March, 2018

What are they?

- **The new BC and Alberta curricula include these ones:**
- **Communication**
- **Creative thinking**
- **Critical thinking**

A red speech bubble with a white outline, containing the text "But what about math?".

But what about
math?

- **What do they look like in
Grades 7 – 10 math?**

Critical thinking

- **Let's talk about critical thinking first.**
- **What is it?**

Definitions

- **Making judgments based on reasoning**
- **Considering options, analyzing and making judgments**

Example 1

- **Sam:** It is not possible to multiply two fractions and get a product with a smaller denominator than the ones you started with.
- **Kevin:** Yes, you can.
- **With whom do you agree?**

Example 2

- Describe a realistic real-life situation that can be represented by the equation $y = 50x + 400$.

Example 3

- Draw a picture that shows why $\frac{3}{5} + \frac{1}{3} = \frac{14}{15}$.

Example 4

- **Sometimes a discount of 10% is better than a discount of 50%.
How could that happen?**

Example 5

- **Calculating surface area is almost always more complicated than calculating volume.**
- **Do you agree or disagree? Explain.**

A red speech bubble graphic with a white outline, containing the text 'Analyze and critique'. The bubble has a tail pointing downwards and to the right.

Analyze and
critique

- **Consider purpose**
- **Focus on evidence**
- **Use criteria to draw conclusions**
- **Consider a variety of perspectives**

Example 1

- **Suppose $A = 30\%$ of B .**
- **1. $A = 60\%$ of $2B$.**
- **2. $2A = 30\%$ of $2B$.**
- **3. $A/2 = 15\%$ of B .**

Example 2

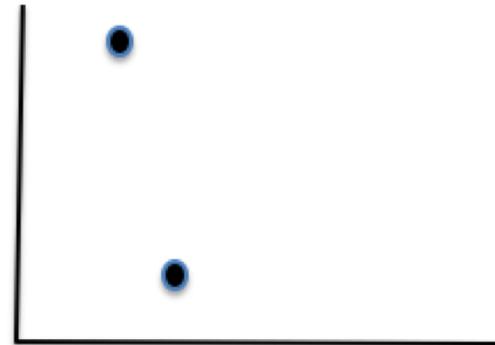
- You know that you can buy a 1.77 L container of laundry detergent for \$5.95. It does 38 loads of laundry.
- Calculate each of the following unit rates using this data. Decide which you think is more useful.

Example 2

- How many loads/1 L?
 - How many loads/\$1?
 - How many litres/\$1?
 - Cost/1L?
-
- Recall: 1.77L for 38 loads for \$5.95.

Example 3

- Provide some reasonable and some unreasonable equations for the line connecting these two points. Explain.



Example 4

- Which equation doesn't belong? Why?

$$3x - 4 = 2x - 7$$

$$6/x = -2$$

$$2x = -8$$

$$5x + 8 = -7$$

Example 5

- Which two of these are most alike and why ?

$$y = 3x^2 - 4$$

$$y = 3x^2 - 10$$

$$y = 2x^2 - 10$$

Example 6

- An exponential function is a LOT like $y = 2^x$.
- What might it be and how are the graphs related?

A red speech bubble graphic with a white outline, containing the text "Inquire and investigate".

Inquire and
investigate

- **Develop and refine questions**
- **Create plans to draw conclusions and gather evidence**
- **Draw reasoned conclusions**

Example 1

- **The problem is: An item that was 40% off cost the same as an item that was 20% off.**
- **How were the original prices related?**

Example 2

- Do equations with fractions in them usually have whole number solutions or fraction solutions?

Example 3

- **A length is four times the width** of a rectangle.
- What do you notice about the relationship between perimeter and width?
- Does what you notice **HAVE** to happen? Why or why not?

Example 4

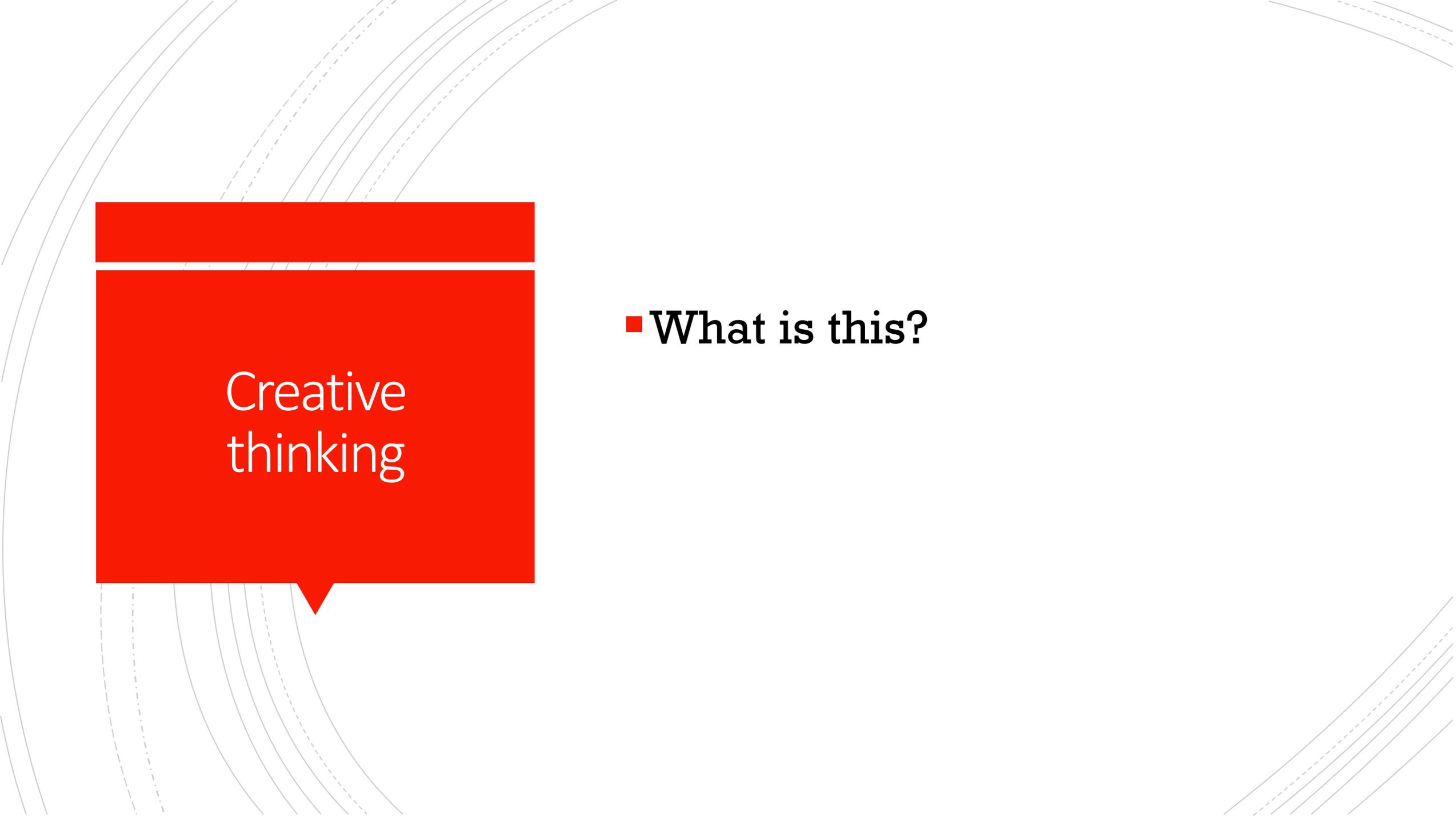
- I added some positive and negative integers using two-colour counters.
- There were five times as many negative counters as positive ones.
- What sums could I end up with?
- What sums could I not end up with?

Example 5

- The value that makes the most difference in the graph of $y = ax^2 + bx + c$ is a .
- Do you agree or disagree? Explain.

Let's try
together

- Choose one of these topics:
- Grade 7: area of trapezoids
- Grade 8: percents more than 100%
- Grade 9: rate of change
- Grade 10: trig
- Create two or three critical thinking questions.

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Creative
thinking

- **What is this?**

Novelty and
value

- **Either completely new or at least new to them or colleagues**

A red speech bubble graphic with a white outline, containing the text "Generate ideas".

Generate ideas

- **Creating fresh ideas**
- **Building on others' ideas**

Example

- What kind of picture could you draw that would help someone understand what $\sqrt{18}$ is?

Example

- Triangles have different names- isosceles, right, etc.
- If you were naming different kinds of trapezoids, what names would you use and why?

Example

- One of the ways to categorize fractions is whether they are proper or improper.
- Think of a more interesting way to categorize fractions.

Example

- What kind of “story” can you create that would make sense of why $1 - (-8)$ is $1 + 8$.

Let's create
some

- What might be a creative situation that students could use in these topics?
- Gr 7- constructing in geometry
- Gr 8- histograms
- Gr 9- polynomials
- Gr 10- Imperial vs metric conversions

A red speech bubble graphic with a white outline, containing the word "Communication" in white text. The bubble has a tail pointing downwards and to the left.

Communication

- **What is involved?**

A red speech bubble graphic with a white outline, containing the text "Connect and engage".

Connect and
engage

- **Interact with others by listening and speaking.**
- **Recognize different points of view and disagree respectfully.**

A red speech bubble graphic with a white outline, containing the text 'Present information'. The bubble has a tail pointing downwards and to the left.

Present
information

- **Inquire to gather information
and present it**

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Collaborate

- **To plan out and review activities, ideas, etc.**

A red speech bubble graphic with a white outline, containing the word "Reflect" in white text. The bubble has a tail pointing downwards and to the left.

Reflect

- **Reflect on experiences about what you learned**

It is NOT

- **About format**

Example 1

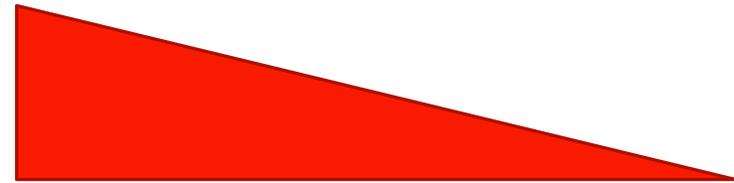
- **Explain what the inverse of a function really means and why it's useful.**

Example 2

- **Explain how it is possible for the volume of a cylinder to be exactly 100 cm^3 .**

Example 3

- What is the fewest number of measurements and what could they be that would allow you to calculate the perimeter of this triangle?



Example 4

- How are the strategies for factoring $x^2 + bx + c$ like the ones for factoring $ax^2 + bx + c$?