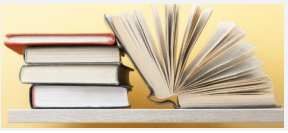
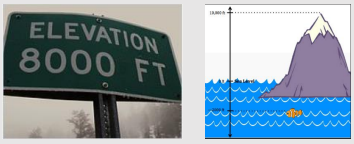
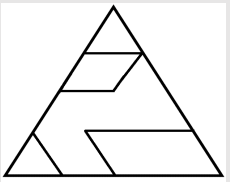
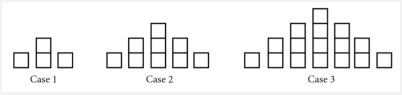
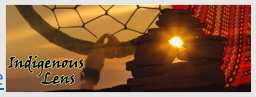
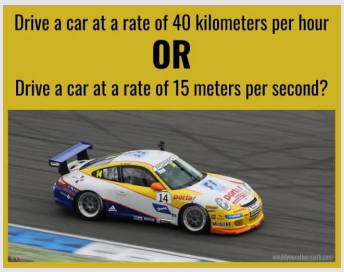
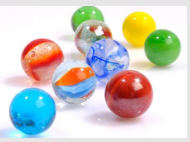
Math 7 -8 Activities- Menu B

Instructions: Each day, choose from the options below. Choose as many or as few as you have time for.

	Task 1	Task 2	Task 3
Estimation	**Esti-Mystery** How many triangular prisms are in the glass? Use the following link for clues to help you solve the problem! 	**Estimation 180** How long is the **entire roll** of toilet paper? 	**The Bookstore** A book costs $18.49. The salesperson tells you that the total price, including taxes, is $22.37. How can you tell if the total price is **reasonable** without using a calculator? 
Working with Numbers	**Elevation** a) What is the change in elevation from 8,500 m to 3,400 m? b) What is the change in elevation between 8,500 m and -300 m? 	**Best Value** a) You go shopping and notice that 25 kg of Ryan's Famous Potatoes cost $12.95, and 10 kg of Gillian's Potatoes cost $5.78. Which is the better deal? Justify your answer. b) A pack of 24 CDs costs $7.99. A pack of 50 CDs costs $10.45. What is the most economical way to purchase 130 CDs?	**Fraction Talk** What fraction of the large triangle is represented by each region? Do all your fractions add up to one whole? 
Activities / Puzzles	**Fraction Fitness** Get moving with some Fraction Fitness! Follow this link for some different exercises to try. 	**Squares upon Squares** How do you see the shapes growing?  youcubed®	**Picturing Square Numbers** The diagram shows that **1 + 3 + 5 + 7 = 16**  What is the sum of the first 30 odd numbers?
Problems	**The Road Trip**  Create a table of values and graph the relationship between distance and time for a car travelling at a constant speed of 40 km/h. For an Indigenous Lens click here 	**Would you Rather?** Whichever option you choose, justify your reasoning with mathematics. 	**Design Space** The Neuman Company is designing a new container for its marbles. The container must have a volume of 200cm^3. Sketch **three possible containers**, and explain which one you would recommend. 
Technology	**Integers – Representing, Comparing and Ordering** Student CLIPS Critical Learning Instructional Paths Supports in Mathematics mathies Activities	**Expression Mash-Up** Go to student.desmos.com and type in the code: desmos 5HB F26	**Math Is Visual –Understanding the Area of a Circle Conceptually** Go to: http://mathisvisual.com/area-circle/ Watch the video and follow along with the prompts.

Choice Board Background Information:

- ✓ Choice boards were created to provide flexibility in learning at home;
- ✓ Boards were planned for divisions: K-3, 4-6, 7-8 for open, individualized learning;
- ✓ Planned with recognition that parents may currently hold various roles at home;
- ✓ Designed to enhance the materials provided by the Ministry;
- ✓ Experiential learning focus with accessible materials at home;
- ✓ Low/No tech options;
- ✓ Accessible on mobile devices.

Choice Boards- Parents Can:

- ✓ Choose as many or as few learning opportunities as desired;
- ✓ Follow the days of the week or be flexible in using the choice boards;
- ✓ Be confident that the learning is based in curriculum;
- ✓ Engage other children in the home in common experiential learning (i.e. baking, reading, playing math games, being active together);
- ✓ Click on the links provided for further learning and sample questions to ask;
- ✓ Have fun!

UPPER CANADA District School Board

Explanatory Notes:
LEARN AT HOME CHOICE BOARDS FOR PARENTS AND EDUCATORS

Creating Futures, Leading and Learning for All

Choice Board Activities Provide:

- ✓ Clear connections to curriculum expectations and process skills;
- ✓ Open activities with options to individualize learning;
- ✓ Accessibility (many require little to no technology);
- ✓ Math – focus on numeracy skills;
- ✓ Literacy – focus on reading, writing, oral language and media literacy;
- ✓ French learning opportunities;
- ✓ Health and Physical Well-Being ;
- ✓ Opportunities to foster connections within the household;
- ✓ Focus on conversation and thinking.

Choice Boards- Teachers Can:

- ✓ Create classroom-based choice boards for students while they are learning at home;
- ✓ Incorporate ideas from the choice boards into teaching practices, daily and weekly planning;
- ✓ Explore and incorporate new resources into classroom learning;
- ✓ Engage students and families in virtually sharing learning with one another;
- ✓ Expand on activities in order to provide individualized learning opportunities;
- ✓ Incorporate other UCDSB resources (i.e. Math Tool, VLC, links) to extend student learning.

Esti-Mystery

https://stevewyborney.com/2019/09/51-esti-mysteries/

How many triangular prisms are in the glass?

Write down your first estimate. After each clue, you'll see if your estimate is still a possibility. After each clue, if it is no longer possible write down a new estimate.

Clues:

Clue #1

The number is less than 70.

Click here for your next clue!

Esti-Mystery

https://stevewyborney.com/2019/09/51-esti-mysteries/

How many triangular prisms are in the glass?

Write down your first estimate. After each clue, you'll see if your estimate is still a possibility. After each clue, if it is no longer possible write down a new estimate.

Clues:

Clue #2

The answer does not include the digits 1, 3, or 5.

Click here for your next clue!

Esti-Mystery

https://stevewyborney.com/2019/09/51-esti-mysteries/

How many triangular prisms are in the glass?

Write down your first estimate. After each clue, you'll see if your estimate is still a possibility. After each clue, if it is no longer possible write down a new estimate.

Clues:

Clue #3

The answer is an odd number.

Click here for your next clue!

Esti-Mystery

https://stevewyborney.com/2019/09/51-esti-mysteries/

How many triangular prisms are in the glass?

Write down your first estimate. After each clue, you'll see if your estimate is still a possibility. After each clue, if it is no longer possible write down a new estimate.

Clues:

Clue #4

The answer is a prime number.

Click here for the Answer!

Esti-Mystery

https://stevewyborney.com/2019/09/51-esti-mysteries/

How many triangular prisms are in the glass?

Write down your first estimate. After each clue, you'll see if your estimate is still a possibility. After each clue, if it is no longer possible write down a new estimate.

Clues:

The Answer!

47

triangular prisms

Estimation 180

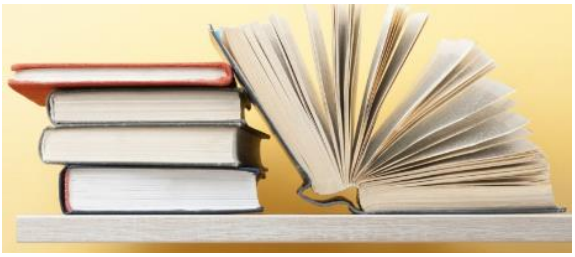
http://www.estimation180.com/day-30.html

How long is the entire roll of toilet paper?

Solution

The Bookstore

A book costs $18.49. The salesperson tells you that the total price, including taxes, is $22.37. How can you tell if the total price is **reasonable** without using a calculator?



Possible Solution

We know that sales tax is 13%. If the price of the book is $18.49, we can figure out that 10% of the price is ~ $1.85. When I add $1.85 to $18.49 the total is $20.34.

We still need to add 3% to the total price. We know that 5% of the price is half of $1.85 which is ~$0.93. When we add this to $20.34 the total is $21.27. Therefore, 3% will be slightly less than $0.93 so the total price of $22.37 is reasonable (or a little too high!)

Elevation

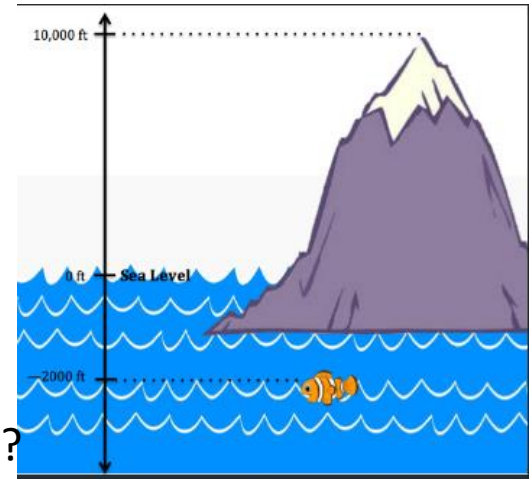
How much higher is 500 than 400 m?

How much higher is 500 than -400 m?

What is the change in elevation from 8,500 m to 3,400 m?

What is the change in elevation between 8,500 m and -300 m?

How much higher is -200 m than 450 m?

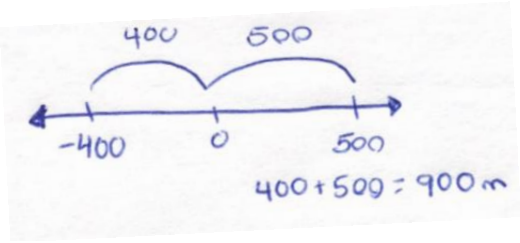


Source: https://openupresources.org/math-curriculum/

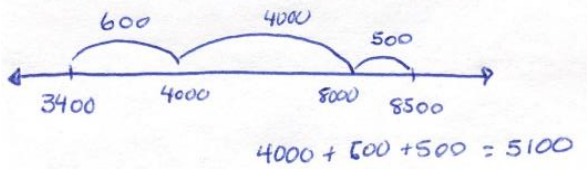
Solutions

How much higher is 500 than 400 m? **100m**

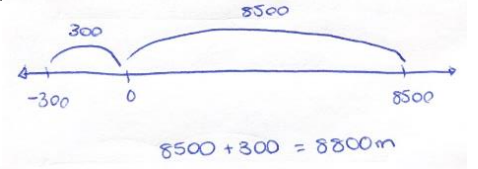
How much higher is 500 than -400 m? **900m**



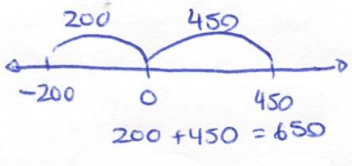
What is the change in elevation from 8,500 m to 3,400 m? **-5100m**



What is the change in elevation between 8,500 m and -300 m? **-8800m**



How much higher is -200 m than 450 m? **650m**



Best Value

a) You go shopping and notice that 25 kg of Ryan's Famous Potatoes cost $12.95, and 10 kg of Gillian's Potatoes cost $5.78. Which is the better deal? Justify your answer.

b) A pack of 24 CDs costs $7.99.
A pack of 50 CDs costs $10.45. What is the most economical way to purchase 130 CDs?

Solutions

a) You go shopping and notice that 25 kg of Ryan's Famous Potatoes cost $12.95, and 10 kg of Gillian's Potatoes cost $5.78. Which is the better deal? Justify your answer.

You can set up a ratio table to help answer this question.

Gillian's Potatoes

10 Kg	1 Kg
$5.78	$0.58

Ryan's Potatoes

25 Kg	×2 → 50 Kg	×2 → 100 Kg	÷100 → 1 Kg
$12.95	25.90	51.80	$0.52

Answer: Ryan's potatoes are a better deal.

b) A pack of 24 CDs costs $7.99. A pack of 50 CDs costs $10.45. What is the most economical way to purchase 130 CDs?

You can set up a ratio table to help answer this question.

Pack of 24 CDs

24	48	96	96+48 = 144
$7.99	$15.98	31.96	15.98+31.96 = $47.94

Pack of 50 CDs

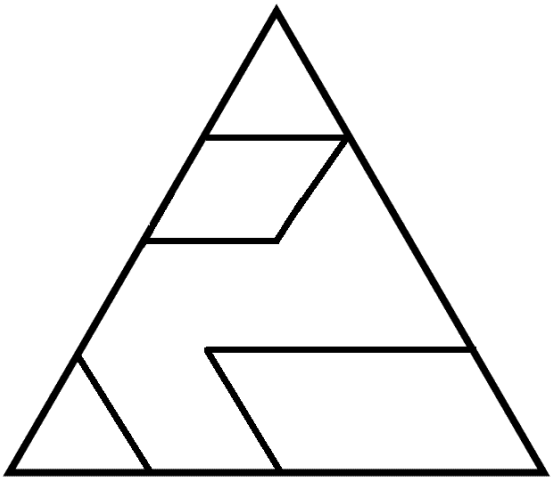
50	100	100+50 = 150
$10.45	$20.90	10.45+20.90 = $31.35

Answer: Buying 3 packs of 50 CDs is most economical.

Fraction Talk

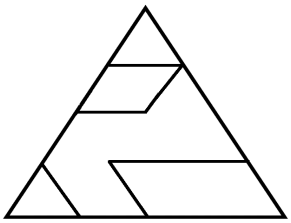
What fraction of the large triangle is represented by each region?

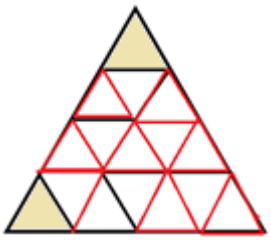
Do all your fractions add up to one whole?



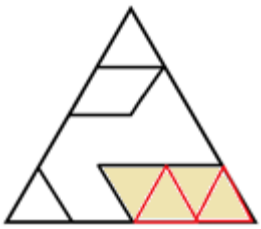
(Source: http://fractiontalks.com/)

Solution

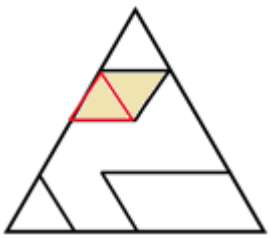




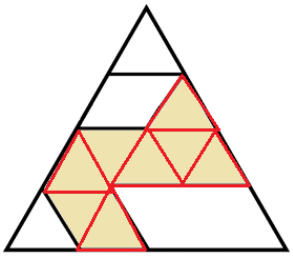
Divide the entire shape into the smallest shape (triangle). Each triangle represents 1/16.
There are two small triangles in the original shape, so 2/16 or 1/8.



The large parallelogram covers 4/16 or 1/4



The small parallelogram covers 2/16 or 1/8



The remaining space covers 8/16 or 1/2

Check: 2/16 + 4/16 + 2/16 + 8/16 = 16/16 = 1 whole

Fraction Fitness

FRACTION FITNESS

Directions: Complete each exercise the indicated number of times based on the fraction of each number given.

$\frac{1}{5}$ of 100

Jumping Jacks

$1\frac{1}{3} + 2\frac{4}{6}$

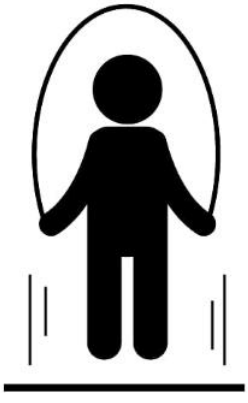
Jogging Laps

$\frac{1}{3}$ of 30

Curl-Ups

$\frac{100}{5}$

Squats



FRACTION FITNESS

Directions: Complete each exercise the indicated number of times based on the fraction of each number given.

$\frac{1430}{65}$

Planks

$3\frac{1}{3} + 8\frac{4}{6}$

Push-Ups

$\frac{17}{3} \times \frac{6}{2}$

Leg Lifts

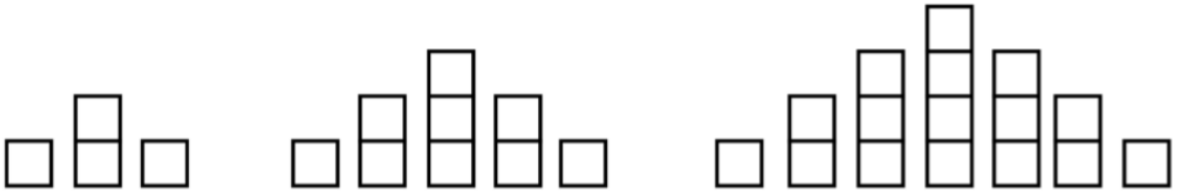
Both Legs!

$\frac{49}{7} - \frac{14}{7}$

Skipping Laps

Squares upon Squares

How do you see the shapes growing?



In case 2 there are more cubes than in case 1, and in case 3 there are more cubes again, where do you see the extra cubes? There are many different ways to answer this question as people see the shapes in lots of different ways. Draw this image on a piece of paper and use colouring pencils to show how you see the shapes growing. Try to imagine it growing in more than one way.

Predict what the next shape might look like.

Create a table of values that shows the case number and the number of squares.

Predict the number of squares in Case 10.

Extension:

Come up with algebraic expressions that match the different visual ways of seeing the pattern grow.

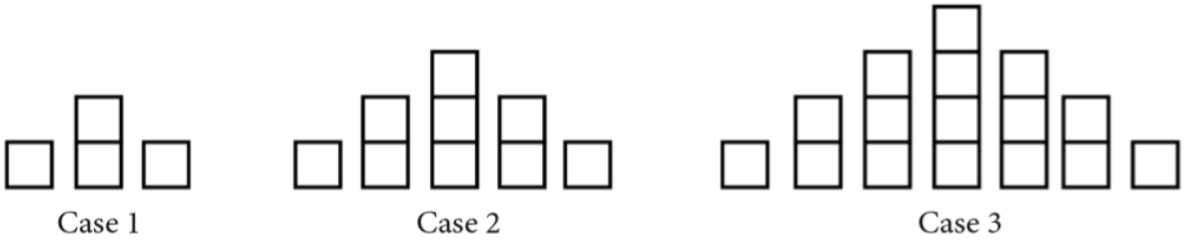
youcubed®

Check your solutions here!

Source:https://www.youcubed.org/tasks/squares-upon-squares/

Squares upon Squares

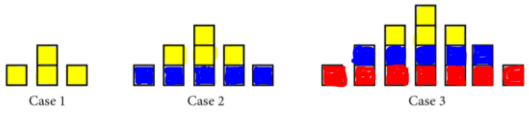
How do you see the shapes growing?

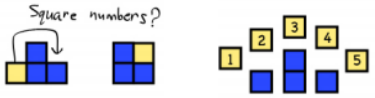


Possible Solutions

How do you see the shapes growing?

There are many different ways to answer this question as people see the shapes in lots of different ways.





Predict what the next shape might look like.

Create a table of values.

case #	squares	
1	4	
2	9	+5
3	16	+7
4	25	+9

Predict the number of squares in Case 10. **($11^2 = 121$)**

Extension:

Come up with algebraic expressions that match the different visual ways of seeing the pattern grow.

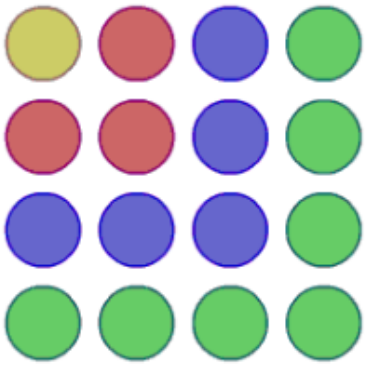
General expression: $(case\# + 1)^2$ OR $(n+1)^2$

youcubed®

Source:https://www.youcubed.org/tasks/squares-upon-squares/

Picturing Square Numbers

The diagram shows that $1 + 3 + 5 + 7 = 16$



Getting started:
How could you describe the squares that are formed?

What is the sum of the first 30 odd numbers?

What is the sum of the first 60 odd numbers?

Can you describe a method for working these out quickly?

Can you make 3249 by adding odd numbers in this way?

Challenge questions:

What is the value of:

$1+3+...+149+151+153$?

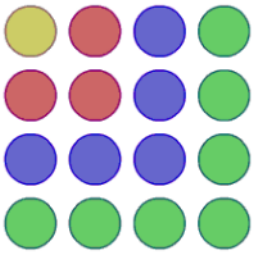
Check your solutions here!

$51+53+55+...+149+151+153$?

Explain how you worked these out.

Picturing Square Numbers

Solution



The diagram shows that the sum of the first 4 odd numbers is 16 because there are 4 rows and 4 columns of counters (or 4x4).

What is the sum of the first 30 odd numbers?
The sum of the first 30 odd numbers would be 30×30 (or 30^2)=900.

What is the sum of the first 60 odd numbers?
For the sum of the first 60 odd numbers there are 60 rows and 60 columns.
So, 60×60 (or 60^2) = 3600.

Can you describe a method for working these out quickly?
If you want the sum of the first *n* odd numbers the answer would be *n x n* or n^2

Can you make 3249 by adding odd numbers in this way?
Yes. 57 x 57 = 3249 (found by trial and error or by square rooting 3249)

Challenge questions:
What is the value of: 1+3+...+149+151+153?

153 is the 77th odd number. (Add one (to get 154) and then divided the answer by 2.)
For the sum of the first 77 odd numbers there are 77 rows and 77 columns.
Therefore, the sum of the first 77 odd numbers is 77×77 which is 5929.

Challenge questions:
What is the value of: 51+53+55+...+149+151+153?

To find 51+53+55+...+149+151+153 use the answer from the previous question which was 5929. As we were starting at 51 this time and not 1, first find the sum of all the odd numbers from 1 up to 49. 49 is the 25th odd number (by adding 1 to 49 and then dividing the answer by 2) So the sum of the odd numbers from 1 to 49 is 25 squared which is 625.
Therefore, 625 away from 5929 to give an answer of 5304.

The Road Trip

Create a table of values and graph the relationship between distance and time for a car travelling at a constant speed of 40 km/h.

At that speed, how far would the car travel in 3.5h? How many hours would it take to travel 220 km?

Solution

Time (hours)	Distance (km)
0	0
1	40
2	80
3	120
4	160

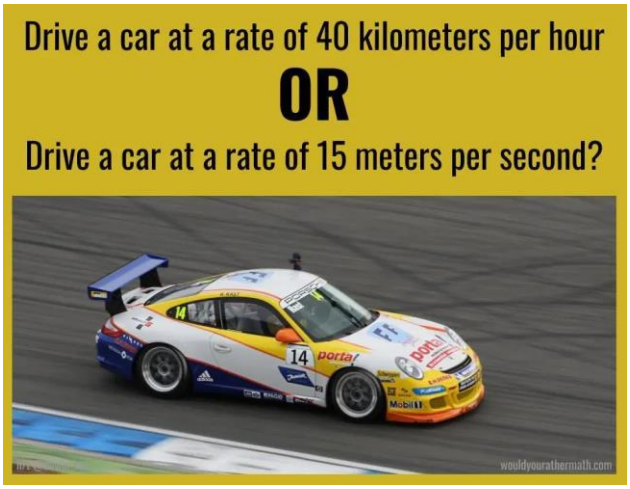
Using the table of values, at 3.5hours the car will travel half way between 120 and 160, or 140km.

Time (hours)	Distance (km)
0	0
1	40
2	80
3	120
4	160
5	200
5.5	220

By extending the table, it would take 5.5h to drive 220km.

Would You Rather

Whichever option you choose, justify your reasoning with mathematics **without using google or a calculator**.

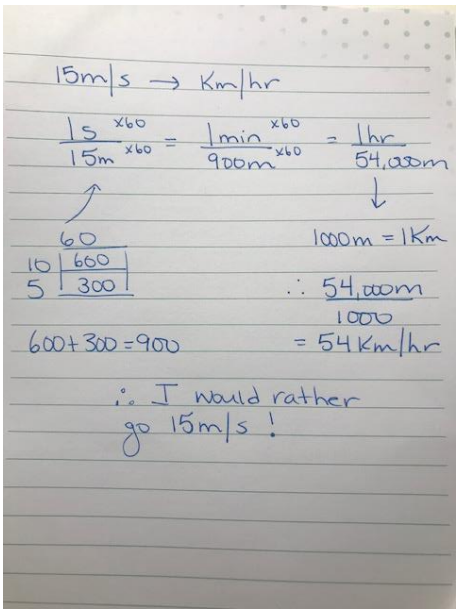


Possible Solutions

Given: 40km/h or 15m/s

You can set up a ratio table to help answer this question.

Possible answer:



(Source: https://www.wouldyourathermath.com/)

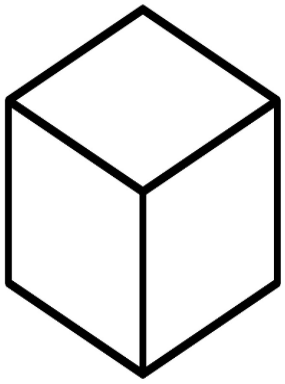
Design Space

The Neuman Company is designing a new container for its marbles. The container must have a volume of 200cm^3.

Sketch **three possible containers**, and explain which one you would recommend.

Possible Solutions

One possible solution would be a rectangular prism with dimensions: 8cm x 5cm x 5cm.

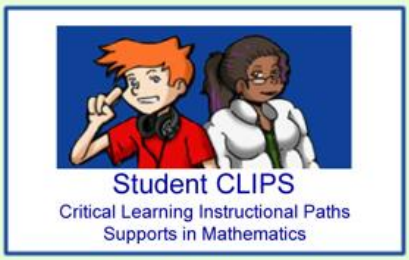


You could have any combination of numbers that multiply to 200cm^3. (ie. 4cmx5cmx10cm)

JUSTIFY which container you would choose.

Challenge: Sketch a container that IS NOT a rectangular prism that has a volume of 200cm^3.

Integers – Representing, Comparing and Ordering



Visit: https://mathies.ca/activities.html

Under the heading “Integers – Representing, Comparing and Ordering” select “Using Integers to Describe Location”

Work through the activities listed.

- 1.1 Mathotel
- 1.2 Identifying Locations Relative to Zero
- 1.3 Integer Number Lines
- 1.4 Integer Adventure Contest
- 1.5 Integer Drop Ball
- 1.6 Show What You Know

•The modern conveniences of travel enable us to move from place to place more easily and quickly. The Haida were renowned for their mastery of the sea. Estimate how long it would take for Haida War Party to travel south to what is now known as Vancouver.

•Watch the attached video to learn more about Haida Canoes and Bentwood Boxes.