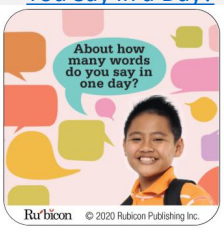
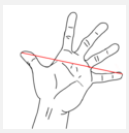
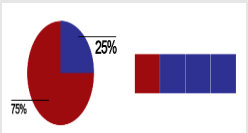
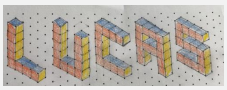
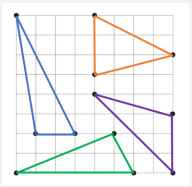
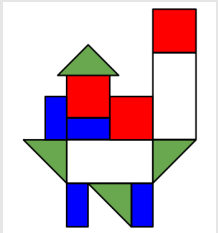
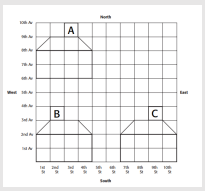
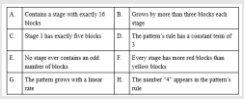
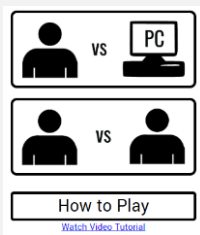
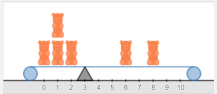
Math 4 - 6 Activities Menu M

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

Curriculum Connections

Creating Futures, Leading and Learning for All

	A	B	C	D	E
Estimation	Chair Height? 	Kilometre Walk 	How Many Words Do You Say in a Day? 	Missing Scale 	All activities in this column are based on a ***Virtual Field Trip with the NBA.*** Explore this first link and then complete the other activities. ➢ Careers That Count: A Virtual Field Trip with the NBA ➢ Circumference of an NBA Game Ball  ➢ Where is the Math in Basketball?  ➢ Handspan Comparison  ➢ 3-on-3 Basketball Tournament 
Talking about Math	Which Time is Least Like the Others? 	What's My Number? 	Which Chocolate Bar? 	Same But Different 	
Activities / Games	Write your name in cubes 	DOts & TriAngles 	Play 31 	Mixing Problems 	
Problems	Area Mystery 	How Many Ways 	Same Probability? Colour of cube / Number of cubes in Isaac's jar / Number of cubes in Presley's jar Red 6 2 Blue 6 3 Green 5 3 Purple 3 2	Menu Math Growing Patterns 	
Technology	MathemaTic – Tac -Toe 	Balance Bears 	Factor Game 	Sudo-Clue 	

Please click on this icon, wherever you see it, to access Indigenous content.

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.

Welcome to your virtual field trip with the NBA! During this activity, you will not only be **participating** in the activity, but you will be **reflecting** on this learning and **applying** this new learning to your personal learning journey.

Participate:
Follow Miles Brown as he interviews various staff and players of the NBA.
Learn how math is used in a variety of basketball careers.
Click here or the image below to begin your virtual field trip!
(You may need to scroll down the site until you see the image below.)

Next Virtual Field Trip Activity

Estimating Circumference

Circumference is a ***measurement*** of the ***distance around the outside of a circle*** or ***round object.***

Basketball players in the **NBA** use a **size 7 official game ball** as shown below:

Estimate the circumference (in cm) of an official NBA basketball.

	Too Low	Just About Right	Too High
Estimate			
Reasoning			

The actual circumference of an official NBA basketball is seventy-five centimetres.

Next Virtual Field Trip Activity

Where is the Math in Basketball?

During each basketball game in the NBA and WNBA, **statisticians** are busily **gathering data**. These **statistics** are used by the players and coaching staff **to inform** and **help make better decisions** for future game play.

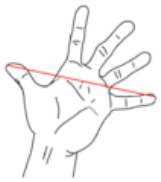
Click here to learn **how Rondae-Hollis Jefferson** (now playing for the Toronto Raptors) **uses math in his game play**. **You may need to scroll down the site until you see the image below for viewing:**

How was math used to determine Rondae's PPS (Points per Shot**) average** for the **ten shots** he took?
Imagine Rondae was to take 10 new shots. **How many 2-Pointers** and **3-Pointers might he have this time**. **Record your ideas in the table below:**

Attempted	2-Pointers	3-Pointers	PPS (Points per shot average)
10	?	?	?

How did you ***calculate the new PPS*** (points per shot) **average**?
In your opinion would it be better to make more 2-point shots successfully or take 3-point shots with hopes of scoring on some of the shots? Explain your thinking to a family member.

Next Virtual Field Trip Activity



Handspan Comparisons

Estimate your **handspan** in **centimetres** *(your **handspan** is the **distance between the outstretched tips of the little finger and thumb**).*

What strategies or **benchmarks** can you apply in order to reach a **reasonable estimate**?

Investigate and **record** your **information in the table** below:

My handspan estimate (in cm)	My actual handspan (in cm)	Difference between my actual handspan and estimate

Did You Know…?

Some professional basketball players such as ***Shaquille O'Neal*** and ***Giannis Antetokounmpo*** have a ***handspan*** of ***twelve inches!***

Let's investigate and ***determine how many centimetres their handspans measure.***

If 1 inch = 2.54 centimetres
Then 12 inches = ? centimetres

Hmmm….let's compare your handspan to a professional basketball player!

My handspan (in cm)	Shaquille O'Neal and Giannas Antetokounmpo's handspan (12 inches = ? cm)	Difference between my handspan and a professional basketball player:

Wow!!! About how many times larger is their handspan than yours?

Next Virtual Field Trip Activity

Imagine you are **organizing a 3-on-3 basketball tournament**.

In this unique tournament, your team is allowed 6 players, yet only 3 players can be on the court at any given time.

How many different combinations of 3 players on the basketball court can there be with the 6 players on your team?

Solution: 20 combinations

Next virtual field trip activity

Thank you for participating in the NBA Virtual Field Trip!

Now that you have experienced components of the NBA and related careers, let's take some time to **reflect** upon what you have learned and **apply** your learning in the activities below:

Reflect:

After listening to Miles and his guests, how is math that you are learning about in school being used in sport?

From participating in this field trip, how do "metrics," and gathering data help make decisions? In what ways could you collect data to make informed choices in your life?

Apply:

It's your turn to analyze NBA data and determine who should take the free throw? Click here or the image below for the link and explore NBA Problem 1.

How has today's field trip influenced your understanding of how math is used in sport? Has it sparked an interest in a future career with math? What goals do you need to set for yourself?

Estimation Task A

https://donsteward.blogspot.com/search/label/estimation

	About how tall is the chair?		
	Too Low	Just Right	Too High
Estimate			
Reasoning			

If you found out the person was 165 cm tall, how would this change your estimate?

Summer Walks

With the warmer weather upon us, it is a wonderful time to join your family for a summer walk!
On average, how much time would you estimate it takes someone to walk 1 kilometre?
What strategies could you apply to support a good estimate?
What estimate would be too high? Too low? Just about right?

Once you unlock the mystery of how long (on average) it takes to walk 1 km, solve the following:

- ❑ How many kilometres would you expect to walk in 1 hour?
- ❑ If a family wanted to follow an 8 km nature path, about how long should they plan for their walk?

Click here for more information:
https://www.mathsisfun.com/definitions/kilometre-kilometer.html

Estimation Task C

https://twitter.com/rubiconpubs/status/1268584052644360192?s=20

SAMPLE RESPONSE

Sample Strategy

Students might estimate how many minutes of a day they spend talking, and then multiply that number by the number of words they say per minute when they talk.

E.g., I sleep for about 10 hours every night, so I'm awake for about 24 − 10 = 14 hours every day. I probably talk for just a little bit of every hour — about 5 minutes, maybe, so I might talk for 5 × 14 = 70 minutes a day. I think that when I talk I say about 100 words in a minute because I talked for a minute and had a friend tally how many words I said. I might say 70 × 100 = 7000 words a day.

ADDITIONAL SUPPORT

How You Could Handle This

Some understanding of the following may help students achieve success:
- hours in a day

To get a sense of how many words they say in one minute, students may choose to time themselves reading for a minute or have a friend tally the number of words they say as they talk.

What Could You Do If ...

Students do not have a strategy to estimate how many minutes they spend talking in a day.
You could ... Suggest that students divide their waking day into categories, such as school, time with friends or family, and quiet time, then think about whether they talk half the time, most of the time, or only a little bit of the time for each category.

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Missing Scale

Adapted from: EQAO Grade 6 Prior Assessment 2012-2016

Math students know that **every graph needs:**

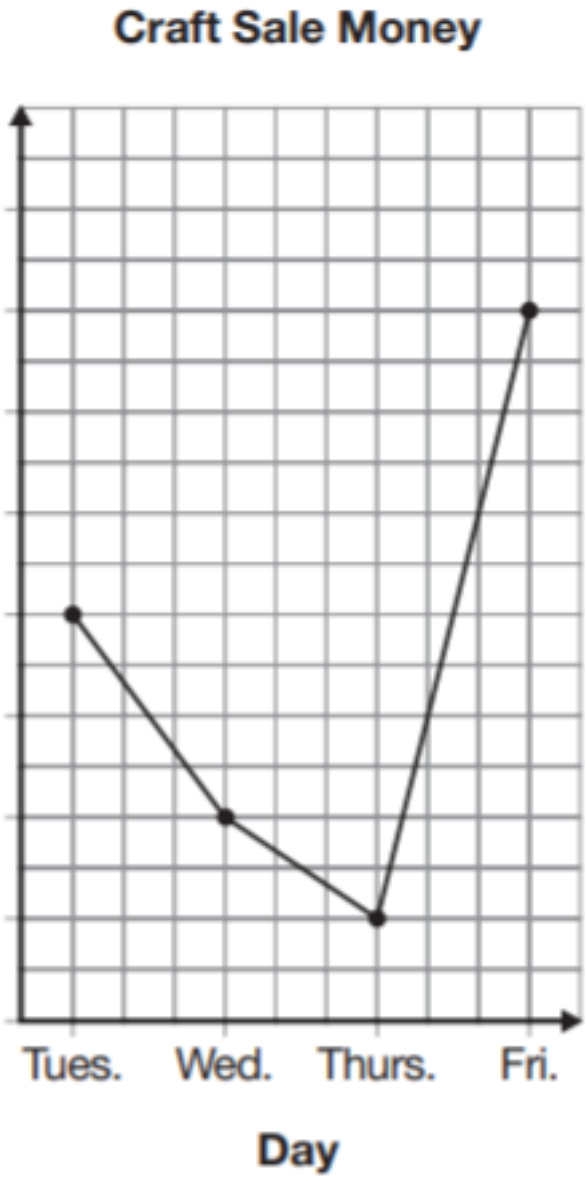
- ❑ a **title**
- ❑ a **label on each axis** and
- ❑ a **clearly marked scale**.

What do you notice is missing on this graph?

If the **y-axis** is "**Money Earned ($)",**

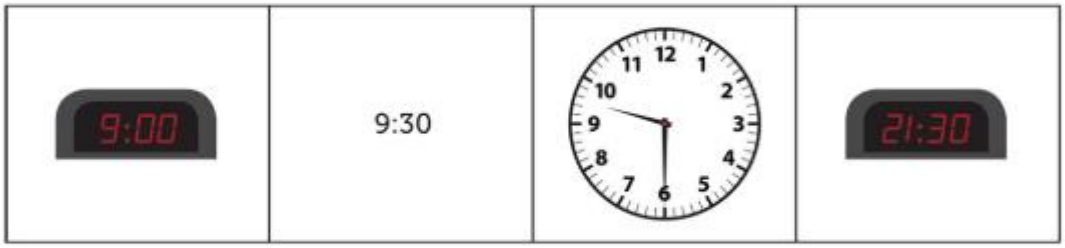
- ➢ **what would be an appropriate scale?**
- ➢ **What would be an unreasonable scale? Explain your reasoning to a family member.**

Using your scale, what would be the range in money earned ? Hint: The range is the difference between the lowest value and the highest value of money earned.



Talking About the Math Task A

Q Which time do you think is the least like the others? Explain your thinking.



A friend picked a different time. Which might they have picked and what would their explanation be?

Can you find a reason for each one of the times?

https://twitter.com/rubiconpubs/status/1265680594484301825?s=20

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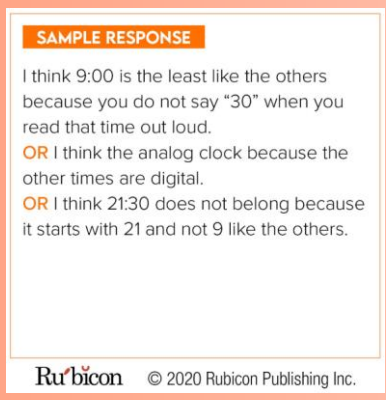
SAMPLE RESPONSE

I think 9:00 is the least like the others because you do not say "30" when you read that time out loud.
OR I think the analog clock because the other times are digital.
OR I think 21:30 does not belong because it starts with 21 and not 9 like the others.

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Sample response provided by
Rubicon Publishing and Marian Small

Problem of the Week

Problem A

What's My Number?

I am a 3-digit even number.

The sum of my three digits is 20.

I am greater than 40×10.

I am less than $1000 \div 2$.

What number am I?

Throughout the summer create your own "What's my Number," for family and friends to solve!

Click here for solution

Source: https://www.cemc.uwaterloo.ca/resources/potw/2019-20/English/POTWA-19-NN-27-P.pdf

Bar Graphs and Chocolate

https://donsteward.blogspot.com/search/label/bar%20charts
From Arthur Buxton

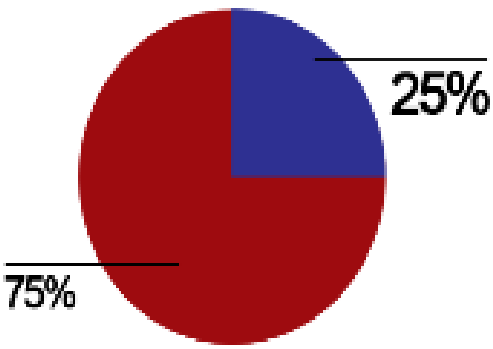
The colours used in the wrappings and the proportions of their use are shown in a kind of percentage bar chart.

Which product goes with which graph? How do you know?

Same but Different

What do you notice about the two images below?
How are they the same?
How are they different?

In what other ways could the images be labeled using a fraction? A decimal?



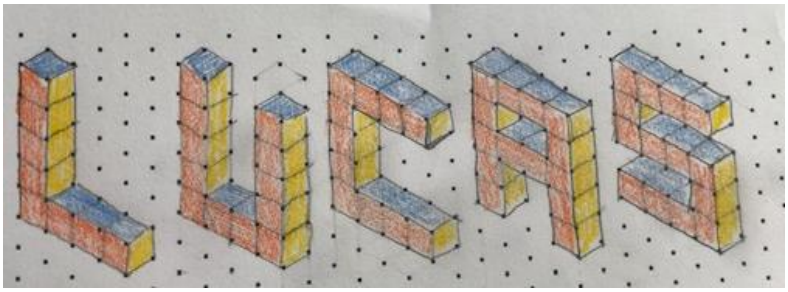
Source: https://www.samebutdifferentmath.com/fractions-ratios-percentage

Write Your Name in 3D

Use Isometric dot paper (found on next page) to write your name in 3D.

Try using this online tool to help you.

Challenge: Can you draw the top, front and side views of your name? See the example below. We coloured the different faces of our isometric cubes to help us see the shape easier.



Front View

Side View

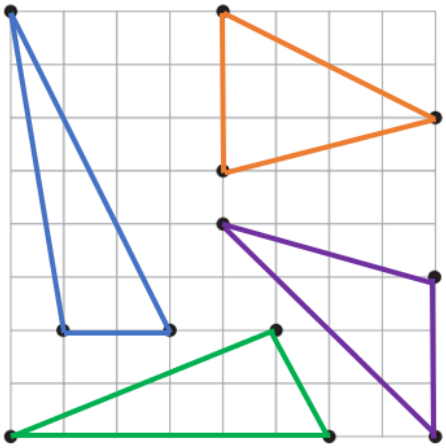
Top View

DOts & TriAngles

Area and spatial reasoning puzzles

By Think Square

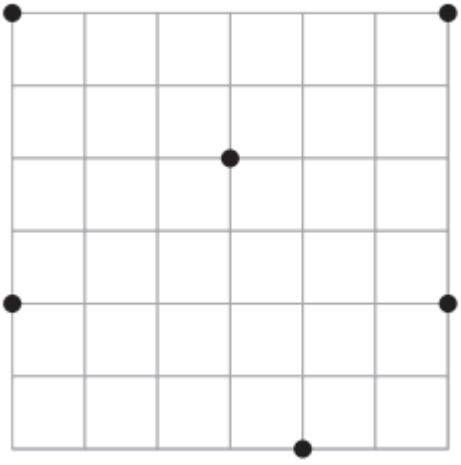
Example:



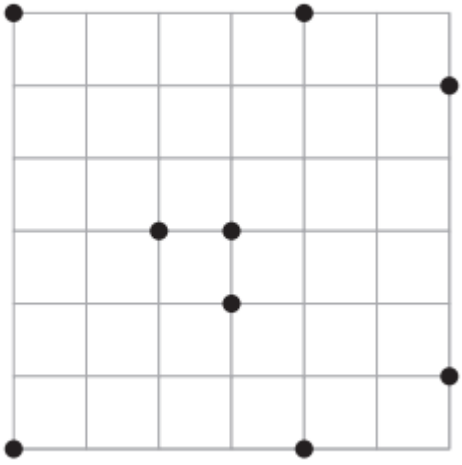
Join groups of three dots (vertices) to create triangles which all have an area of 6 square units. Triangles may not overlap or share dots with another triangle.

Think about it:
What measurements do you need to find the area of a triangle?
What strategy are you going to use to try and solve the puzzle?
Did your strategy stay the same the whole time you tried to solve the puzzle?
What might you try on the next puzzle?

Rookie #001



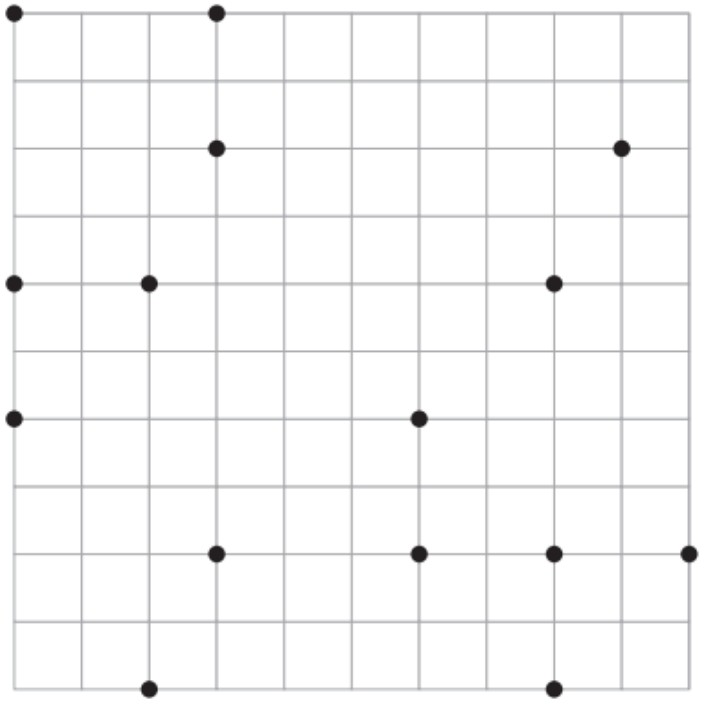
Rookie #002



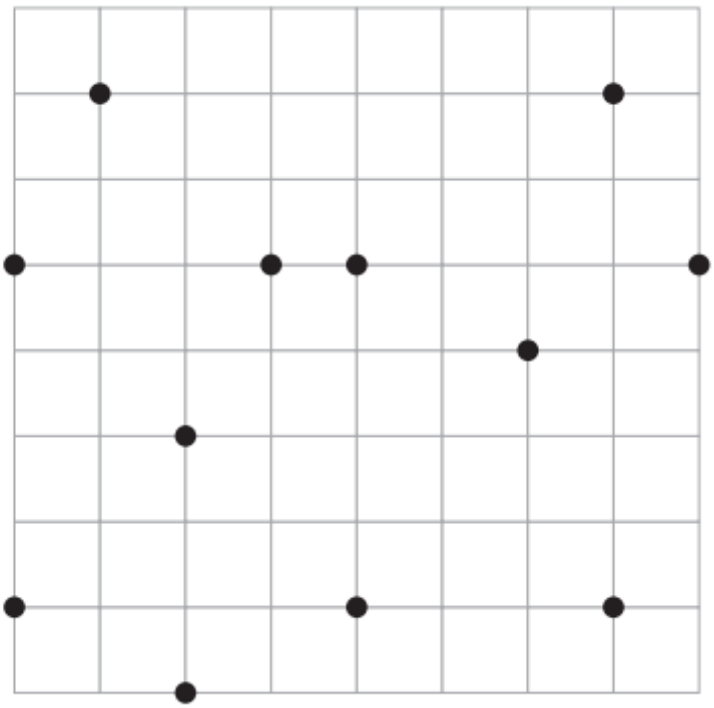
More Puzzles on Next Page

Dots and Triangle Puzzles Continued

DOts & TriΔngles
Moderate #001



DOts & TriΔngles
Easy #001



Thirty - One

Required Materials:

- ❑ A deck of 52 cards
- ❑ 2 or more player

Goal: Have a score of 31, or as close to 31, when the hand ends.

Scoring:

If totaling your cards, they must be of the same suit.

- All numbered cards are worth the value of their number
- Aces are 11
- Faces cards are worth 10

If you have 3 of a kind, your score is 30.5

Instructions:

1. Deal 3 cards to each player.
2. Flip over one card to start the discard pile.
3. Player to the left of the dealer starts and play continues clockwise.
4. On your turn you either:
    - Pick up a card from the draw pile and discard a card.
    - Pick up the top card from the discard pile and discard a card or
    - Knock (knock the table and saying "I'm knocking"). This informs all other players that you think you have the best hand and they get one last turn.
5. If you make 31 on your turn, you immediately call 31, turn your hand over and the game is over.

Mixing Problems

Inspired by and adapted from
https://momath.org/wp-content/uploads/2017/07/Color-Combos.pdf

Problem 1:

Which combination would give the bluest green using? (using the following drops of food colouring).

Mix A	Mix B	Mix C	Mix D
3 drops yellow 2 drops blue	9 drops yellow 5 drops blue	2 drops yellow 1 drop blue	5 drops yellow 3 drops blue

How do you know?

Do you have food colouring at home? Try it out to verify your answer. Gather 4 small clear glasses or dishes and fill them with an equal amount of water. In each glass, put the drops of food colouring into each glass.

Problem 2:

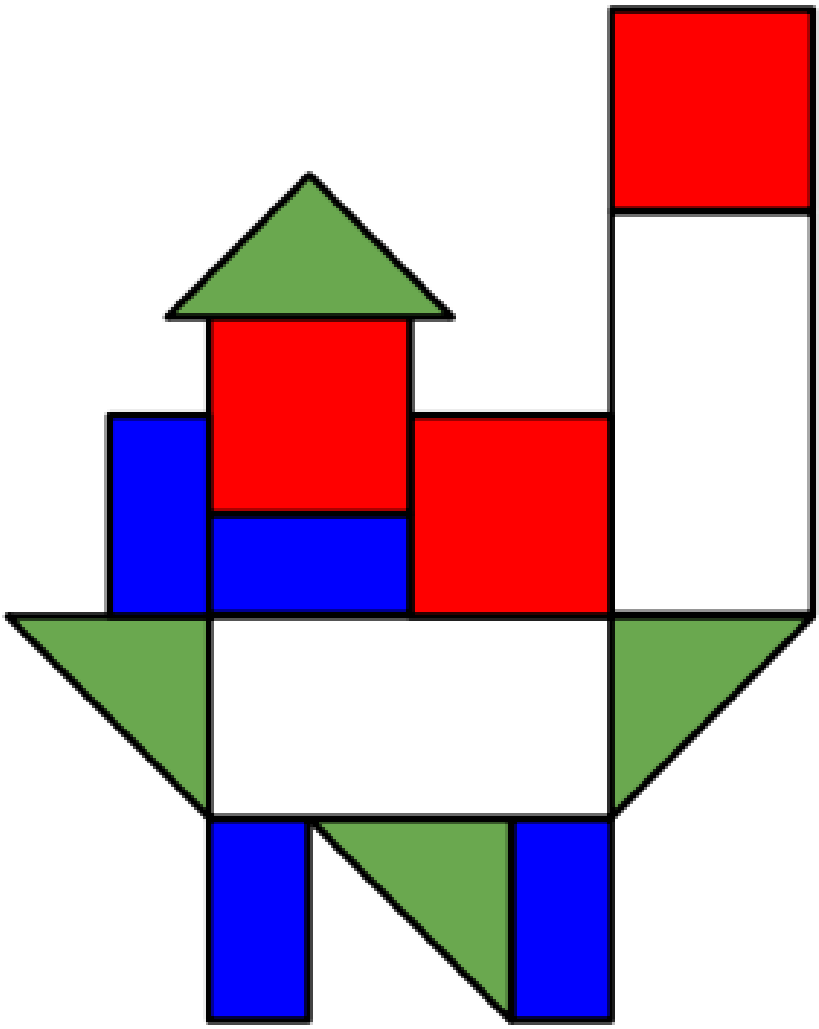
You add 3 drops of blue and 9 drops of red colouring to a glass. Which combination of drops would give the same hue of purple? Justify your answer. If you have food colouring, try it out to verify your solution.

Mix A	Mix B	Mix C	Mix D
1 drop blue 3 drops red	2 drops blue 8 drops red	6 drops blue 18 drops red	4 drops blue 12 drops red

Area Mystery

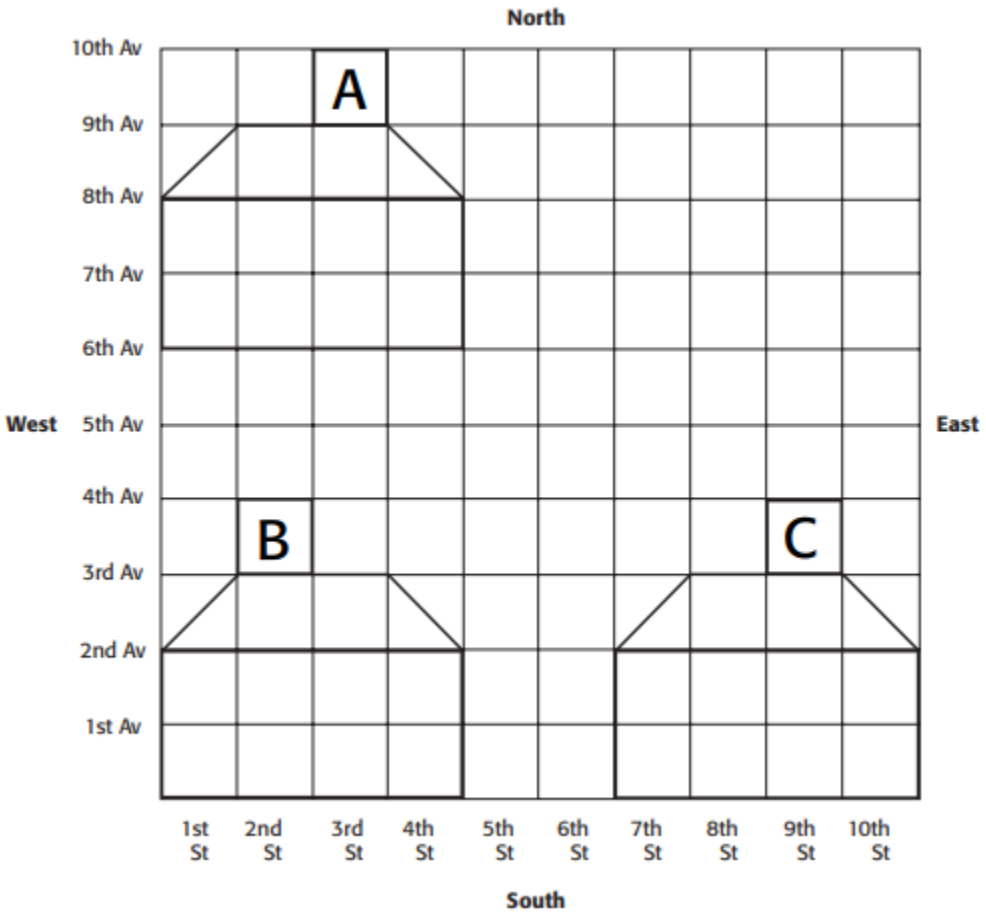
https://www.cemc.uwaterloo.ca/resources/potw-strands/2018-19/English/POTWA-18-Combined3-4.pdf
Page 36

The following image was formed by arranging various rectangles, squares, and triangles. The parts of the image with the same shape and shading have the same dimensions. For example, the rectangles that are filled have identical widths and lengths. The rectangles that are not filled have identical widths and lengths. The dimensions of the filled rectangles are different than the dimensions of the rectangles that are not filled. The filled squares each have an area of 4 cm^2 . Determine the area of the whole image. Justify your answer.



How Many Ways

[Guide to Effective Instruction: Geometry and Spatial Sense page 177]



List all the ways in which you can move the house from:

- ❑ Position A to Position B
- ❑ Position B to Position C
- ❑ Position A to Position C

Same Probability?

Isaac and Presley each have a jar of coloured cubes.
The contents of their jars are shown in the table below:

Colour of cube	Number of cubes in Isaac's jar	Number of cubes in Presley's jar
Red	6	2
Blue	6	3
Green	5	3
Purple	3	2

What colour of cube has the same probability of being chosen from Isaac's jar as from Presley's jar?

How do you know?

Hint:
How many cubes are in Isaac's jar altogether?
What fraction of cubes in Isaac's jar are Red? Blue? Green? Purple?

How many cubes are in Presley's jar altogether?
What fraction of cubes in Presley's jar are Red? Blue? Green? Purple?

Which fraction in Isaac's jar is equivalent to a fraction in Presley's jar?
What coloured cube would this be?

Adapted from: EQAO Grade 6 Prior Assessment 2012-2016

Growing Patterns Menu Task:

Created by: Heather Theijsmeijer.
Collected at: natbanting.com/menu-math & lapageadage.com/menu-math

Build as *few* growing patterns as possible to satisfy each constraint at least once.
You can only use red and yellow blocks.
Please show three stages of each pattern.

A.	Contains a stage with exactly 16 blocks	B.	Grows by more than three blocks each stage
C.	Stage 1 has exactly five blocks	D.	The pattern's rule has a constant term of 3
E.	No stage ever contains an odd number of blocks	F.	Every stage has more red blocks than yellow blocks
G.	The pattern grows with a linear rate	H.	The number "4" appears in the pattern's rule

Which constraints pair nicely?

Which constraints cannot be paired?

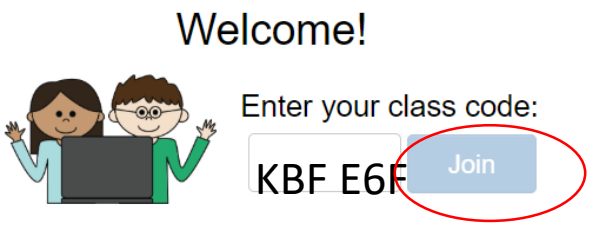
Is it possible to solve in 2, 3, or 4 growing patterns?

Describe how and why you built each growing pattern.

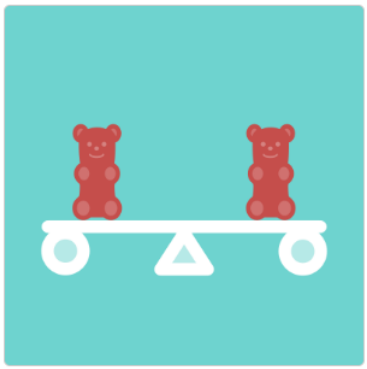
Be sure to identify which growing patterns satisfy which constraints.

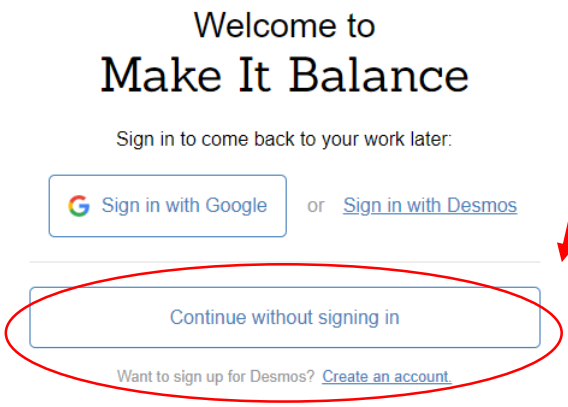
Explore the potential of Menu Math.
More information, including the inspiration behind the tasks, can be found at Nat Bantings website http://natbanting.com/menu-math/

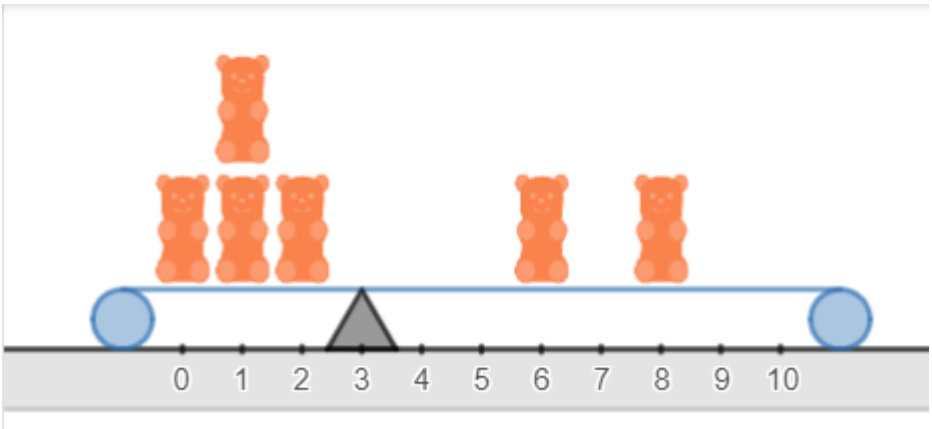
Balance Bears



1. Go to http://www.student.desmos.com
2. Type in this code KBF E6F
3. Click on join
4. When prompted to sign in click continue without signing in.
   HOWEVER: if you want to go back and see your work later, you can create an account with your parents permission.







Grades 4 – 6: Curriculum Continuum

Note: highlighted expectations are addressed in this menu

	Grade 4	Grade 5	Grade 6
Process Skills	❑ Problem Solving ❑ Reasoning and Proving ❑ Reflecting	❑ Selecting Tools and Computational Strategies ❑ Connecting	❑ Representing ❑ Communicating
Number Sense and Numeration	❒ read, represent, compare, and order whole numbers to 10 000, decimal numbers to tenths, and simple fractions, and represent money amounts to $100 ❒ demonstrate an understanding of magnitude by counting forward and backwards by 0.1 and by fractional amounts ❒ solve problems involving the addition, subtraction, multiplication, and division of single-and multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to tenths and money amounts, using a variety of strategies ❑ demonstrate an understanding of proportional reasoning by investigating whole-number unit rates	❒ read, represent, compare, and order whole numbers to 100 000, decimal numbers to hundredths, proper and improper fractions, andmixed numbers ❒ demonstrate an understanding of magnitude by counting forward and backwards by 0.01 ❒ solve problems involving the multiplication and division of multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to hundredths, using a variety of strategies; ❒ demonstrate an understanding of proportional reasoning by investigating whole-number rates.	❒ read, represent, compare, and order whole numbers to 1 000 000, decimal numbers to thousandths, proper and improper fractions, and mixed numbers ❒ solve problems involving the multiplication and division of whole numbers, and the addition and subtraction of decimal numbers to thousandths, using a variety of strategies ❒ demonstrate an understanding of relationships involving percent, ratio, and unit rate
Patterning and Algebra	❑ describe, extend, and create a variety of numeric and geometric patterns, make predictions related to the patterns, and investigate repeating patterns involving reflections; ❑ demonstrate an understanding of equality between pairs of expressions, using addition, subtraction, and multiplication	❑ determine, through investigation using a table of values, relationships in growing and shrinking patterns, and investigate repeating patterns involving translations; ❑ demonstrate, through investigation, an understanding of the use of variables in equations.	❑ describe and represent relationships in growing and shrinking patterns (where the terms are whole numbers), and investigate repeating patterns involving rotations; ❑ use variables in simple algebraic expressions and equations to describe relationships.
Measurement	❒ estimate, measure, and record length, perimeter, area, mass, capacity, volume, elapsed time, using a variety of strategies ❒ determine the relationships among units and measurable attributes, including the area and perimeter of rectangles.	❒ estimate, measure and represent time intervals to the nearest second estimate and determine elapsed time, with and without using a time line, given the durations of events expressed in minutes, hours, days, weeks, months, or years ❒ measure and record temperatures to determine and represent temperature changes over time ❒ estimate and measure the perimeter and area of regular and irregular polygons, using a variety of tools and strategies.	❒ estimate, measure, and record quantities, using the metric measurement system; ❒ determine the relationships among units and measurable attributes, including the area of a parallelogram, the area of a triangle, and the volume of a triangular prism.
Geometry and Spatial Sense	❑ identify quadrilaterals and three-dimensional figures and classify them by their geometric properties, and compare various angles to benchmarks; ❑ construct three-dimensional figures, using two-dimensional shapes; ❑ identify and describe the location of an object, using a grid map, and reflect two-dimensional shapes	❒ identify and classify two-dimensional shapes by side and angle properties, and compare and sort three-dimensional figures; ❒ identify and construct nets of prisms and pyramids; ❒ identify and describe the location of an object, using the cardinal directions, and translate two-dimensional shapes	❒ classify and construct polygons and angles; ❒ sketch three-dimensional figures, and construct three-dimensional figures from drawings; ❒ describe location in the first quadrant of a coordinate system, and rotate two-dimensional shapes
Data Management and Probability	❒ collect and organize discrete primary data and display the data using charts and graphs, including stem-and-leaf plots and double bar graphs ❒ read, describe, and interpret primary data and secondary data presented in charts and graphs, including stem-and-leaf plots and double bar graphs ❒ predict the results of a simple probability experiment, then conduct the experiment and compare the prediction to the results	❒ collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including broken-line graphs ❒ read, describe, and interpret primary data and secondary data presented in charts and graphs, including broken-line graphs ❒ represent as a fraction the probability that a specific outcome will occur in a simple probability experiment, using systematic lists and area models.	❒ collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including continuous line graphs; ❒ read, describe, and interpret data, and explain relationships between sets of data; ❒ determine the theoretical probability of an outcome in a probability experiment and use it to predict the frequency of the outcome.