We are thrilled that you are devoting some of your summertime to mathematics!

Here are the rules for Davis School District's summer math program:

1. Each task should take 4-5 days of 10-20 minutes each. Set a timer (or watch a clock) and work on the task for no longer than 20 mins per day.
2. You may pick a task to work on--there is no order, choose something that looks interesting or something that makes you think! There are enough tasks for 9 weeks of mathing!
3. I encourage you to work on the task with a sibling or a neighbor or a friend. If you prefer to work alone that is fine too!
4. I encourage you to draw pictures, to use tools (like a calculator), and to use models (like base-10 blocks, algebra tiles, or dual-sided counters) to help you make sense of the task.

Time to Pick Your Task:

Mathematician(s):_____

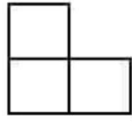# Squares to Stairs

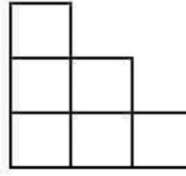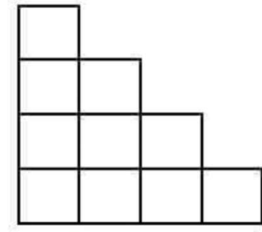

Figure 1   Figure 2   Figure 3   Figure 4

Taken from YouCubed.org

Take a look at the shapes below and answer these questions:

1. Day 1 (20 mins): Reflect on the image above, use these questions to guide your thinking: What do you notice? What do you wonder?

2. Day 2 (20 mins): Reflect on the image above, draw how you see the pattern growing. How many total squares are in figure 10 and what does the figure look like? How many squares are in figure 55, and what does the figure look like? Explain how you know?

3. Day 3 (20 mins): Reflect on the image above, can you use 190 squares to make a stair-like structure? If you have 1,478 squares, can you make a stair-like structure? Mathematically justify your answers.
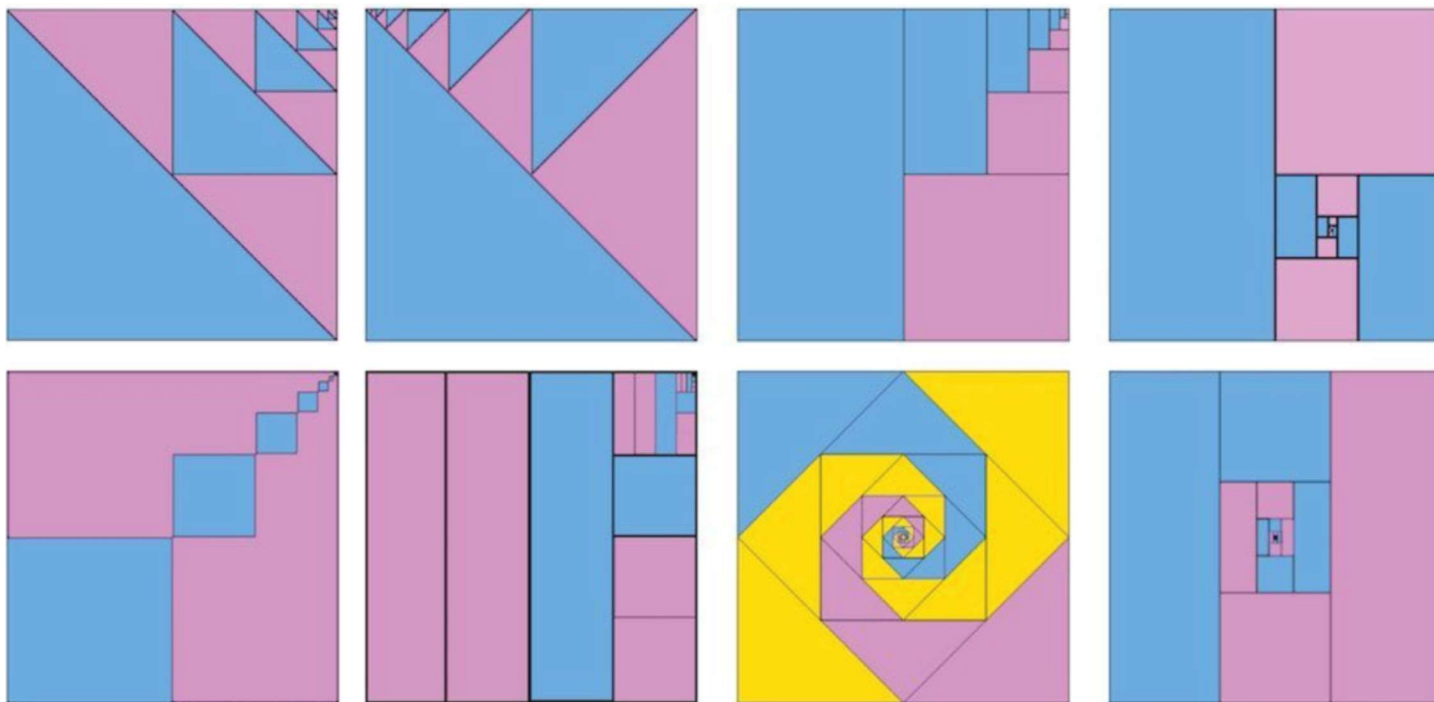
4. Day 4 (20 mins): Is there a way you can calculate how total squares are in any figure?

5. Day 5 (20 mins): Find someone to explain the answers to the questions above. Spend the most time talking about how you know and justifying your solutions. If you don't have anyone to speak with, record a video of yourself explaining your solutions or do a quiet journal reflection about the process and how you engaged with this math task.
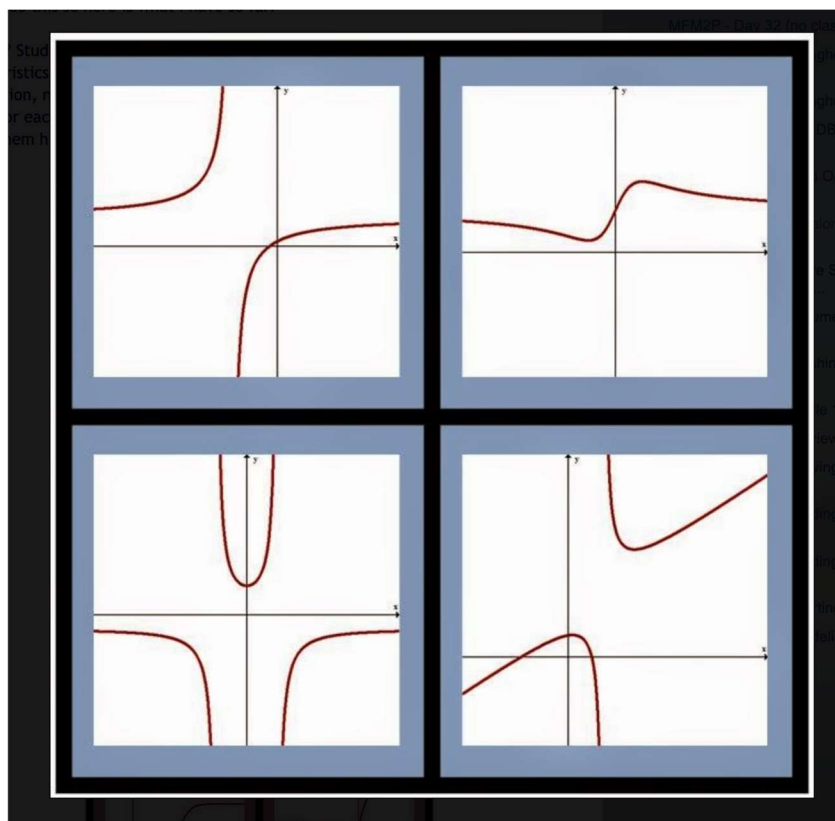
Mathematician(s):_____

Diminishing Returns

1. Day 1 (20 mins): Reflect on the image above, use these questions to guide your thinking: What do you notice? What do you wonder?

2. Day 2 and 3 (20 mins): For each of the images above, can you work out what fraction of the total is taken up by the largest blue shapes? Add your fractions to estimate the proportion of the total that is colored blue.

3. Day 4 (20 mins): Provide a mathematical justification or a convincing explanation about why you know your answers are right?

4. Day 5 (20 mins): Find someone to explain the answers to the questions above. Spend the most time talking about how you know and justifying your solutions. If you don't have anyone to speak with, record a video of yourself explaining your solutions or do a quiet journal reflection about the process and how you engaged with this math task.

Mathematician(s):_____

Taken from: https://wodb.ca/

1. Day 1 (20 mins): Reflect on the image above, use these questions to guide your thinking: What do you notice? What do you wonder?

2. Day 2 (20 mins): Can you tell me which graph doesn't belong and why? Give a mathematical justification.

3. Day 3 (20 mins): Pick a different graph out of the 4 above than you did on day 2, can you tell me why it doesn't belong and why? Give a mathematical justification.

4. Day 4 (20 mins): Pick a different graph out of the 4 above than you did on days 2 and 3, can you tell me why it doesn't belong and why? Give a mathematical justification.

5. Day 5 (20 mins): Find someone to explain the answers to the questions above. Spend the most time talking about how you know and justifying your solutions. If you don't have anyone to speak with, record

Mathematician(s):_____

a video of yourself explaining your solutions or do a quiet journal reflection about the process and how you engaged with this math task.

1. Day 1 (20 mins): Think about this question: Can you explain why every year must contain at least one Friday the thirteenth?

2. Day 2 (20 mins): Justify your answer for the question in day 1 mathematically (you can use a written description, you can record audio, you could draw a picture, use whatever makes sense to you).

3. Day 3 (20 mins): Think about this question: What is the greatest number of Friday the thirteenths that can fall in one year?

Day 4 (20 mins): Justify your answer for the question in day 3 mathematically (you can use a written description, you can record audio, you could draw a picture, use whatever makes sense to you).

5. Day 5 (20 mins): Find someone to explain the answers to the questions above. Spend the most time talking about how you know and justifying your solutions. If you don't have anyone to speak with, record a video of yourself explaining your solutions or do a quiet journal reflection about the process and how you engaged with this math task.

 Mathematician(s):_____

$(2x + 1)(x + 5)$	$(x^2 + 1)(x + 5)$
$(t + 1)(t + 5)$	$x(x+5)$

1. Day 1 (20 mins): Reflect on the image above, use these questions to guide your thinking: What do you notice? What do you wonder?

2. Day 2 (20 mins): Can you tell me which equation doesn't belong and why? Give a mathematical justification.

3. Day 3 (20 mins): Pick a different equation out of the 4 above than you did on day 2, can you tell me why it doesn't belong and why? Give a mathematical justification.

4. Day 4 (20 mins): Pick a different equation out of the 4 above than you did on days 2 and 3, can you tell me why it doesn't belong and why? Give a mathematical justification.

5. Day 5 (20 mins): Find someone to explain the answers to the questions above. Spend the most time talking about how you know and justifying your solutions. If you don't have anyone to speak with, record

Mathematician(s):_____

a video of yourself explaining your solutions or do a quiet journal reflection about the process and how you engaged with this math task.


Taken from: nrich.maths.org

1. Day 1 (20 mins): Think about this question: You have 27 small cubes, 3 each of nine colors. Can you use all of the small cubes to make a 3x3x3 cube so that each face of the bigger cube contains one of each color?

2. Day 2 (20 mins): Attempt to solve the question in day 1.

3. Day 3 (20 mins): Keep working on the question in #1 (or move on to day 4 if you feel you have an acceptable answer).

4. Day 4 (20 mins): Justify your answer for the question in day 1 mathematically (you can use a written description, you can record audio, you could draw a picture, use whatever makes sense to you).

Mathematician(s):_____

5. Day 5 (20 mins): Find someone to explain the answers to the questions above. Spend the most time talking about how you know and justifying your solutions. If you don't have anyone to speak with, record a video of yourself explaining your solutions or do a quiet journal reflection about the process and how you engaged with this math task.

Taken from: https://wodb.ca/
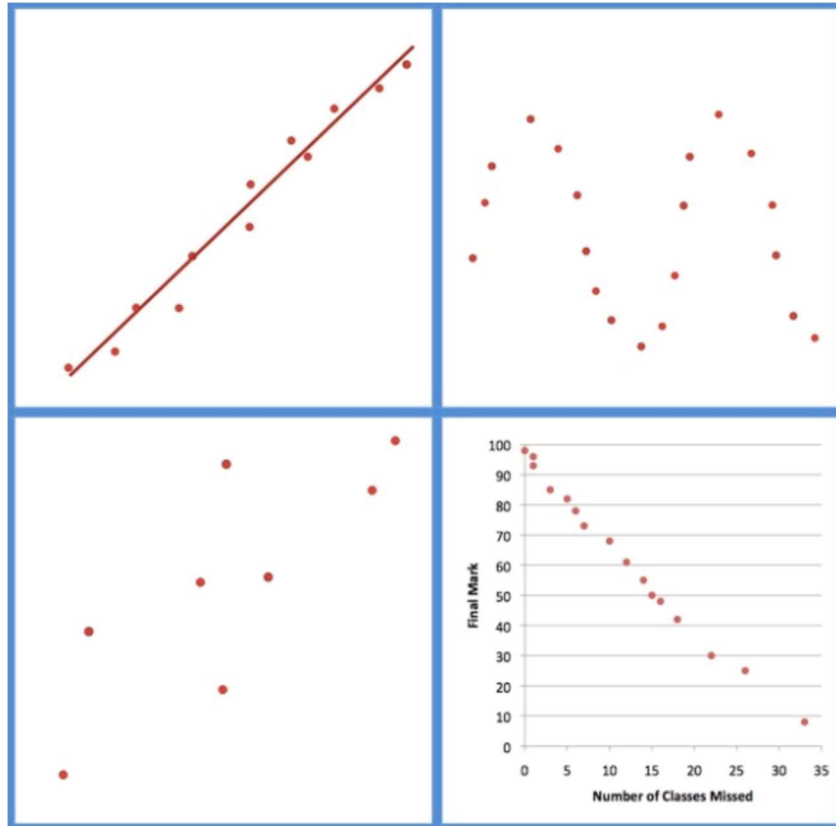
1. Day 1 (20 mins): Reflect on the image above, use these questions to guide your thinking: What do you notice? What do you wonder?

2. Day 2 (20 mins): Can you tell me which data set doesn't belong and why? Give a mathematical justification.

3. Day 3 (20 mins): Pick a different data set out of the 4 above than you did on day 2, can you tell me why it doesn't belong and why? Give a mathematical justification.

Mathematician(s):_____

4. Day 4 (20 mins): Pick a different data set out of the 4 above than you did on days 2 and 3, can you tell me why it doesn't belong and why? Give a mathematical justification.

5. Day 5 (20 mins): Find someone to explain the answers to the questions above. Spend the most time talking about how you know and justifying your solutions. If you don't have anyone to speak with, record a video of yourself explaining your solutions or do a quiet journal reflection about the process and how you engaged with this math task.

4's

1. Day 1 (20 mins): Think about this question: Can you find every number between 1 and 20 using only four 4's and any math operation (addition, subtraction, multiplication, division, exponents, radicals, etc.).

2. Day 2 (20 mins): Time to dive in, try and solve part of the question in day 1.

3. Day 3 (20 mins): Spend more time diving in-- try and solve more of the question in day 1.
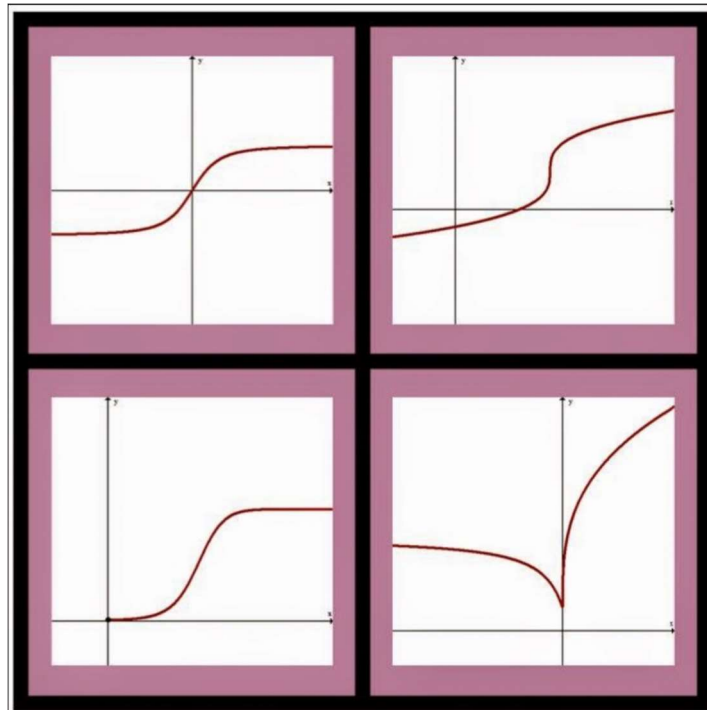

4. Day 4 (20 mins): Spend more time diving in-- try and solve more of the question in day 1.

5. Day 5 (20 mins): Find someone to explain the answers to the questions above. Spend the most time talking about how you know and justifying your solutions. If you don't have anyone to speak with, record

Mathematician(s):_____

a video of yourself explaining your solutions or do a quiet journal reflection about the process and how you engaged with this math task.

Taken from: https://wodb.ca/

1. Day 1 (20 mins): Reflect on the image above, use these questions to guide your thinking: What do you notice? What do you wonder?

2. Day 2 (20 mins): Can you tell me which graph doesn't belong and why? Give a mathematical justification.

3. Day 3 (20 mins): Pick a different graph out of the 4 above than you did on day 2, can you tell me why it doesn't belong and why? Give a mathematical justification.

Mathematician(s):_____

4. Day 4 (20 mins): Pick a different graph out of the 4 above than you did on days 2 and 3, can you tell me why it doesn't belong and why? Give a mathematical justification.

5. Day 5 (20 mins): Find someone to explain the answers to the questions above. Spend the most time talking about how you know and justifying your solutions. If you don't have anyone to speak with, record a video of yourself explaining your solutions or do a quiet journal reflection about the process and how you engaged with this math task.

Mathematician(s):_____