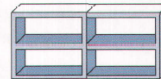


Apply Patterning Strategies

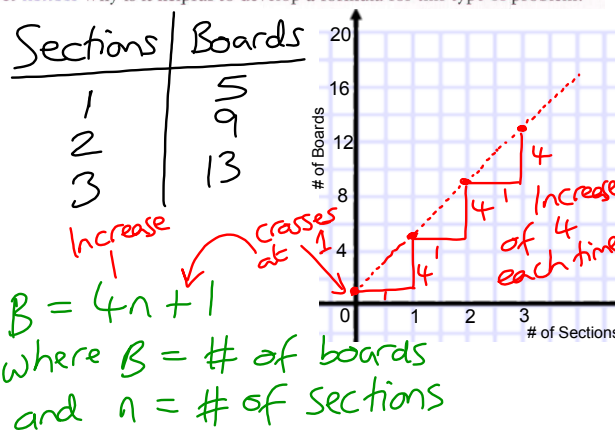
Nov 20-18:34

How can you apply formulas to solve problems?

A shelving unit can be made using boards that are the same length, including the vertical side pieces and the horizontal shelves. The shelves can be extended by placing sections side by side. This shelving unit is made in two sections and needs nine boards.



- Use toothpicks to model one-, two-, and three-section shelving units. How many boards are needed for each? Organize the data for the shelving units.
- Plot the data on a grid.
- How many boards are added for each new section?
- Write a formula relating the number of boards to the number of sections.
- Explain how you developed your formula.
- Reflect** Why is it helpful to develop a formula for this type of problem?



Nov 27-16:24

Example 1: Find a Pattern to Plan a Picnic

Grade 8 students are setting up rows of tables for an outdoor picnic. The school has rectangular tables. The tables can seat three people on each side and one person at each end.

a) Develop a formula for the number of people that can sit at a row of n tables.
 b) Use your formula to find how many people can sit at a row of 13 tables.

T	P
1	8
2	14
3	20

Let $t = \#$ of tables
 and $p = \#$ of people
 $\Rightarrow p = 6t + 2$

Use $t = 13$
 $\Rightarrow p = 6(13) + 2$
 $p = 78 + 2$
 $p = 80$ people

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Example 2: Explore a Tournament Pattern

In a lacrosse tournament, a team that wins a match plays against another winning team in the next round. A team that loses a match is eliminated.

a) A lacrosse tournament takes six rounds to find the winning team. How many teams can enter the tournament?
 b) How many teams can enter a tournament that takes n rounds to find the winner?

Rounds	Teams
1	2
2	4
3	8
4	16
5	32
6	64

For n rounds we need 2^n teams

[multiplying the previous term by 2]

Nov 27-16:30

Copy the Key Ideas box

Key Ideas

- To solve a patterning problem,
 - Extend the pattern.
 - Organize the data in a table or a tree diagram.
 - Plot ordered pairs on a grid.
 - Explain the pattern in words.
 - Develop an equation to model the pattern.
- Sometimes you need to use more than one method to solve a patterning problem.



Shelving Units	Boards	Pattern
1	$5 = 1 + 4$	$1 + 4 \times 1$
2	$9 = 1 + 4 + 4$	$1 + 4 \times 2$
3	$13 = 1 + 4 + 4 + 4$	$1 + 4 \times 3$

Start with one board. Then, add four boards for each unit.

Let n represent the number of shelving units.

Let b represent the number of boards.

$$b = 1 + 4n$$

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