

Warm Up

9/11

Simplify:

$$4^2 \div 8 - (5)(-4) + (2 - 5)^2$$

$$4^2 \div 8 - (5)(-4) + (-3)^2$$
$$16 \div 8 - (5)(-4) + 9$$

$$2 - -20 + 9$$

$$22 + 9$$

$$31$$

Recap 1.3 A

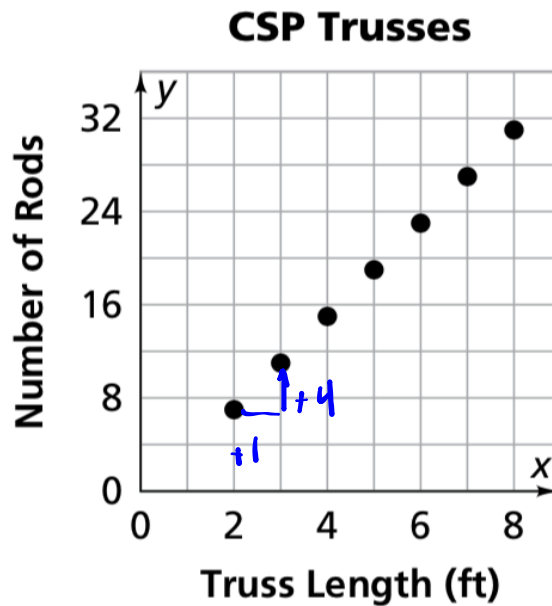
Let's check
the changes!

Figure 1

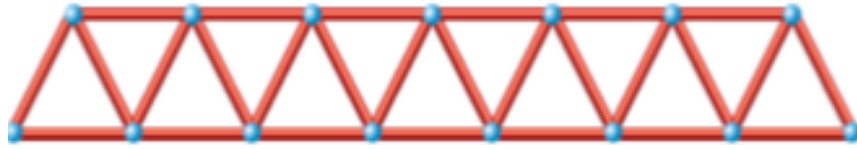
| Length of Truss | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-----------------|---|----|----|----|----|----|----|
| Number of Rods | 7 | 11 | 15 | 19 | 23 | 27 | 31 |

Handwritten annotations above the table: $+1$ above each length value, with a blue caret (^) below each $+1$.

Handwritten annotations below the table: $+4$ below each number of rods value, with a blue checkmark (v) above each $+4$.



constant
changes
↓
LINEAR



Estimate how many rods for a 50 foot long truss

199 total

5 feet uses 19 rods

$$\begin{array}{l} \nearrow \\ \text{for 10 5ft} \\ \text{sections} \end{array} 10 \cdot 19 = 190 + 9 \text{ connecting rods}$$

199 total



$$50 \text{ ft} - 8 \text{ ft} = 42 \text{ ft}$$

He knew at
8 ft we used
31 rods

→ we need 42
more feet.

According to the
table there is an increase
of 4 rods / foot

$$\underbrace{42 \cdot 4}_{\text{\# of rods for 42 ft}} + \underbrace{31}_{\text{\# of rods for 8 ft}} = 199$$

Let's Complete Problem 1.3B

- Describe the pattern of change in the number of rods as the number of steps increases.
- How is the pattern you described shown in the table? How is it shown in the graph?

Figure 2

CSP Staircase Frames

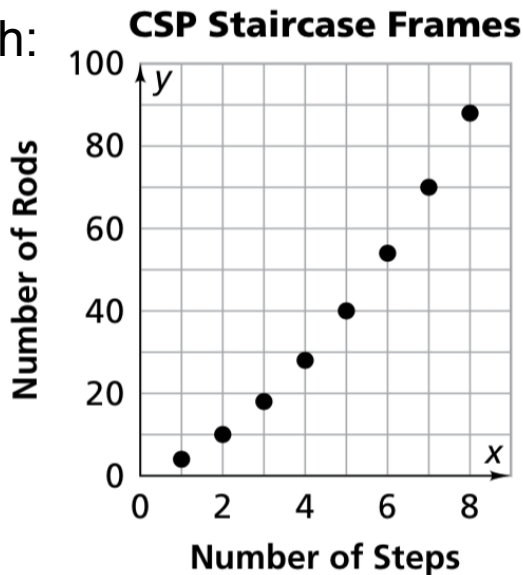
| | | | | | | | | |
|------------------------|---|----|----|----|----|----|----|----|
| Number of Steps | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Number of Rods | 4 | 10 | 18 | 28 | 40 | 54 | 70 | 88 |

$+1$ $+1$ $+1$ $+1$ $+1$ $+1$ $+3$
 $+6$ $+8$ $+10$ $+12$ $+14$ $+16$ $+18$

constant change

Not a constant change

Graph:



y-value is increasing by 2 more than the previous increase.

Just because there is a pattern does not mean it is linear.

- C How is the pattern in Question A similar to the pattern in Question B? How is it different? Explain how the similarities and differences are shown in the tables and graphs.

Figure 1

| | | | | | | | |
|-----------------|---|----|----|----|----|----|----|
| Length of Truss | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Number of Rods | 7 | 11 | 15 | 19 | 23 | 27 | 31 |

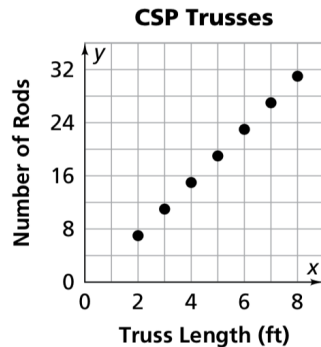
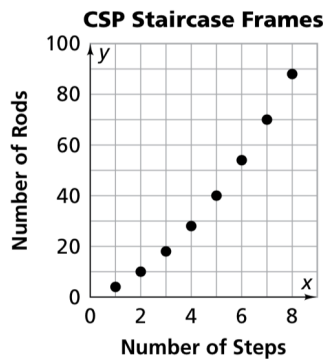


Figure 2

| CSP Staircase Frames | | | | | | | |
|-----------------------------|---|----|----|----|----|----|----|
| Number of Steps | 1 | 2 | 3 | 4 | 5 | 6 | 8 |
| Number of Rods | 4 | 10 | 18 | 28 | 40 | 54 | 88 |



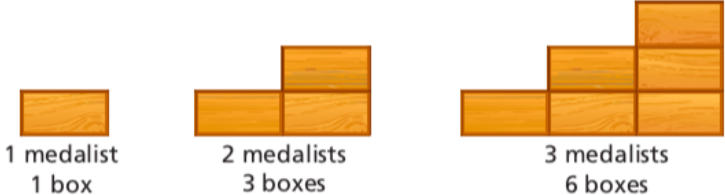
Same: Both are increasing

Different: One is linear, the other is increasing by more & more (2 more than the previous change)

Classwork

Page 17 # 4

4. During the medal ceremonies at a track meet, the top athletes stand on platforms made from stacked wooden boxes. The number of boxes depends on the number of medal winners.



- a. Copy and complete the table below.

Medal Platforms

| Number of Medalists | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------|---|---|---|---|---|---|---|---|
| Number of Boxes | 1 | 3 | 6 | ■ | ■ | ■ | ■ | ■ |

- b. Make a graph of the (number of medalists, number of boxes) data.
- c. Describe the pattern of change shown in the table and graph.
- d. Each box is 1 foot high and 2 feet wide. A red carpet starts 10 feet from the base of the platform and covers all the risers and steps.



- Copy and complete the table below.

Carpet for Platforms

| Number of Steps | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--------------------|---|---|---|---|---|---|---|---|
| Carpet Length (ft) | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

- e. Make a graph of the (number of steps, carpet length) data.
- f. Describe the pattern of change in the carpet length as the number of steps increases. Compare this pattern to the pattern in the (number of medalists, number of boxes) data.

Homework

Finish classwork