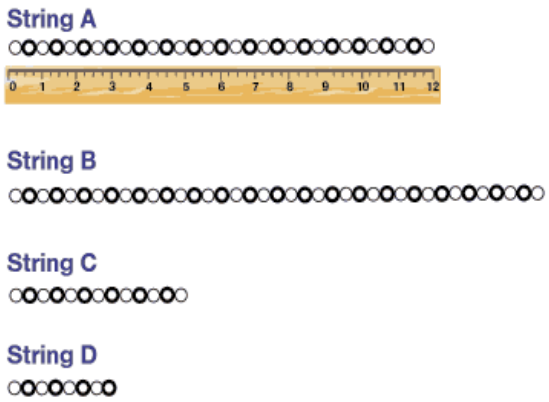
Math Challenge 11

Units of Length

Cory is making strings of beads for necklaces and bracelets.

- The string of red beads is 1 foot long.
- The string of blue beads is 3 inches longer than the string of red beads.
- The string of yellow beads is 9 inches shorter than the string of red beads.
- The string of green beads is 2 inches longer than the string of yellow beads.



1. Based on the clue and the picture, what is the color of each string of beads?

Answer:

A	B	C	D
Red	Blue	Green	Yellow

2. In inches, how long is each string of beads?

Answer:

A (Red)	B (Blue)	C (Green)	D (yellow)
12 inches	15 inches	5 inches	3 inches

3. If Cory connects all four strings seamlessly to make one long string, how long in inches will this string be?

Answer: _____ 35 [inches]

4. If there are 3 beads for every inch of string, how many beads will Cory need to complete **all** his strings?

Answer: _____ (12+15+5+3) x 3 = 105

5. The red and blue beads cost 10 cents each. The yellow and green beads cost 5 cents each. How much will it cost to make each string?

Answer:

Red	Blue	Green	Yellow
12 x 3 = 36 beads	15 x 3 = 45 beads	5 x 3 = 15 beads	3 x 3 = 9 beads
36 x 10¢ = $3.60	45 x 10¢ = $4.50	15 x 5¢ = $0.75	9 x 5¢ = $0.45

6. What is each person's height in feet and inches?

Answer:

Change their heights into feet and inches or to just inches.

As Listed in Problem	Changed to Feet and Inches	In inches	Name
3 feet 11 inches	3 feet 11 inches	36 + 11 = 47 inches	
46 inches	3 feet 10 inches	36 + 10 = 36 inches	
4 feet 8 inches	4 feet 8 inches	48 + 8 = 56 inches	
48 inches	4 feet	48 inches	
4 feet 2 inches	4 feet 2 inches	48 + 2 = 50 inches	
52 inches	4 feet 4 inches	48+ 4 = 52 inches	

Name:	Sandy	Kendra	Drew	Jamal	Parker	Erin
Height:	3 feet 10 inches	3 feet 11 inches	4 feet	4 feet 2 inches	4 feet 4 inches	4 feet 8 inches

7. Using the clues above, in what order are they standing in line?

Answer:
Use your solution from problem 5 and the clues given to find out each person's height.

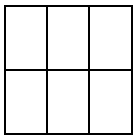
- Since Kendra is second in line, she must be 3 feet 11 inches. Put her name in the chart.
- Since Sandy is one inch shorter than Kendra, she must be 3 feet 10 inches. Put her name in the chart.
- Try out different orders for the other four students.
- Guess and check to see which order matches the clues.

	shortest →					tallest
Name:	Sandy	Kendra	Drew	Jamal	Parker	Erin

8. What is the average height, in inches, of the students? Round your answer to the nearest whole number.

Answer: _____ 50 [inches]
Average heights: (46+47+48+50+52+56) ÷ 6 = 49.83 or 50 inches (rounded to the nearest whole number).

9. A square garden has an area of 144 square inches. Suppose the garden is partitioned into six congruent rectangles as shown at the right. How many inches is the perimeter of one of the six rectangles?



Answer: _____ 20 [inches]
The side of the garden is 12 inches. Each rectangle measures 4 by 6 inches. The perimeter of each rectangle is (4 x 2) + (6 x 2) = 20 in.

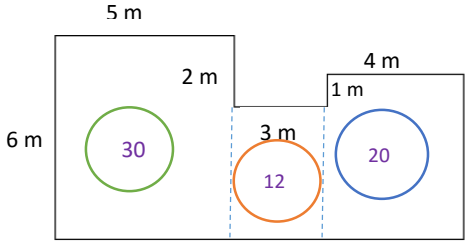
10. Rajas is less than 6 feet tall but more than 2 feet tall. His height in inches is a multiple of 7 and is also 2 inches more than a multiple of 6. What is Rajas' height in inches?
List multiples of 7 greater than 24 and less than 72. Also list multiples of 6 which is less than and closest to each of the corresponding multiple of 7.

Multiple of 7	28	35	42	49	56	63	70
Multiple of 6	24	30	36	48	54	60	66

Notice that 56 is the desired multiple of 7 which is 2 more than a multiple of 6. Therefore the answer is 56 inches.

Answer: _____ 56 inches

11. In the figure on the right, all corner angles are right angles. How many square meters of area does the figure have?



Answer: _____ 62 m²
Total Area: (6 x 5) + (4 x 3) + (5 x 4) = 30 + 12+ 20 = 62 m²

Math Challenge 12 *will be available online March 25, 2016 at* www.mathinaction.org.