

1. a) Gap: + 14
Pattern:
44, 58, 72
 - b) Gap: - .6
Pattern:
4.9, 4.3, 3.7
 - c) Gap:
+ 6, + 8, + 6, + 8,
+ 6, + 8
Pattern:
36, 44
 - d) Gap:
- 14, + 8, - 14, + 8,
- 14, + 8
Pattern:
17, 25
 - e) Gap:
+ 10, + 20, + 30,
+ 40, + 50, + 60
Pattern:
103, 153, 213
 - f) Gap:
+ 2, + 4, + 8, + 16,
+ 32, + 64
Pattern:
66, 130
2. a) Natalie's rule is correct.
 - b) Helen didn't give the starting point; Kate gave the wrong difference.
3. a) Pattern:
653, 666, 679
Rule:
Start at 614, add 13 each time.
 - b) Pattern:
579, 565, 551
Rule:
Start at 621, subtract 14 each time.
 - c) Pattern:
75, 77
Rule:
Start at 84, add 2, subtract 5, and repeat.
 - d) Pattern:
162, 486, 1458
Rule:
Start at 2, multiply by 3 each time.

4. a) Stepwise rule:
Start at 13 and add 6 each time.
General rule:
Multiply term number by 6 and add 7.
 - b) Stepwise rule:
Start at 3 and add 12 each time.
General rule:
Multiply term number by 12 and subtract 9.
5. a) Yes
 - b) # of octagons = # of broaches
of pentagons = # of broaches × 5
of triangles = # of broaches × 3
 - c) Wendy can make at most 8 broaches with her shapes.
 - d) After making 8 broaches, Wendy will have 1 triangle (25 - 24) and 9 pentagons (49 - 40) left.

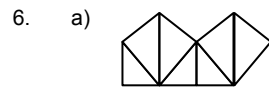


Figure 6

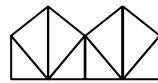


Figure 7

| Figure Number | Perimeter |
|---------------|-----------|
| 1 | 8.3 cm |
| 2 | 9.6 cm |
| 3 | 10.6 cm |
| 4 | 12.6 cm |
| 5 | 14.9 cm |
| 6 | 16.2 cm |

- b) The step is a repeating pattern with the core: 1.3, 1, 2, 2.3.
The pattern in the perimeter is the increasing sequence that results from starting at 8.3 cm and applying this step pattern.

c)

| Figure Number | Perimeter |
|---------------|-----------|
| 6 | 16.2 cm |
| 7 | 17.2 cm |
| 8 | 19.2 cm |
| 9 | 21.5 cm |
| 10 | 22.8 cm |

The perimeter of the 10th figure is 22.8 cm.