PA6-12: Describing and Creating Patterns

In the first sequence, each number is greater than the one before it.
The sequence is always **increasing**: 7 8 10 15 21

In the second sequence, each number is less than the one before it.
The sequence is always **decreasing**: 25 23 18 11 8

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1. Find the amount by which the sequence increases or decreases. Write a number in the circle, with a + sign if the sequence increases, and a – sign if it decreases. The first one has been done for you:

a) (+4) 3 , (−2) 7 , (+7) 5 , (−4) 12 , 8

b) ◯ 1 , ◯ 5 , ◯ 4 , ◯ 8 , ◯ 3

c) ◯ 2 , ◯ 6 , ◯ 9 , ◯ 19 , ◯ 25

d) ◯ 4 , ◯ 8 , ◯ 7 , ◯ 1 , ◯ 10

e) ◯ 4 , ◯ 6 , ◯ 8 , ◯ 7 , ◯ 12

f) ◯ 17 , ◯ 16 , ◯ 19 , ◯ 10 , ◯ 11

g) ◯ 27 , ◯ 20 , ◯ 25 , ◯ 19 , ◯ 13

h) ◯ 58 , ◯ 61 , ◯ 54 , ◯ 62 , ◯ 57

2. Match each sequence with the sentence that describes it. This sequence ....

a) **A** ... increases by 5 each time.
B ... increases by different amounts.

____ 9 , 13 , 19 , 23 , 25

____ 8 , 13 , 18 , 23 , 28

b) **A** ... decreases by different amounts.
B ... decreases by the same amount.

____ 21 , 20 , 18 , 15 , 11

____ 13 , 10 , 7 , 4 , 1

BONUS

c) **A** ... increases by 5 each time.
B ... decreases by different amounts.
C ... increases by different amounts.

____ 18 , 23 , 29 , 33 , 35

____ 27 , 24 , 20 , 19 , 16

____ 24 , 29 , 34 , 39 , 44

d) **A** ... increases and decreases.
B ... increases by the same amount.
C ... decreases by different amounts.
D ... decreases by the same amount.

____ 31 , 29 , 25 , 13 , 9

____ 10 , 14 , 9 , 6 , 5

____ 18 , 16 , 14 , 12 , 10

____ 8 , 11 , 14 , 17 , 20

PA6-12: Describing and Creating Patterns (continued)

3. Write a rule for each pattern (use the words add or subtract, and say what number the pattern starts with):

a) (+3) (+3) (+3)
4 , 7 , 10 , 13 — Start at 4 and add 3.

b) ( ) ( ) ( )
23 , 29 , 35 , 41 _____

c) ( ) ( ) ( )
28 , 25 , 22 , 19 _____

d) ( ) ( ) ( )
53 , 48 , 43 , 38 _____

4. Write a rule for each pattern:
NOTE: One sequence doesn't have a rule – see if you can find this sequence.

a) 9 , 14 , 19 , 24 _____

b) 27 , 19 , 11 , 3 _____

c) 39 , 31 , 27 , 14 , 9 _____

d) 81 , 85 , 89 , 93 _____

5. Describe each pattern as increasing, decreasing or repeating:

a) 1 , 3 , 6 , 9 , 12 , 15 _____ b) 2 , 8 , 9 , 2 , 8 , 9 _____

c) 29 , 27 , 25 , 23 , 22 _____ d) 2 , 6 , 10 , 14 , 17 _____

e) 3 , 9 , 4 , 3 , 9 , 4 _____ f) 61 , 56 , 51 , 46 , 41 _____

6. Write the first five terms in the pattern:
a) Start at 38 and add 4. b) Start at 67 and subtract 6. c) Start at 98 and add 7.

7. Create an increasing number pattern. Write the rule for your pattern.
Do the same for a decreasing number pattern.

8. Create a repeating pattern using: a) letters b) shapes c) numbers

9. Create a pattern and ask a friend to find the rule for your pattern.