PA5-5: Increasing and Decreasing Sequences

1. Extend the following patterns, using the "gap" provided:

Example 1:

(+1)

6 , 7 , 8 , 9

Example 2:

(−2)

8 , 6 , 4 , 2

a) (+6) 5 , 11 , ____ , ____ , ____

b) (+4) 1 , 5 , ____ , ____ , ____

c) (+4) 3 , 7 , ____ , ____ , ____

d) (+3) 6 , 9 , ____ , ____ , ____

e) (−5) 36 , 31, ____ , ____ , ____

f) (+7) 10 , 17 , ____ , ____ , ____

g) (−4) 17 , 13 , ____ , ____ , ____

h) (−4) 19 , 15 , ____ , ____ , ____

2. Extend the following patterns by first finding the "gap".

Example:

( ) ( )

3 , 5 , 7 , ____

Step 1:

(+2) (+2)

3 , 5 , 7 , ____

Step 2:

(+2) (+2)

3 , 5 , 7 , 9

a) ( ) ( ) 4 , 8 , 12 , ____ , ____

b) ( ) ( ) 3 , 10 , 17 , ____ , ____

c) ( ) ( ) 1 , 4 , 7 , ____ , ____

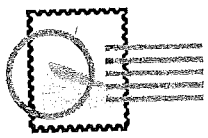
d) ( ) ( ) 21 , 25 , 29 , ____ , ____

e) ( ) ( ) 11 , 16 , 21 , ____ , ____

f) ( ) ( ) 55 , 53 , 51 , ____ , ____

g) ( ) ( ) 79 , 73 , 67 , ____ , ____

3. Jameson has a roll of 52 stamps.
He uses 4 each day for 6 days.
How many are left? _____



4. Amy has saved $36. She saves $6 each day after that.
How much money has she saved after 5 days? _____

PA5-6: Extending a Pattern Using a Rule

1. Continue the following sequences by <u>adding</u> the number given:

   a) (add 3) 41 , 44 , _____, _____, _____

   b) (add 5) 60 , 65 , _____, _____, _____

   c) (add 2) 74 , 76 , _____, _____, _____

   d) (add 10) 20 , 30 , _____, _____, _____

   e) (add 4) 61 , 65 , _____, _____, _____

   f) (add 9) 31 , 40 , _____, _____, _____

   g) (add 6) 20 , 26 , _____, _____, _____

2. Continue the following sequences, <u>subtracting</u> by the number given:

   a) (subtract 2) 24 , 22 , _____, _____, _____

   b) (subtract 3) 25 , 22 , _____, _____, _____

   c) (subtract 5) 85 , 80 , _____, _____, _____

   d) (subtract 10) 70 , 60 , _____, _____, _____

   e) (subtract 4) 56 , 52 , _____, _____, _____

   f) (subtract 7) 56 , 49 , _____, _____, _____

   g) (subtract 11) 141 , 130 , _____, _____, _____

BONUS

3. Create a pattern of your own. Say what number you added or subtracted each time:

   _____ , _____ , _____ , _____ , _____ My rule: _____

4. Which one of the following sequences was made by adding 4? Circle it.
   HINT: Check all the numbers in the sequence.

   a) 4, 8, 10, 14 b) 4, 8, 12, 16 c) 3, 9, 11, 15

5. **72, 63, 54, 45, 36 ...**

   Yen says this sequence was made by subtracting 8 each time.
   Hyun says it was made by subtracting 9. Who is right?

   _____

   _____

PA5-7: Identifying Pattern Rules

1. What number was added each time to make the pattern?

   a) 2, 6, 10, 14 add ____

   b) 2, 5, 8, 11 add ____

   c) 18, 24, 30, 36 add ____

   d) 40, 47, 54, 61 add ____

   e) 81, 86, 91, 96 add ____

   f) 69, 72, 75, 78 add ____

2. What number was subtracted each time to make each pattern?

   a) 38, 36, 34, 32 subtract ____

   b) 65, 60, 55, 50 subtract ____

   c) 200, 199, 198, 197 subtract ____

   d) 91, 88, 85, 82 subtract ____

   e) 67, 64, 61, 58 subtract ____

   f) 399, 397, 395, 393 subtract ____

3. State the rule for the following patterns:

   a) 219, 212, 205, 198, 191 subtract ____

   b) 11, 19, 27, 35, 43, 51 add _____

   c) 301, 305, 309, 313 _____

   d) 210, 198, 186, 174 _____

   e) 633, 622, 611, 600, 589 _____

   f) 821, 830, 839, 848, 857 _____

   g) 407, 415, 423, 431 _____

   h) 731, 725, 719, 713 _____

4. Find the rule for the pattern. Then continue the pattern:

   a) 22, 27, 32, 37, 42, 47 The rule is: Start at 22 and add 5 each time

   b) 38, 45, 52, _____, _____, _____ The rule is: _____

   c) 124, 136, 148, _____, _____, _____ The rule is: _____

5. **5, 9, 13, 17, 21 ...**

   Jonah says the pattern rule is: "Start at 5 and subtract 4 each time."
   Pria says the rule is: "Start at 5 and add 5 each time."
   Genevieve says the rule is: "Start at 5 and add 4 each time."

   a) Whose rule is correct? _____

   b) What mistakes did the others make? _____

PA5-8: Introduction to T-tables

Claude makes a **growing pattern** with squares.
He records the number of squares in each figure in a chart or T-table.

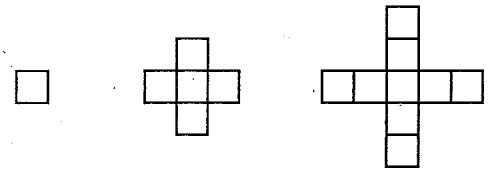


Figure 1 Figure 2 Figure 3

Figure	# of Squares
1	1
2	5
3	9

(4) (4) ← Number of square added each time.

The number of squares in the figures are 1, 5, 9, ...
Claude writes a rule for this number pattern:

RULE: Start at 1 and add 4 each time.

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1. Claude makes other growing patterns with squares.
   How many squares does he add to make each new figure?
   Write your answer in the circles provided. Then write a rule for the pattern:

a)

Figure	Number of Squares
1	2
2	7
3	12

Rule:
Start at 2 and
add 5 each time

b)

Figure	Number of Squares
1	2
2	9
3	16

Rule:

c)

Figure	Number of Squares
1	1
2	4
3	7

Rule:

d)

Figure	Number of Squares
1	1
2	7
3	13

Rule:

e)

Figure	Number of Squares
1	5
2	12
3	19

Rule:

f)

Figure	Number of Squares
1	13
2	21
3	29

Rule:

PA5-8: Introduction to T-tables *(continued)*

g)

Figure	Number of Squares
1	3
2	11
3	19

Rule:

h)

Figure	Number of Squares
1	7
2	11
3	15

Rule:

i)

Figure	Number of Squares
1	8
2	14
3	20

Rule:

2. Extend the number pattern. How many squares would be used in Figure 6?

a)

Figure	Number of Squares
1	2
2	9
3	16

b)

Figure	Number of Squares
1	2
2	6
3	10

c)

Figure	Number of Squares
1	6
2	11
3	16

3. Trina makes the following growing patterns with squares.
After making Figure 3, she only has 16 squares left.
Does she have enough squares to complete Figure 4?

a)

Figure	Number of Squares
1	4
2	9
3	14

YES NO

b)

Figure	Number of Squares
1	5
2	9
3	13

YES NO

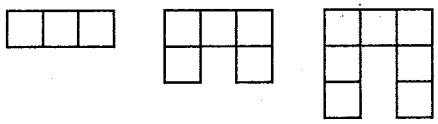
c)

Figure	Number of Squares
1	3
2	7
3	11

YES NO

4. Make a chart to show how many shapes will be needed to make the fifth figure in each pattern.

a)



b)