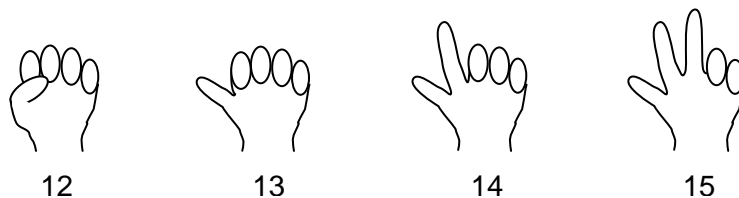


PA4-1: Counting

Helen finds the **difference** between 15 and 12 by counting on her fingers. She says “12” with her fist closed, then counts to 15, raising one finger at a time.



When she says “15”, she has raised 3 fingers. So the difference or “gap” between 12 and 15 is 3.

1. Find the difference between the numbers by counting up. Write your answer in the circle.
(If you know your subtraction facts, you may find the answer without counting.)

a) 2 5

b) 3 8

c) 6 8

d) 4 9

e) 12 16

f) 13 17

g) 21 26

h) 37 39

i) 26 29

j) 32 37

k) 24 29

l) 44 47

m) 51 55

n) 46 49

o) 28 32

p) 34 39

q) 89 91

r) 62 71

s) 87 89

t) 59 63

BONUS:

u) 96 101

v) 79 83

w) 98 104

x) 117 122

y) 219 223

z) 146 151

aa) 99 108

bb) 99 107

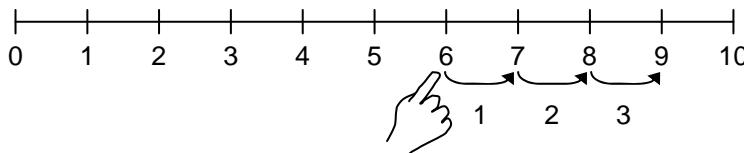
TEACHER:

To help your students recognize the gap between numbers, give your students daily practice with the mental math exercises provided in the Teacher’s Guide.

What number added to 6 gives 9?

$$6 + \boxed{} = 9$$

Anne counts 3 spaces between 6 and 9 on a number line:

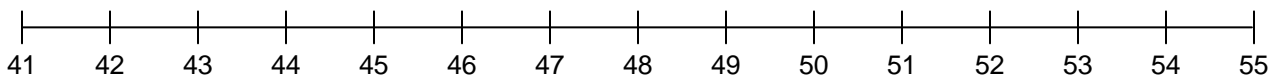


so: $6 + \boxed{3} = 9$

and: 9 is 3 **more than** 6

and: 3 is called the **difference** between 9 and 6

2. Use the number line (or count up) to find the difference between the numbers.



a) 42 45

b) 43 47

c) 51 54

d) 44 51

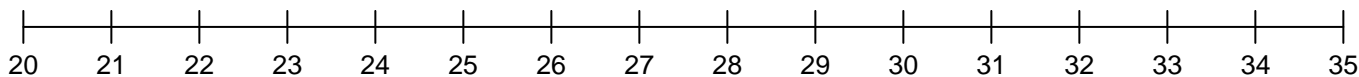
e) 42 44

f) 49 53

g) 47 48

h) 45 49

3. Use the number line (or count up) to find the difference between the numbers.



a) $23 + \boxed{2} = 25$

b) $22 + \boxed{} = 26$

c) $24 + \boxed{} = 27$

d) $\boxed{} + 22 = 24$

e) $23 + \boxed{} = 30$

f) $\boxed{} + 28 = 31$

BONUS:

4. Fill in the missing number.

a) 25 is _____ more than 23

b) 30 is _____ more than 27

c) 53 is _____ more than 46

d) 32 is _____ more than 29

e) 28 is _____ more than 25

f) 26 is _____ more than 25

g) 50 is _____ more than 49

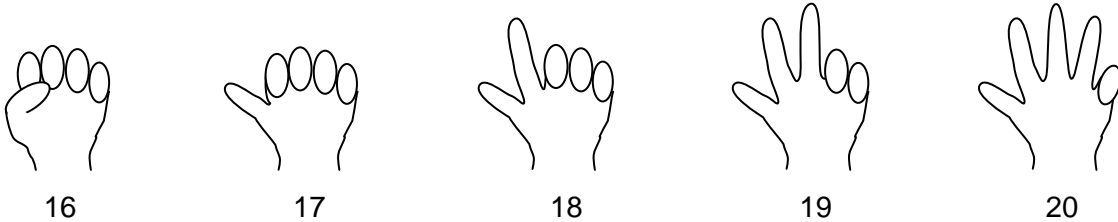
h) 47 is _____ more than 43

i) 53 is _____ more than 48

PA4-2: Preparation for Increasing Sequences

What number is 4 **more** than 16? (Or: What is $16 + 4$?)

Alissa finds the answer by counting on her fingers. She says 16 with her fist closed, then counts up from 16 until she has raised 4 fingers.



The number 20 is 4 **more** than 16.

1. Add the number in the circle to the number beside it. Write your answer in the blank.

- a) 5 (4) _____ b) 8 (2) _____ c) 7 (3) _____ d) 3 (4) _____
e) 17 (5) _____ f) 18 (4) _____ g) 14 (8) _____ h) 19 (6) _____
i) 30 (8) _____ j) 27 (9) _____ k) 34 (7) _____ l) 32 (5) _____

BONUS:

- m) 67 (2) _____ n) 85 (5) _____ o) 42 (3) _____ p) 68 (4) _____
q) 54 (6) _____ r) 63 (5) _____ s) 98 (4) _____ t) 93 (8) _____

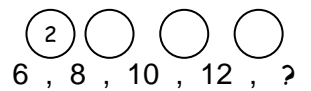
2. Fill in the missing numbers.

- a) _____ is 4 more than 6 b) _____ is 6 more than 5 c) _____ is 5 more than 7
d) _____ is 1 more than 19 e) _____ is 6 more than 34 f) _____ is 5 more than 18
g) _____ is 8 more than 29 h) _____ is 7 more than 24 i) _____ is 8 more than 37

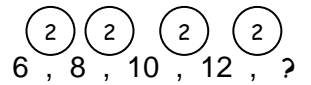
PA4-3: Increasing Sequences

Angel wants to continue the number pattern: 6 , 8 , 10 , 12 , ?

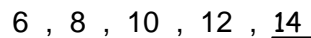
Step 1: She finds the **difference** between the first two numbers.



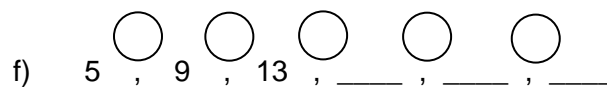
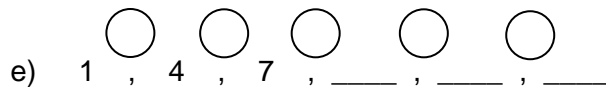
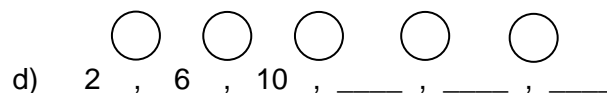
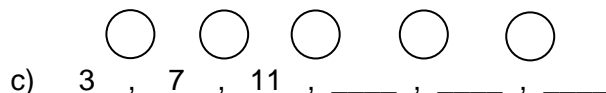
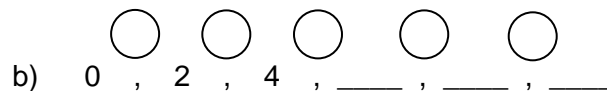
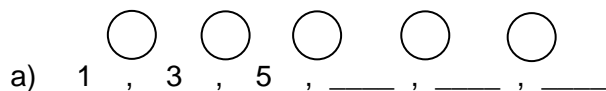
Step 2: She checks that the difference between the other numbers in the pattern is also 2.



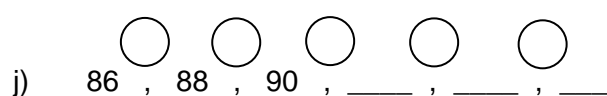
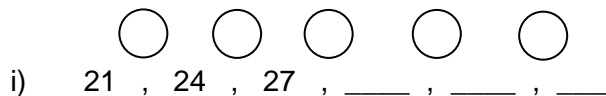
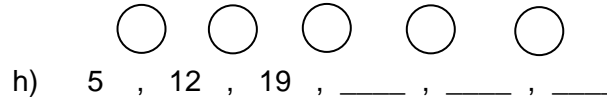
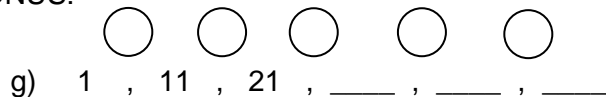
Step 3: To continue the pattern, Angel adds 2 to the last number in the sequence.



1. Extend the following patterns. Start by finding the gap between the numbers.



BONUS:



Use increasing sequences to solve these problems.

2. Mary reads 5 pages of her book each night. Last night she was on page 72.

What page will she reach tonight? _____ And tomorrow night? _____

3. Jane runs 12 blocks on Monday. Each day she runs 4 blocks further than the day before.

How far does she run on Tuesday? _____ And on Wednesday? _____

On what day of the week will she run 28 blocks? _____

PA4-4: Counting Backwards

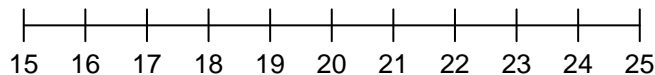
What number must you subtract from 22 to get 18?

Dana finds the answer by counting backwards on her fingers. She uses the number line to help.



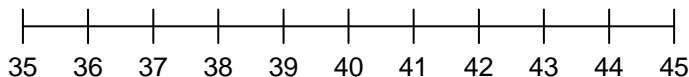
Dana has raised 4 fingers. So 4 subtracted from 22 gives 18.

1. What number must you subtract from the greater number to get the lesser number?



- | | | | |
|--|--------------------------------|--------------------------------|--------------------------------|
| a) 23 <input checked="" type="radio"/> -3 20 | b) 24 <input type="radio"/> 19 | c) 21 <input type="radio"/> 16 | d) 22 <input type="radio"/> 15 |
| e) 24 <input type="radio"/> 17 | f) 19 <input type="radio"/> 16 | g) 23 <input type="radio"/> 17 | h) 25 <input type="radio"/> 19 |

2. Find the gap between the numbers by counting backwards on your fingers.



- | | | | |
|--|--------------------------------|--------------------------------|--------------------------------|
| a) 42 <input checked="" type="radio"/> -4 38 | b) 41 <input type="radio"/> 39 | c) 42 <input type="radio"/> 37 | d) 38 <input type="radio"/> 37 |
| e) 41 <input type="radio"/> 37 | f) 40 <input type="radio"/> 36 | g) 42 <input type="radio"/> 35 | h) 43 <input type="radio"/> 35 |

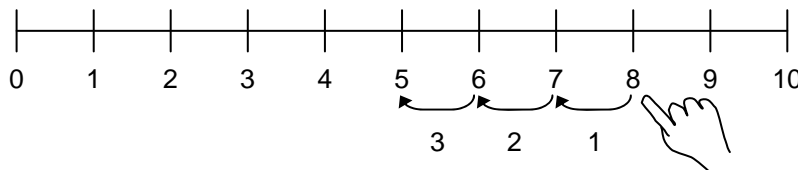
3. Find the gap between the numbers by counting backwards on your fingers (or by using your subtraction facts).

- | | | | |
|--------------------------------|---------------------------------|--------------------------------|--------------------------------|
| a) 86 <input type="radio"/> 81 | b) 58 <input type="radio"/> 52 | c) 50 <input type="radio"/> 48 | d) 80 <input type="radio"/> 78 |
| e) 52 <input type="radio"/> 47 | f) 67 <input type="radio"/> 63 | g) 45 <input type="radio"/> 36 | h) 62 <input type="radio"/> 56 |
| i) 58 <input type="radio"/> 51 | j) 101 <input type="radio"/> 97 | k) 82 <input type="radio"/> 76 | l) 97 <input type="radio"/> 89 |

What number **subtracted** from 8 gives 5?

$$8 - \boxed{?} = 5$$

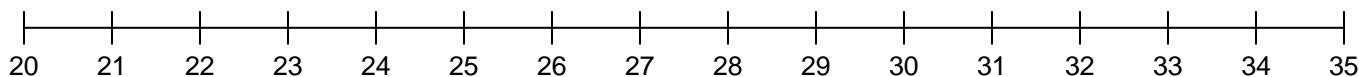
Rita puts her finger on 8 on a **number line**:



She counts (backward 3 spaces to 5)
to find the number of spaces between 8 and 5.

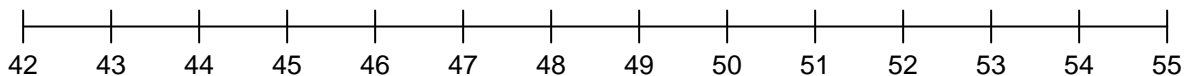
so: $8 - \boxed{3} = 5$ and: 5 is **3 less than 8**

4. Use the number line to find the difference between the two numbers. Write your answer in the box.



- | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|
| a) $27 - \boxed{} = 24$ | b) $26 - \boxed{} = 23$ | c) $29 - \boxed{} = 27$ |
| d) $25 - \boxed{} = 21$ | e) $28 - \boxed{} = 24$ | f) $30 - \boxed{} = 25$ |
| g) $32 - \boxed{} = 29$ | h) $35 - \boxed{} = 34$ | i) $30 - \boxed{} = 24$ |

5. What number must you subtract from the bigger number to get the smaller number?



- | | | | |
|---------------------|---------------------|---------------------|---------------------|
| a) 47 \bigcirc 44 | b) 45 \bigcirc 43 | c) 51 \bigcirc 48 | d) 54 \bigcirc 43 |
| e) 48 \bigcirc 41 | f) 49 \bigcirc 44 | g) 54 \bigcirc 47 | h) 52 \bigcirc 43 |

BONUS:

6. Fill in the missing number.

- | | | |
|----------------------------|----------------------------|----------------------------|
| a) 47 is ____ less than 50 | b) 51 is ____ less than 55 | c) 46 is ____ less than 51 |
| d) 49 is ____ less than 51 | e) 48 is ____ less than 54 | f) 45 is ____ less than 52 |
| g) 44 is ____ less than 49 | h) 43 is ____ less than 51 | i) 52 is ____ less than 55 |

PA4-5: Decreasing Sequences

In a **decreasing sequence**, each number is one less than the one before it.

What number is 3 less than 9? (Or: What is $9 - 3$?)

Keitha finds the answer by counting on her fingers. She says 9 with her fist closed and counts backwards until she has raised 3 fingers:



The number 6 is **3 less than 9**.

1. Subtract the number in the circle from the number beside it. Write your answer in the blank.

a) $3 \text{ } \textcircled{-2}$ _____ b) $12 \text{ } \textcircled{-3}$ _____ c) $8 \text{ } \textcircled{-4}$ _____ d) $9 \text{ } \textcircled{-1}$ _____

e) $8 \text{ } \textcircled{-5}$ _____ f) $10 \text{ } \textcircled{-4}$ _____ g) $5 \text{ } \textcircled{-1}$ _____ h) $9 \text{ } \textcircled{-2}$ _____

BONUS:

i) $28 \text{ } \textcircled{-4}$ _____ j) $35 \text{ } \textcircled{-6}$ _____ k) $57 \text{ } \textcircled{-8}$ _____ l) $62 \text{ } \textcircled{-4}$ _____

2. Fill in the missing numbers.

- a) _____ is 4 less than 7 b) _____ is 2 less than 9 c) _____ is 3 less than 8
 d) _____ is 5 less than 17 e) _____ is 4 less than 20 f) _____ is 6 less than 25
 g) _____ is 7 less than 28 h) _____ is 4 less than 32 i) _____ is 5 less than 40

3. Extend the following decreasing patterns.

Example: $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$
 11 , 9 , 7 , _____ , _____ , _____

Step 1: $\textcircled{-2}$ $\textcircled{-2}$ $\textcircled{-2}$ $\textcircled{-2}$ $\textcircled{-2}$
 11 , 9 , 7 , _____ , _____ , _____

Step 2: $\textcircled{-2}$ $\textcircled{-2}$ $\textcircled{-2}$ $\textcircled{-2}$ $\textcircled{-2}$
 11 , 9 , 7 , 5 , 3 , 1

a) $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$
 10 , 9 , 8 , _____ , _____ , _____

b) $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$
 14 , 12 , 10 , _____ , _____ , _____

c) $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$
 23 , 22 , 21 , _____ , _____ , _____

d) $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$
 24 , 21 , 18 , _____ , _____ , _____

e) $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$
 90 , 80 , 70 , _____ , _____ , _____

f) $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$ $\textcircled{}$
 45 , 40 , 35 , _____ , _____ , _____

PA4-6: Increasing and Decreasing Sequences

1. Extend the patterns, using the “gap” provided.

Example 1:

$$6, \overset{+1}{\circlearrowleft}, 7, \underline{8}, \underline{9}$$

a) $5, \overset{+5}{\circlearrowleft}, 10, \underline{\quad}, \underline{\quad}, \underline{\quad}$

c) $3, \overset{+3}{\circlearrowleft}, 6, \underline{\quad}, \underline{\quad}, \underline{\quad}$

e) $12, \overset{+2}{\circlearrowleft}, 14, \underline{\quad}, \underline{\quad}, \underline{\quad}$

g) $14, \overset{-1}{\circlearrowleft}, 13, \underline{\quad}, \underline{\quad}, \underline{\quad}$

Example 2:

$$8, \overset{-2}{\circlearrowleft}, 6, \underline{4}, \underline{2}$$

b) $1, \overset{+3}{\circlearrowleft}, 4, \underline{\quad}, \underline{\quad}, \underline{\quad}$

d) $6, \overset{+2}{\circlearrowleft}, 8, \underline{\quad}, \underline{\quad}, \underline{\quad}$

f) $10, \overset{+5}{\circlearrowleft}, 15, \underline{\quad}, \underline{\quad}, \underline{\quad}$

h) $16, \overset{-2}{\circlearrowleft}, 14, \underline{\quad}, \underline{\quad}, \underline{\quad}$

2. Extend the patterns by first finding the “gap”.

Example:

$$3, \circlearrowleft, 5, \circlearrowleft, 7, \underline{\quad}$$

Step 1:

$$3, \overset{+2}{\circlearrowleft}, 5, \overset{+2}{\circlearrowleft}, 7, \underline{\quad}$$

a) $5, \circlearrowleft, 8, \circlearrowleft, 11, \underline{\quad}, \underline{\quad}$

c) $6, \circlearrowleft, 10, \circlearrowleft, 14, \underline{\quad}, \underline{\quad}$

e) $21, \circlearrowleft, 24, \circlearrowleft, 27, \underline{\quad}, \underline{\quad}$

g) $25, \circlearrowleft, 23, \circlearrowleft, 21, \underline{\quad}, \underline{\quad}$

Step 2:

$$3, \overset{+2}{\circlearrowleft}, 5, \overset{+2}{\circlearrowleft}, 7, \underline{9}$$


b) $2, \circlearrowleft, 4, \circlearrowleft, 6, \underline{\quad}, \underline{\quad}$

d) $1, \circlearrowleft, 3, \circlearrowleft, 5, \underline{\quad}, \underline{\quad}$

f) $12, \circlearrowleft, 17, \circlearrowleft, 22, \underline{\quad}, \underline{\quad}$

h) $59, \circlearrowleft, 54, \circlearrowleft, 49, \underline{\quad}, \underline{\quad}$

BONUS:

3.  Rachel has a box of 24 pears.

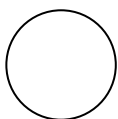
She eats 3 each day.

How many are left after 5 days? _____

4. Emi has saved \$17. She saves an additional \$4 each day.

How much money has she saved after 4 days? _____

Cathy is making patterns. She uses 4 different 2-D shapes:



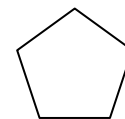
circle



triangle



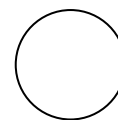
square



pentagon

She uses 3 colours:
 red = R
 yellow = Y
 blue = B

She uses 2 different sizes:



big



small

SHAPE, COLOUR and SIZE are referred to as the shapes' **attributes**.

TEACHER:

Make sure your students understand that while the two circles above are different sizes, they are still the same shape.

1. Circle the one attribute that changes in each pattern.

HINT: Check each attribute one at a time. First ask: "Does the shape change?" Then ask: "Does the colour change?" Then ask: "Does the size change?"

a)
 shape colour size

b)
 shape colour size

c)
 shape colour size

d)
 shape colour size

e)
 shape colour size

f)
 shape colour size

2. Write the one attribute that changes in each pattern.

a)

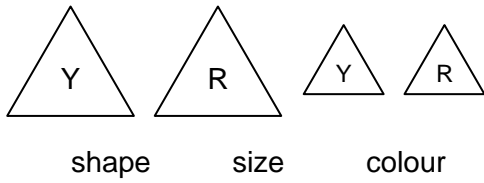
b)

c)

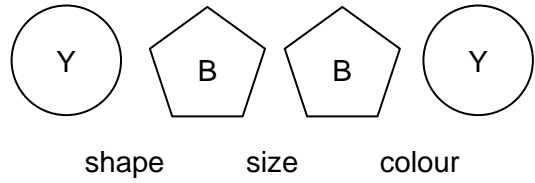
d)

3. Circle the two attributes that change in each sequence.

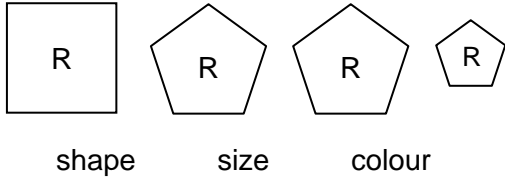
a)



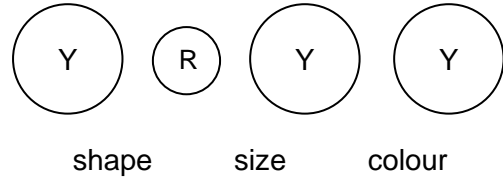
b)



c)

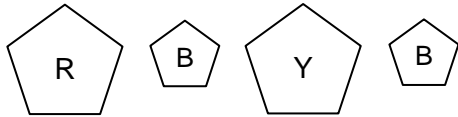


d)

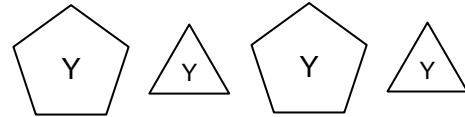


4. Write the two attributes that change in each pattern.

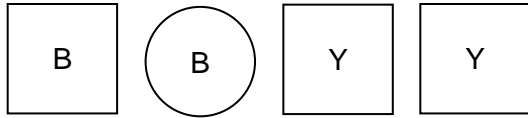
a)



b)



c)

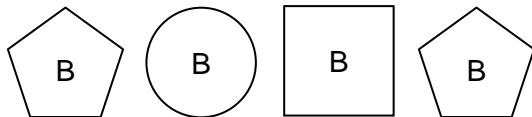


d)

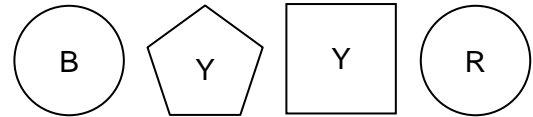


5. Write the one, two or three attributes that change in each sequence.

a)



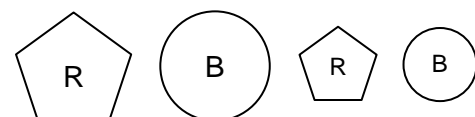
b)



c)



d)



PA4-8: Repeating Patterns

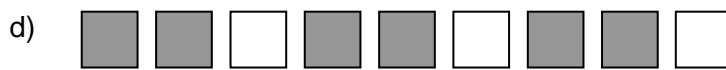
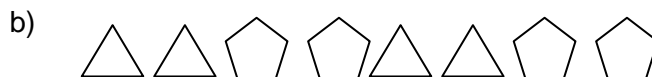
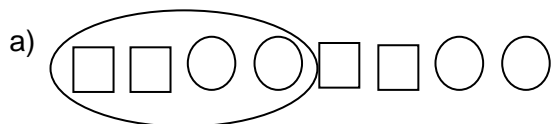
Marco makes a **repeating** pattern using blocks:



This is the **core** of Marco's pattern.

The **core** of a pattern is the part that repeats.

1. Circle the core of the following patterns. The first one is done for you.



h) C B B C B B C B B

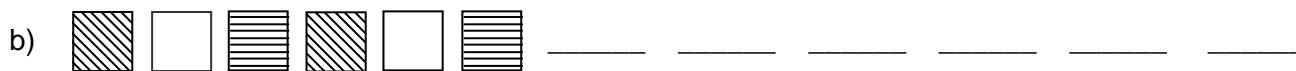
i) 1 2 4 1 2 4 1 2 4

j) 9 8 7 8 9 8 7 8 9 8 7 8



l) X Y Z X Y Z X Y Z

2. Circle the core of the pattern. Then continue the pattern.



c) A B C A B C A _____

d) A B A A B A _____

e) 3 0 0 4 3 0 0 4 _____

f) 1 8 1 1 8 1 1 8 1 _____

PA4-9: Extending a Pattern Using a Rule

1. Continue the following sequences by adding the number given.

a) (add 3) 31, 34, _____, _____, _____

b) (add 5) 70, 75, _____, _____, _____

c) (add 2) 24, 26, _____, _____, _____

d) (add 10) 50, 60, _____, _____, _____

e) (add 4) 31, 35, _____, _____, _____

f) (add 9) 11, 20, _____, _____, _____

g) (add 6) 10, 16, _____, _____, _____

h) (add 7) 70, 77, _____, _____, _____

2. Continue the following sequences, subtracting by the number given.

a) (subtract 2) 14, 12, _____, _____, _____

b) (subtract 3) 15, 12, _____, _____, _____

c) (subtract 5) 75, 70, _____, _____, _____

d) (subtract 3) 66, 63, _____, _____, _____

e) (subtract 4) 46, 42, _____, _____, _____

f) (subtract 7) 49, 42, _____, _____, _____

g) (subtract 3) 91, 88, _____, _____, _____

h) (subtract 5) 131, 126, _____, _____, _____

BONUS:

3. Create a pattern of your own. After writing down the pattern in the blanks, give the rule you used.

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

4. Which one of the following sequences was made by adding 3? Circle it.

HINT: Check all the numbers in the sequence.

a) 3, 5, 9, 12

b) 3, 6, 8, 12

c) 3, 6, 9, 12

5. **72, 64, 56, 48, 40...**

Zannat says this sequence was made by subtracting 7 each time.

Faruq says it was made by subtracting 8.

Who is right? Explain.

PA4-10: Identifying Pattern Rules

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

- a) 2, 5, 8, 11 add _____
- b) 3, 6, 9, 12 add _____
- c) 15, 17, 19, 21 add _____
- d) 44, 46, 48, 50 add _____
- e) 41, 46, 51, 56 add _____
- f) 19, 22, 25, 28 add _____
- g) 243, 245, 247, 249 add _____
- h) 21, 27, 33, 39 add _____
- i) 15, 18, 21, 24 add _____
- j) 41, 45, 49, 53 add _____

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

- a) 18, 16, 14, 12 subtract _____
- b) 35, 30, 25, 20 subtract _____
- c) 100, 99, 98, 97 subtract _____
- d) 41, 38, 35, 32 subtract _____
- e) 17, 14, 11, 8 subtract _____
- f) 99, 97, 95, 93 subtract _____
- g) 180, 170, 160, 150 subtract _____
- h) 100, 95, 90, 85 subtract _____
- i) 27, 25, 23, 21 subtract _____
- j) 90, 84, 78, 72 subtract _____

3. State the rule for the following patterns.

- a) 119, 112, 105, 98, 91 subtract _____
- b) 1, 9, 17, 25, 33, 41 add _____
- c) 101, 105, 109, 113 _____
- d) 110, 99, 88, 77, _____

4. Find the rule for the pattern. Then continue the pattern by filling in the blanks.

12, 17, 22, _____, _____, _____ The rule is: _____

5. **5, 8, 11, 14, 17...**

Keith says the pattern rule is: "Start at 5 and subtract 3 each time."

Jane says the rule is: "Add 4 each time."

Molly says the rule is: "Start at 5 and add 3 each time."

a) Whose rule is correct? _____

b) What mistakes did the others make? _____

PA4-11: Introduction to T-tables

Abdul makes a **growing pattern** with blocks.

He records the number of blocks in each figure in a chart or T-table. He also records the number of blocks he adds each time he makes a new figure.



Figure 1

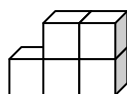


Figure 2

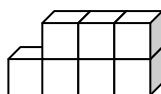


Figure 3

Figure	# of Blocks
1	3
2	5
3	7

2
2
← Number of blocks added each time

The number of blocks in the figures are 3, 5, 7, ...

Abdul writes a rule for this number pattern.

RULE: Start at 3 and add 2 each time.

1. Abdul makes other growing patterns with blocks. How many blocks 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 Blocks
1	3
2	7
3	11

Rule:

b)

Figure	Number of Blocks
1	2
2	6
3	10

Rule:

c)

Figure	Number of Blocks
1	2
2	4
3	6

Rule:

d)

Figure	Number of Blocks
1	1
2	6
3	11

Rule:

e)

Figure	Number of Blocks
1	5
2	9
3	13

Rule:

f)

Figure	Number of Blocks
1	12
2	18
3	24

Rule:

g)

Figure	Number of Blocks
1	2
2	10
3	18

Rule:

h)

Figure	Number of Blocks
1	3
2	6
3	9

Rule:

i)

Figure	Number of Blocks
1	6
2	13
3	20

Rule:

BONUS

2. Extend the number pattern. How many blocks would be used in the 6th figure?

a)

Figure	Number of Blocks
1	2
2	7
3	12

b)

Figure	Number of Blocks
1	3
2	6
3	9

c)

Figure	Number of Blocks
1	3
2	8
3	13

3. Amy makes a growing pattern with blocks. After making the 3rd figure, she only has 14 blocks left. Does she have enough blocks to complete the 4th figure?

a)

Figure	Number of Blocks
1	3
2	7
3	11

YES NO

b)

Figure	Number of Blocks
1	7
2	10
3	13

YES NO

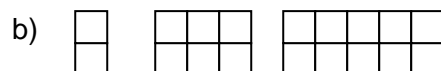
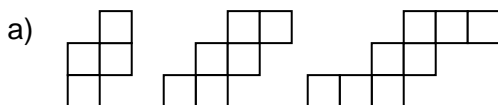
c)

Figure	Number of Blocks
1	1
2	5
3	9

YES NO

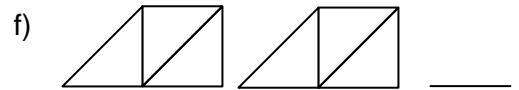
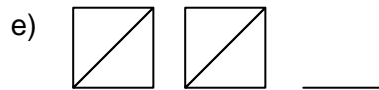
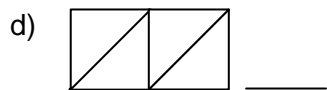
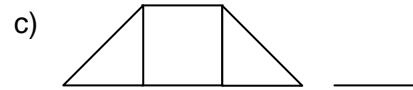
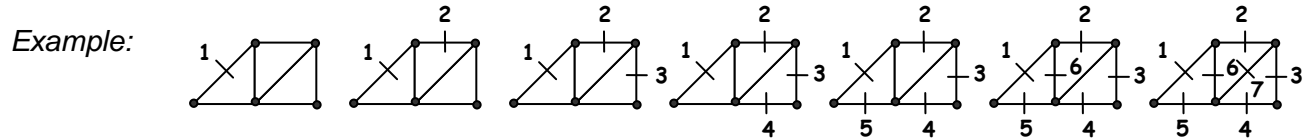


4. In your notebook, make a chart to show how many squares will be needed to make the fifth figure in each pattern.



1. Count the number of line segments in each set of figures.

HINT: Count around the outside of the figure first, marking each line segment as you count.



2. Continue the pattern below, then complete the chart.

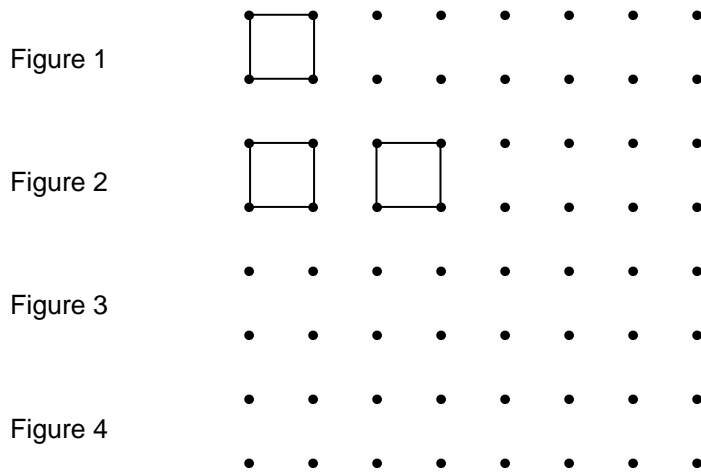


Figure	Number of Line Segments
1	4
2	8
3	
4	

How many line segments would Figure 5 have? _____

3. Continue the pattern below, then complete the chart.

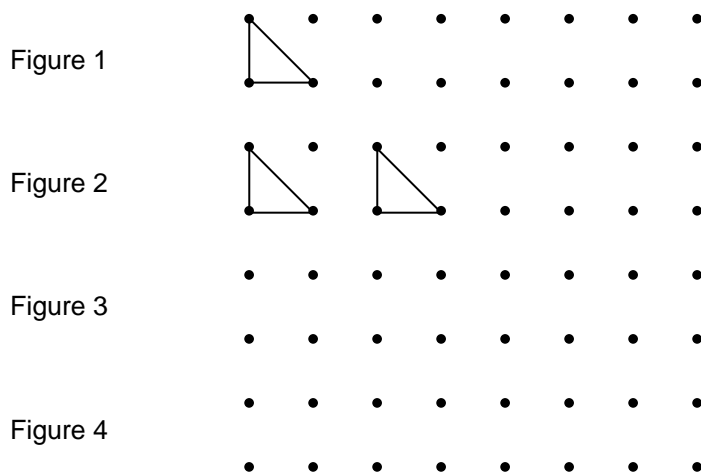


Figure	Number of Line Segments
1	
2	
3	
4	

How many line segments would Figure 5 have? _____

4. Continue the pattern below, then complete the chart.

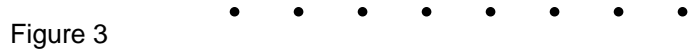
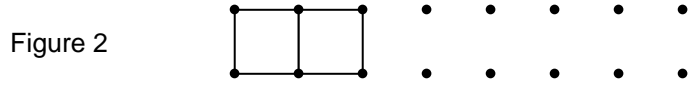
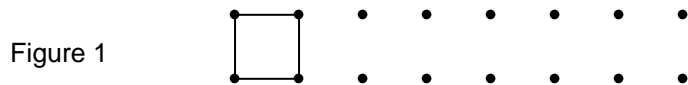


Figure	Number of Line Segments
1	
2	
3	
4	

- a) How many line segments would Figure 5 have? _____
- b) How many line segments would Figure 6 have? _____
- c) How many line segments would Figure 7 have? _____

5. Continue the pattern below, then complete the chart.

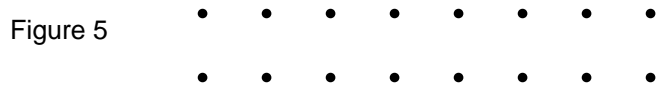
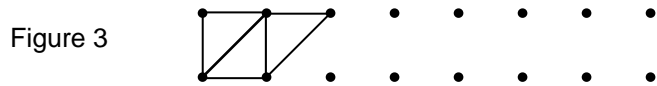


Figure	Number of Line Segments
1	
2	
3	
4	
5	

- a) How many line segments would Figure 6 have? _____
- b) How many line segments would Figure 7 have? _____
- c) How many line segments would Figure 8 have? _____

6. Extend the chart. How many young would five animals have?



a)

Arctic Fox	Number of Cubs
1	5
2	10

b)

Woodchuck	Number of Pups
1	4
2	8

c)

White Tailed Deer	Number of Fawns
1	2
2	4

d)

Osprey	Number of Eggs
1	3
2	6

7. How much money would Claude earn for four hours of work?

a)

Hours Worked	Dollars Earned in an Hour
1	\$9

b)

Hours Worked	Dollars Earned in an Hour
1	\$10

c)

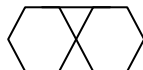
Hours Worked	Dollars Earned in an Hour
1	\$8



8. Step 1



Step 2



Step 3



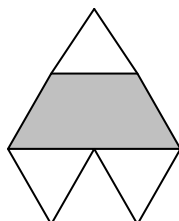
Peter wants to make a design using triangles and hexagons. He has 6 hexagons and 9 triangles.

Does he have enough triangles to use all 6 hexagons? _____

Hexagons	Triangles

9. Hanna wants to make Christmas ornaments like the one shown below. She has 5 trapezoids (the shaded figure).

Fill in the chart to show how many triangles she will need.



Trapezoids	Triangles

PA4-13: Patterns Involving Time

For the exercises on this page you will need to know:

The Days of the Week: **Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday.**

The Months of the Year: **January, February, March, April, May, June, July, August, September, October, November, December.**

1. Harry starts work on Tuesday morning.
He repairs 4 bikes each day.

Day	Total Number of Bikes Repaired
Tuesday	4

How many bikes has he repaired by Friday evening?

3. During a snow storm, 5 cm of snow had fallen by 6 pm.
3 cm of snow fell every hour after that.

Hour	Depth of Snow
6 pm	5 cm

How deep was the snow at 9 pm?



5. Karen writes 14 pages of her book in February.
She writes 8 pages every month after that.
How many pages has she written by the end of June?

2. Meryl saves \$20 in July.
She saves \$10 each month after that.

Month	Saved
July	\$20

How much has she saved by the end of October?

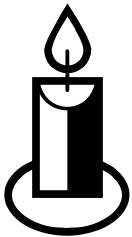
4. Adria's maple sapling grows 3 cm in May.
It grows 6 cm each month after that.

Month	Height of Sapling
May	

How high is the sapling by the end of August?

6. Mario starts work on Wednesday morning.
He plants 5 trees each day.
How many trees has he planted by Friday evening?

7. Sandhu lights a candle at 6 pm. It is 30 cm high.
 At 7 pm, the candle is 27 cm high.
 At 8 pm, it is 24 cm high.



- a) How many cm does the candle burn down every hour?
 Write your answers (with a minus sign) in the circles provided.

- b) How high is the candle at 11 pm?

Hour	Height of the Candle
6 pm	30 cm
7 pm	27 cm
8 pm	24 cm
9 pm	
10 pm	

8. Abdullah has \$35 in his savings account at the end of March.
 He spends \$7 each month.

Month	Savings
March	\$35

How much does he have in his account at the end of June?

10. Karen has \$57 in her savings account at the end of June.
 She spends \$6 each month.

Month	Savings

How much does she have at the end of September?

9. Allishah has \$38 in her savings account at the end of October.
 She spends \$6 each month.

Month	Savings

How much does she have at the end of January?

11. A fish tank contains 20 L of water at 5 pm.
 3 L of water leaks out each hour.

Time	Amount of Water

How much water is left at 8 pm?



Answer the following questions in your notebook.

1. A marina rents canoes at \$7 for the first hour and \$4 for every hour after that. How much would it cost to rent a canoe for 6 hours?



2. A bookstore has a special sale: the first book you buy costs \$10 and each book after that costs \$5. Claude has \$25. Does he have enough to buy five books?



3. The snow is 19 cm deep at 3 pm. 5 cm of snow falls every hour. How deep is the snow at 7 pm?



4. Jacob saves \$30 in July. He saves \$4 each month after that. Amanda saves \$22 in July. She saves \$6 each month after that. Who has saved the most money by the end of January?

5. Draw a picture or make a sequence of models (using blocks or counters) that match the pattern.

a)

Figure	Number of Objects
1	4
2	6
3	8

b)

Figure	Number of Objects
1	3
2	6
3	9

c)

Figure	Number of Objects
1	4
2	7
3	10

6. Edith's maple sapling grows 5 cm in July. It grows 7 cm each month after that. Ron's sapling grows 7 cm in July. It grows 3 cm each month after that. Whose sapling is higher by the end of September?

7. Chloe's candle is 28 cm high when she lights it at 5 pm. It burns down 4 cm every hour. Dora's candle is 21 cm high when she lights it at 5 pm. It burns down 3 cm every hour. Whose candle is taller at 10 pm?

