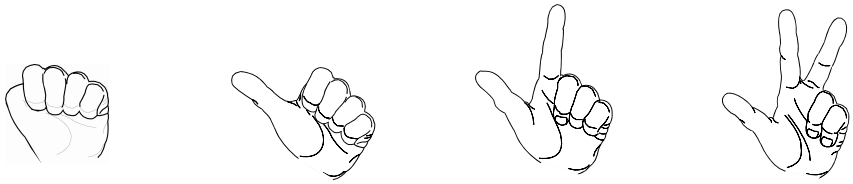
PA3-1: Counting

Tom finds the **difference** between 9 and 6 by counting on his fingers. He says "6" with his fist closed, then counts to 9, raising one finger at a time.



6 7 8 9

When he says "9", he has raised 3 fingers. So the difference or "gap" between 9 and 6 is 3.

---

1. Count the gap between the numbers. Write your answer in the circle. (If you know your subtraction facts, you may find the answer without counting.)

a) 2 ◯ 4 b) 3 ◯ 5 c) 5 ◯ 8 d) 6 ◯ 8

e) 4 ◯ 5 f) 3 ◯ 4 g) 4 ◯ 6 h) 7 ◯ 9

i) 2 ◯ 5 j) 3 ◯ 6 k) 1 ◯ 4 l) 4 ◯ 7

m) 5 ◯ 10 n) 1 ◯ 6 o) 5 ◯ 7 p) 2 ◯ 7

q) 5 ◯ 9 r) 3 ◯ 7 s) 7 ◯ 10 t) 6 ◯ 9

BONUS

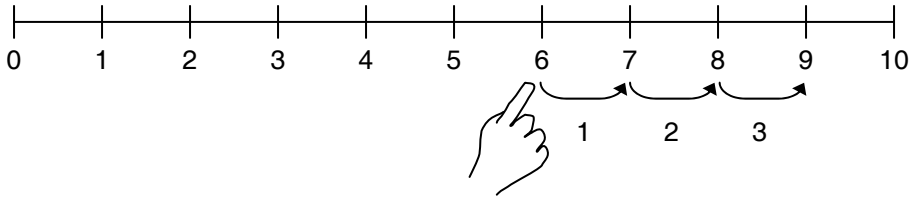
u) 19 ◯ 21 v) 8 ◯ 12 w) 28 ◯ 32 x) 17 ◯ 22

y) 19 ◯ 23 z) 46 ◯ 51 aa) 37 ◯ 40 bb) 99 ◯ 101

PA3-1: Counting *(continued)*

What number added to 6 gives 9? $6 + \boxed{?} = 9$

Anne finds the answer using a **number line**. She puts her finger on 6 and counts the number of spaces between 6 and 9.



She counts 3 spaces, 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 following number line to find the <u>difference</u> between the two numbers. Write your answer in the box.

a) $3 + \square = 5$ b) $2 + \square = 6$ c) $4 + \square = 7$

d) $8 + \square = 10$ e) $7 + \square = 12$ f) $11 + \square = 14$

g) $10 + \square = 12$ h) $4 + \square = 5$ i) $12 + \square = 15$

j) $13 + \square = 15$ k) $2 + \square = 8$ l) $9 + \square = 14$

m) $\square + 12 = 14$ n) $3 + \square = 10$ o) $\square + 8 = 11$

BONUS

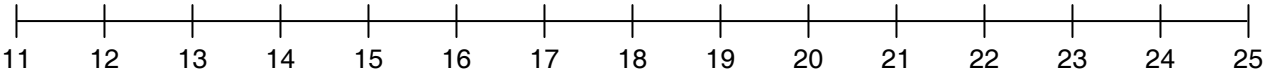
p) $\square + 3 = 12$ q) $1 + \square = 9$ r) $2 + \square = 12$

s) $\square + 8 = 14$ t) $4 + \square = 11$ u) $6 + \square = 15$

v) $\square + 6 = 15$ w) $\square + 4 = 14$ x) $3 + \square = 15$

PA3-1: Counting *(continued)*

3. Use the following number line to find the difference between the two numbers. Write your answer in the circle.



a) 12 ◯ 15 b) 13 ◯ 17 c) 11 ◯ 14

d) 22 ◯ 24 e) 19 ◯ 23 f) 17 ◯ 18

g) 14 ◯ 21 h) 15 ◯ 19 i) 16 ◯ 20

j) 13 ◯ 19 k) 11 ◯ 15 l) 17 ◯ 24

m) 13 ◯ 16 n) 12 ◯ 17 o) 21 ◯ 23

p) 18 ◯ 22 q) 13 ◯ 23 r) 14 ◯ 22

s) 11 ◯ 19 t) 12 ◯ 24

4. Fill in the missing number.
HINT: Use the number line to find the difference between the smaller and the larger number.

a) 15 is _____ more than 13 b) 20 is _____ more than 17 c) 23 is _____ more than 16

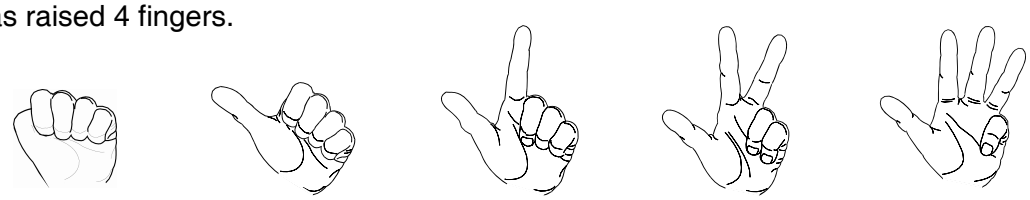
d) 22 is _____ more than 19 e) 18 is _____ more than 15 f) 16 is _____ more than 15

g) 20 is _____ more than 19 h) 17 is _____ more than 13 i) 23 is _____ more than 18

PA3-2: Preparation for Increasing Sequences

What number is 4 **more than** 8? (Or: What is 8 + 4?)

Carlo finds the answer by counting on his fingers. He says "8" with his fist closed, then counts up from 8 until he has raised 4 fingers.



8 9 10 11 12

The number 12 is 4 **more than** 8.

---

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

a) 3 (4) 7 b) 9 (2) _____ c) 6 (3) _____ d) 4 (4) _____

e) 7 (5) _____ f) 6 (4) _____ g) 2 (8) _____ h) 9 (6) _____

i) 10 (8) _____ j) 17 (9) _____ k) 14 (7) _____ l) 12 (5) _____

BONUS

m) 27 (2) _____ n) 35 (5) _____ o) 52 (3) _____ p) 47 (4) _____

q) 36 (6) _____ r) 82 (5) _____ s) 97 (4) _____ t) 95 (8) _____

2. Fill in the missing numbers.

a) _____ is 3 more than 6 b) _____ is 2 more than 7 c) _____ is 4 more than 6

d) _____ is 1 more than 8 e) _____ is 5 more than 4 f) _____ is 4 more than 13

g) _____ is 6 more than 9 h) _____ is 7 more than 7 i) _____ is 5 more than 17

PA3-3: Increasing Sequences

Tara wants to continue the number pattern.

6 , 8 , 10 , 12 , ?

She finds the **difference** between the first two numbers by counting on her fingers.
She says “6” with her fist closed and counts until she reaches 8.

6 7 8

She has raised 2 fingers so the difference between 6 and 8 is 2.

(2)
6 , 8 , 10 , 12 , ?

She checks that the difference between the other numbers is 2.

(2) (2) (2)
6 , 8 , 10 , 12 , ?

To continue the pattern, Tara adds 2 to the last number in the sequence.
She says “12” with her fist closed and counts up until she has raised 2 fingers.

12 13 14

(2) (2) (2) (2)
6 , 8 , 10 , 12 , 14

---

1. Extend the following patterns.
   NOTE: It is important to start by finding the gap between the numbers.

a) 1 , 3 , 5 , ____ , ____ , ____

b) 0 , 2 , 4 , ____ , ____ , ____

c) 2 , 5 , 8 , ____ , ____ , ____

d) 0 , 3 , 6 , ____ , ____ , ____

PA3-3: Increasing Sequences *(continued)*

e) 0 , 5 , 10 , ____ , ____ , ____

f) 5 , 7 , 9 , ____ , ____ , ____

g) 3 , 7 , 11 , ____ , ____ , ____

h) 2 , 6 , 10 , ____ , ____ , ____

i) 4 , 8 , 12 , ____ , ____ , ____

j) 10 , 15 , 20 , ____ , ____ , ____

k) 1 , 4 , 7 , ____ , ____ , ____

l) 5 , 9 , 13 , ____ , ____ , ____

m) 11 , 13 , 15 , ____ , ____ , ____ , ____ , ____ , ____

BONUS

2. Extend the following patterns.

a) 1 , 6 , 11 , ____ , ____ , ____

b) 5 , 12 , 19 , ____ , ____ , ____

c) 21 , 24 , 27 , ____ , ____ , ____

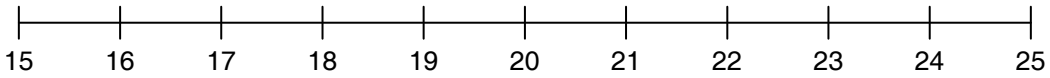
d) 86 , 88 , 90 , ____ , ____ , ____

Use increasing sequences to solve these problems.

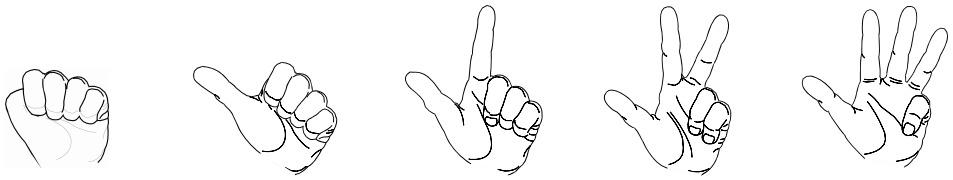
3. Mary reads 3 pages of her book each night.
   Last night she was on page 34.
   What page will she reach tonight?

4. Jane runs 10 blocks on Monday.
   Each day she runs 2 blocks further than the day before.
   How far does she run on Wednesday?

PA3-4: Counting Backwards



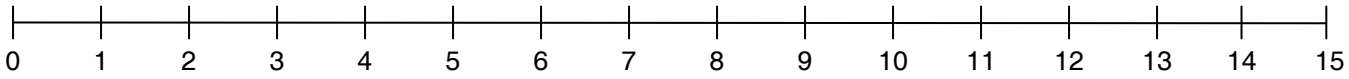
What number must you **subtract** from 22 to get 18?
Dana finds the answer by counting backwards on her fingers. She uses the number line to help.



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

---

1. What number must you <u>subtract</u> from the bigger number to get the smaller number?



a) 7 (- 3) 4 b) 6 ( ) 3 c) 9 ( ) 7

d) 5 ( ) 1 e) 8 ( ) 4 f) 10 ( ) 5

g) 12 ( ) 9 h) 5 ( ) 4 i) 10 ( ) 4

j) 14 ( ) 9 k) 5 ( ) 2 l) 12 ( ) 4

m) 13 ( ) 9 n) 15 ( ) 11 o) 12 ( ) 10

p) 12 ( ) 6 q) 13 ( ) 5 r) 14 ( ) 7

s) 15 ( ) 5 t) 11 ( ) 2 u) 10 ( ) 2

PA3-4: Counting Backwards *(continued)*

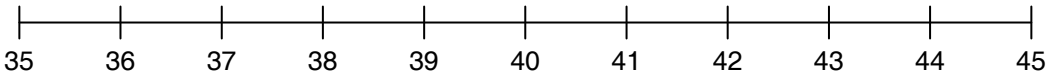
2. Find the gap between the numbers by counting backwards on your fingers.

a) 32 (- 4) 28 b) 31 ( ) 29 c) 32 ( ) 27

d) 31 ( ) 27 e) 30 ( ) 26 f) 33 ( ) 26

g) 28 ( ) 26 h) 32 ( ) 25 i) 34 ( ) 26

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



a) 43 (– 4) 39 b) 41 ( ) 39 c) 43 ( ) 37

d) 41 ( ) 38 e) 40 ( ) 36 f) 42 ( ) 35

g) 41 ( ) 37 h) 45 ( ) 38 i) 44 ( ) 36

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

a) 56 ( ) 51 b) 59 ( ) 57 c) 50 ( ) 48

d) 68 ( ) 61 e) 60 ( ) 58 f) 70 ( ) 68

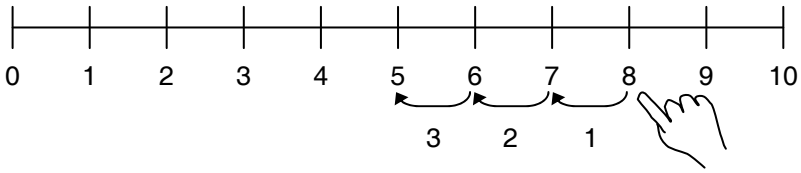
g) 72 ( ) 68 h) 81 ( ) 79 i) 83 ( ) 78

j) 128 ( ) 125 k) 167 ( ) 162 l) 181 ( ) 178

PA3-4: Counting Backwards *(continued)*

What number **subtracted** from 8 gives 5? $8 - \boxed{?} = 5$

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

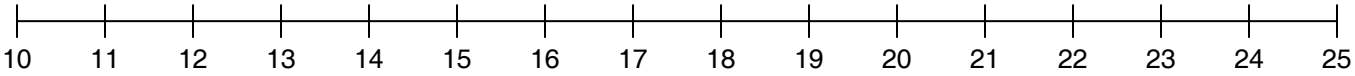


She counts (backward 3 spaces to 5)
to find the number of spaces between 8 and 5.

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

---

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



a) $17 - \square = 14$ b) $15 - \square = 13$ c) $21 - \square = 18$

d) $17 - \square = 12$ e) $19 - \square = 14$ f) $17 - \square = 13$

g) $18 - \square = 16$ h) $21 - \square = 20$ i) $24 - \square = 21$

j) $20 - \square = 14$ k) $21 - \square = 17$ l) $19 - \square = 13$

m) $15 - \square = 12$ n) $16 - \square = 14$ o) $18 - \square = 14$

p) $21 - \square = 15$ q) $20 - \square = 12$ r) $17 - \square = 16$

BONUS

6. Fill in the missing number.

a) 17 is _____ less than 20 b) 11 is _____ less than 15 c) 16 is _____ less than 21

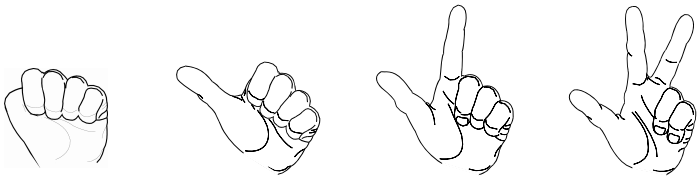
d) 19 is _____ less than 21 e) 18 is _____ less than 24 f) 15 is _____ less than 22

g) 14 is _____ less than 19 h) 13 is _____ less than 21 i) 12 is _____ less than 15

PA3-5: Preparation for Decreasing Sequences

What number is 3 **less than** 9? $9 - 3 = \boxed{?}$

Aron finds the answer by counting on his fingers.
He says "9" with his fist closed and counts backwards until he has raised 3 fingers.



9 8 7 6

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) 5 (−2) _____ b) 9 (−3) _____ c) 8 (−4) _____ d) 7 (−1) _____

e) 7 (−5) _____ f) 6 (−4) _____ g) 3 (−1) _____ h) 11 (−2) _____

i) 10 (−6) _____ j) 13 (−2) _____ k) 19 (−4) _____ l) 18 (−3) _____

BONUS

m) 28 (−4) _____ n) 35 (−6) _____ o) 57 (−8) _____ p) 62 (−4) _____

q) 87 (−4) _____ r) 48 (−2) _____ s) 92 (−5) _____ t) 100 (−3) _____

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

j) _____ is 8 less than 59 k) _____ is 6 less than 63 l) _____ is 4 less than 78

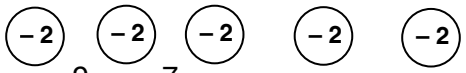
PA3-6: Decreasing Sequences

1. Extend the **decreasing** patterns.
   NOTE: It is important to start by finding the gap between the numbers.

Example:

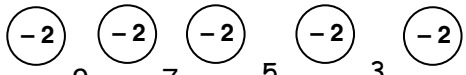
11 , 9 , 7 , ____ , ____ , ____

Step 1:



11 , 9 , 7 , ____ , ____ , ____

Step 2:



11 , 9 , 7 , 5 , 3 , 1

a) 10 , 9 , 8 , ____ , ____ , ____

b) 14 , 12 , 10 , ____ , ____ , ____

c) 23 , 22 , 21 , ____ , ____ , ____

d) 24 , 21 , 18 , ____ , ____ , ____

e) 90 , 80 , 70 , ____ , ____ , ____

f) 45 , 40 , 35 , ____ , ____ , ____

g) 15 , 13 , 11 , ____ , ____ , ____

h) 33 , 30 , 27 , ____ , ____ , ____

i) 23 , 21 , 19 , ____ , ____ , ____

j) 28 , 25 , 22 , ____ , ____ , ____

BONUS

k) 95 , 90 , 85 , ____ , ____ , ____

l) 110 , 100 , 90 , ____ , ____ , ____

m) 44 , 40 , 36 , ____ , ____ , ____ , ____ , ____ , ____

PA3-7: Increasing and Decreasing Sequences

1. Extend the patterns, using the gap provided.

Example 1:

(+1)
6 , 7 , 8 , 9

Example 2:

(−2)
8 , 6 , 4 , 2

a) (+5) 5 , 10 , ____ , ____

b) (+3) 2 , 5 , ____ , ____

c) (+3) 3 , 6 , ____ , ____

d) (+2) 8 , 10 , ____ , ____

e) (+2) 14 , 16 , ____ , ____

f) (+5) 15 , 20 , ____ , ____

g) (−1) 13 , 12 , ____ , ____

h) (−2) 18 , 16 , ____ , ____

i) (−5) 25 , 20 , ____ , ____

j) (−2) 9 , 7 , ____ , ____

k) (−3) 22 , 19 , ____ , ____

l) (−4) 17 , 13 , ____ , ____

m) (−5) 29 , 24 , ____ , ____

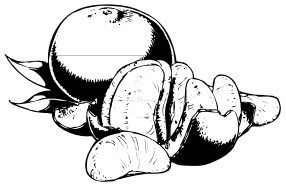
n) (+5) 32 , 37 , ____ , ____

o) (+3) 21 , 24 , ____ , ____

p) (−2) 102 , 100 , ____ , ____

BONUS

2. Rachel has a box of 24 tangerines. She eats 3 each day for 5 days. How many are left?



PA3-7: Increasing and Decreasing Sequences *(continued)*

3. Extend the patterns by first finding the gap.
HINT: You should first check that the gap is the same between each pair of numbers!

Example:

3 , 5 , 7 , ____

Step 1:

3 , 5 , 7 , ____

Step 2:

3 , 5 , 7 , 9

a) 5 , 8 , 11 , ____

b) 2 , 4 , 6 , ____

c) 6 , 10 , 14 , ____

d) 1 , 3 , 5 , ____

e) 21 , 24 , 27 , ____

f) 12 , 17 , 22 , ____

g) 25 , 23 , 21 , ____

h) 29 , 24 , 19 , ____

i) 12 , 9 , 6 , ____ , ____

j) 30 , 25 , 20 , ____ , ____

BONUS

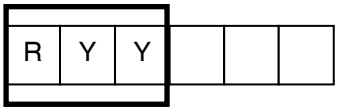
k) 45 , 48 , 51 , ____

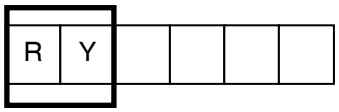
l) 105 , 95 , 85 , ____ , ____

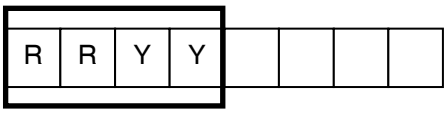
m) 32 , 34 , 36 , ____ , ____ , ____ , ____ , ____ , ____ , ____

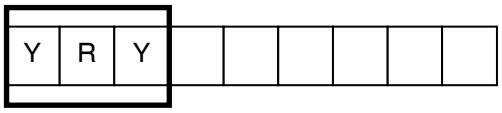
PA3-11: Extending Repeating Patterns

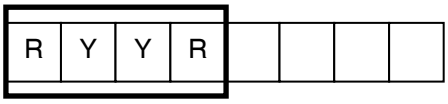
1. The box shows the core of the pattern Karen made with red (R) and yellow (Y) blocks. Continue her pattern.

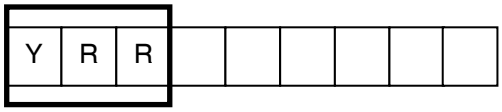
a) 

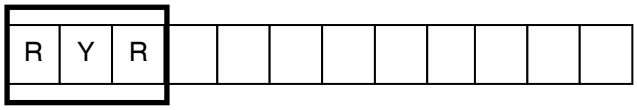
b) 

c) 

d) 

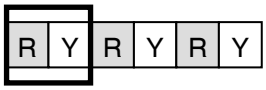
e) 

f) 

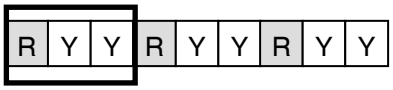
g) 

h) 

2. The core of Rachel's pattern is in the rectangle.
Stan tried to continue the pattern.
Did he continue the pattern correctly?
HINT: Shade the reds if it helps.

a) 

YES NO

b) 

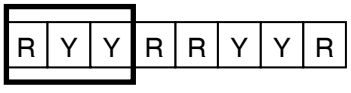
YES NO

c) 

YES NO

d) 

YES NO

e) 

YES NO

f) 

YES NO

PA3-12: Finding Cores in Patterns

1. Are the blocks in the rectangle the <u>core</u> of the pattern?

a) R Y R Y R Y

YES NO

b) R Y Y R Y Y R Y Y

YES NO

c) R Y Y R R Y Y R

YES NO

d) Y Y R R Y Y R R Y Y R R

YES NO

e) Y R Y R R Y R Y R R

YES NO

f) R Y R Y Y R Y R Y Y

YES NO

2. Put a rectangle around the blocks that make up the core.

a) Y R R Y R R Y R R

b) R R R Y R R R Y

c) Y Y R R Y Y R R Y Y R R

d) Y R R Y Y R R Y

e) R Y R Y Y Y R Y R Y Y Y

f) R Y R Y R Y R Y R

g) Y R Y Y R Y R Y Y R Y R

h) R Y Y Y R R Y Y Y R

3. Continue the pattern below to show 20 blocks altogether.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
R	**Y**	**R**	**Y**	**R**	**Y**	**R**	**Y**	**R**	**Y**										

a) What colour are the following blocks?

i) block 12 ii) block 14 iii) block 15 iv) block 18

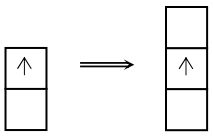
b) What colour are the blocks of the even numbers (2, 4, 6, 8, ...)? _____

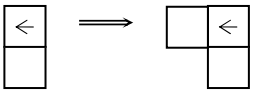
c) If you continued the pattern, what colour would the following blocks be?

i) block 22 ii) block 27 iii) block 35 iv) block 44

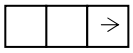
PA3-13: Making Patterns with Squares

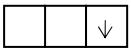
1. Add a square to the figure (along the edge shown by the arrow).

Example 1: 

Example 2: 

a) 

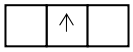
b) 

c) 

d) 

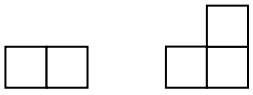
e) 

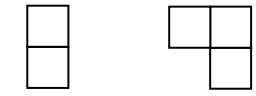
f) 

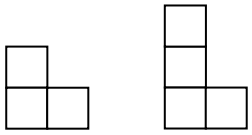
g) 

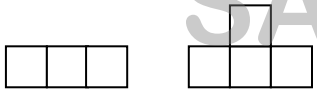
h) 

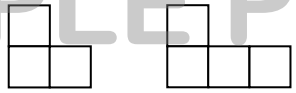
2. Shade the square that was added to Figure 1 to make Figure 2.

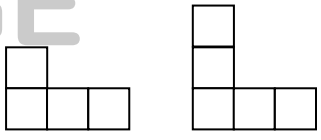
a) 
Figure 1 Figure 2

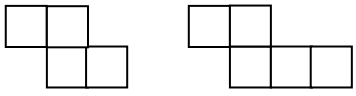
b) 
Figure 1 Figure 2

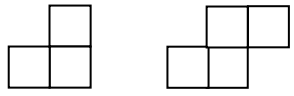
c) 
Figure 1 Figure 2

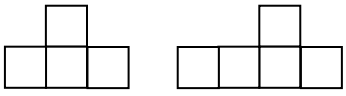
d) 
Figure 1 Figure 2

e) 
Figure 1 Figure 2

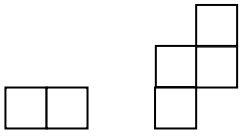
f) 
Figure 1 Figure 2

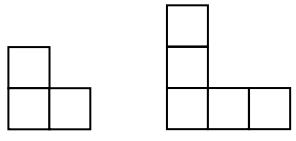
g) 
Figure 1 Figure 2

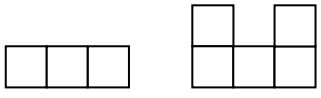
h) 
Figure 1 Figure 2

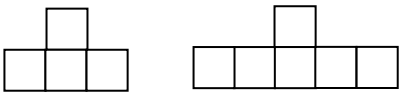
i) 
Figure 1 Figure 2

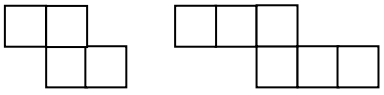
3. Shade the <u>two</u> squares that were added to Figure 1 to make Figure 2.

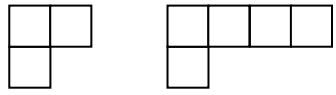
a) 
Figure 1 Figure 2

b) 
Figure 1 Figure 2

c) 
Figure 1 Figure 2

d) 
Figure 1 Figure 2

e) 
Figure 1 Figure 2

f) 
Figure 1 Figure 2

PA3-13: Making Patterns with Squares *(continued)*

4. Shade any squares that were added to make the next figure in the pattern.

a)

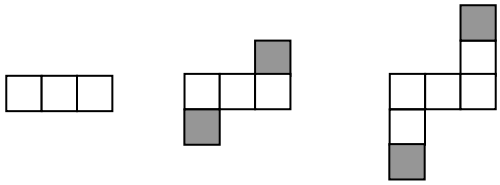


Figure 1 Figure 2 Figure 3

b)

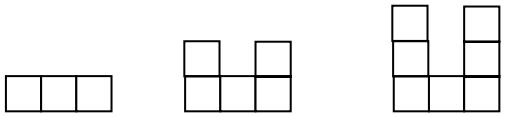


Figure 1 Figure 2 Figure 3

c)

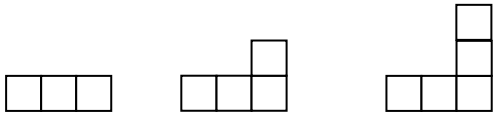


Figure 1 Figure 2 Figure 3

d)

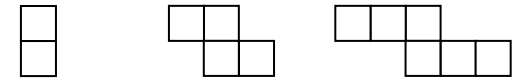


Figure 1 Figure 2 Figure 3

5. Shade any squares that were added to make the next figure.
Then draw Figure 4 in the box provided.

a)

Figure 1 Figure 2 Figure 3

b)

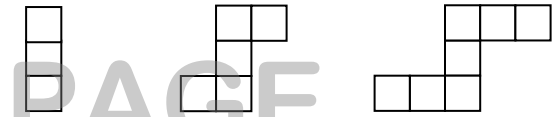


Figure 1 Figure 2 Figure 3

Figure 4

Figure 4

c)

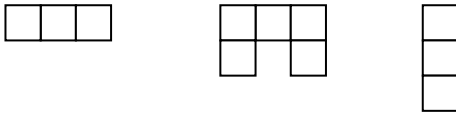


Figure 1 Figure 2 Figure 3

d)

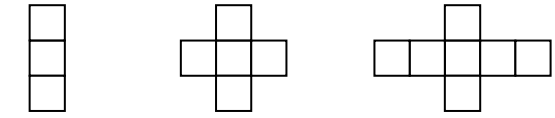


Figure 1 Figure 2 Figure 3

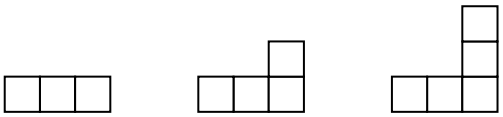
Figure 4

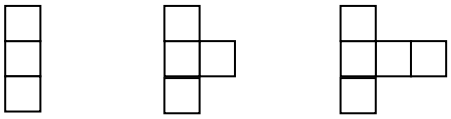
Figure 4

Sample pages were taken from a different edition of JUMP! Math, so you may notice some subtle formatting/page number changes. The page content remains the same.

PA3-14: Making Patterns with Squares (Advanced)

1. Draw the next figure (or build it using blocks).

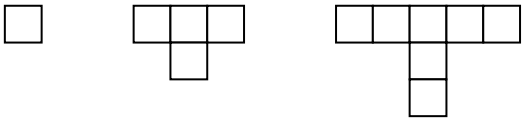
a) 

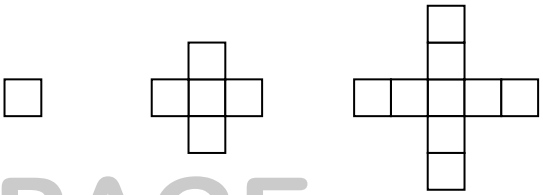
b) 

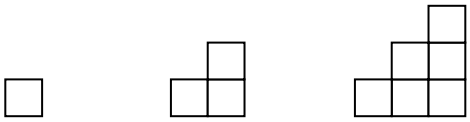
BONUS

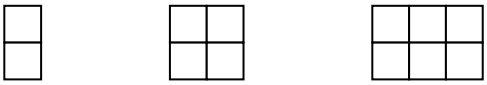
2. In the figures below, shade the squares that were added each time.

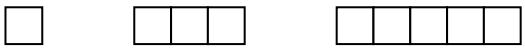
   For an extra challenge draw the next figure on grid paper (or build it with blocks).

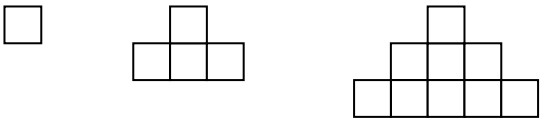
a) 

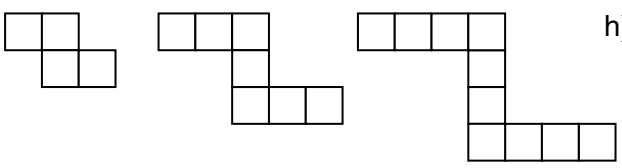
b) 

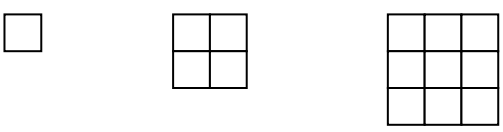
c) 

d) 

e) 

f) 

g) 

h) 

Sample pages were taken from a different edition of JUMP! Math, so you may notice some subtle formatting/page number changes. The page content remains the same.

PA3-15: Extending a Pattern Using a Rule

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

   a) (add 3) 30, 33, _____ , _____ , _____ b) (add 5) 60, 65, _____ , _____ , _____

   c) (add 2) 26, 28, _____ , _____ , _____ d) (add 10) 20, 30, _____ , _____ , _____

   e) (add 3) 12, 15, _____ , _____ , _____ f) (add 5) 46, 51, _____ , _____ , _____

   g) (add 5) 105, 110, _____ , _____ , _____ h) (add 5) 4, 9, _____ , _____ , _____

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

   a) (subtract 2) 12, 10, ____ , ____ , ____ b) (subtract 3) 18, 15, ____ , ____ , ____

   c) (subtract 5) 55, 50, ____ , ____ , ____ d) (subtract 3) 63, 60, ____ , ____ , ____

   e) (subtract 2) 88, 86, ____ , ____ , ____ f) (subtract 5) 79, 74, ____ , ____ , ____

   g) (subtract 3) 30, 27, ____ , ____ , ____ h) (subtract 5) 200, 195, ____ , ____ , ____

BONUS

3. Which of the following sequences were made by adding 3? Circle them.
   HINT: Check all the numbers in the sequence.

   a) 3, 7, 9, 11 b) 3, 6, 9, 11 c) 3, 6, 9, 12

   d) 19, 22, 25, 28 e) 15, 18, 21, 24 f) 18, 21, 24, 29

4. **2, 6, 10, 14 ...**

   Ann says the above pattern was made by adding 4 each time. Is she right? Explain how you know.

_____

_____

PA3-15: Extending a Pattern Using a Rule *(continued)*

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

a) (add 4) 30, 34, ____ , ____ , ____

b) (add 9) 11, 20, ____ , ____ , ____

c) (add 6) 10, 16, ____ , ____ , ____

d) (add 7) 70, 77, ____ , ____ , ____

e) (add 11) 10, 21, ____ , ____ , ____

f) (add 4) 56, 60, ____ , ____ , ____

g) (add 8) 73, 81, ____ , ____ , ____

h) (add 10) 71, 81, ____ , ____ , ____

6. Continue the following sequences by <u>subtracting</u> the number given.

a) (subtract 4) 45, 41, ____, ____, ____

b) (subtract 7) 48, 41, ____, ____, ____

c) (subtract 3) 92, 89, ____, ____, ____

d) (subtract 8) 142, 134, ____, ____, ____

e) (subtract 5) 230, 225, _____, _____

f) (subtract 5) 565, 560, _____, _____

g) (subtract 6) 366, 360, _____, _____

h) (subtract 10) 423, 413, _____, _____

BONUS

7. Create a pattern of your own. Write your pattern in the blanks. Then give the rule you used.

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

8. **67, 59, 51, 43, 35 ...**

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

_____

_____

PA3-16: Identifying Pattern Rules

1. The following sequences were made by <u>adding</u> a number repeatedly. In each case, say what number was added.

   a) 2, 4, 6, 8 add ____ b) 3, 6, 9, 12 add ____

   c) 15, 18, 21, 24 add ____ d) 42, 44, 46, 48 add ____

   e) 41, 46, 51, 56 add ____ f) 19, 23, 27, 31 add ____

   g) 243, 245, 247, 249 add ____ h) 21, 27, 33, 39 add ____

2. The following sequences were made by <u>subtracting</u> a number repeatedly. In each case, say what number was subtracted.

   a) 16, 14, 12, 10 subtract ____ b) 30, 25, 20, 15 subtract ____

   c) 100, 99, 98, 97 subtract ____ d) 42, 39, 36, 33 subtract ____

   e) 17, 14, 11, 8 subtract ____ f) 99, 97, 95, 93 subtract ____

   g) 190, 180, 170, 160 subtract ____ h) 100, 95, 90, 85 subtract ____

3. State the rule for the following patterns.

   a) 117, 110, 103, 96, 89 subtract ____ b) 1, 9, 17, 25, 33, 41 add ____

   c) 101, 105, 109, 113 _____ d) 99, 88, 77, 66 _____

BONUS

4. Continue the pattern by filling in the blanks. Then write a rule for the pattern.

   13, 18, 23, _____, _____, _____ 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? Explain.

PA3-17: Introduction to T-tables

Abdul makes a **growing** pattern with squares. He records the number of squares in each figure in a T-table. He also records the number of squares he adds each time he makes a new figure.

Figure 1

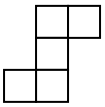


Figure 2

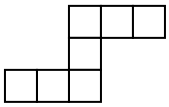


Figure 3

Figure	# of Squares
1	3
2	5
3	7

2 2

Number of squares added each time

The number of squares 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 another growing pattern 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	4
2	7
3	10

Rule:

b)

Figure	Number of Squares
1	2
2	5
3	8

Rule:

c)

Figure	Number of Squares
1	4
2	6
3	8

Rule:

d)

Figure	Number of Squares
1	1
2	5
3	9

Rule:

e)

Figure	Number of Squares
1	5
2	7
3	9

Rule:

f)

Figure	Number of Squares
1	6
2	12
3	18

Rule:

PA3-17: Introduction to T-tables *(continued)*

g)

Figure	Number of Squares
1	2
2	8
3	14

Rule:

h)

Figure	Number of Squares
1	3
2	6
3	9

Rule:

i)

Figure	Number of Squares
1	5
2	12
3	19

Rule:

BONUS

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

a)

Figure	Number of Squares
1	2
2	5
3	8
4	
5	
6	

b)

Figure	Number of Squares
1	6
2	9
3	12

c)

Figure	Number of Squares
1	1
2	6
3	11

d)

Figure	Number of Squares
1	4
2	9
3	14

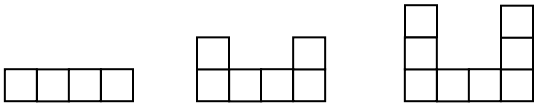
e)

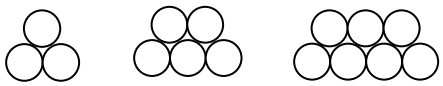
Figure	Number of Squares
1	10
2	13
3	16

f)

Figure	Number of Squares
1	12
2	16
3	20

3. Make a T-table and record the number of squares or circles in each figure. Write a rule for the pattern.

a) 

b) 

Sample pages were taken from a different edition of JUMP! Math, so you may notice some subtle formatting/page number changes. The page content remains the same.

PA3-17: Introduction to T-tables *(continued)*

4. Amy makes a growing pattern with squares. After making Figure 3, she only has 14 squares left. Does she have enough squares to complete Figure 4?

a)

Figure	Number of Squares
1	4
2	7
3	10

YES NO

b)

Figure	Number of Squares
1	6
2	9
3	12

YES NO

c)

Figure	Number of Squares
1	1
2	6
3	11

YES NO

5. Extend the pattern to find out how many eggs 5 birds would lay.

a)

Bald Eagle	Number of Eggs
1	2
2	4
3	
4	
5	

b)

Sand-piper	Number of Eggs
1	4
2	8

c)

Snow Goose	Number of Eggs
1	3
2	6

d)

Marsh Hawk	Number of Eggs
1	5
2	10

6. How many young would 5 animals have?

a)

Polar Bear	Number of Cubs
1	2
2	4

b)

Swift Fox	Number of Pups
1	4
2	8

c)

Bearded Seal	Number of Pups
1	5
2	10

d)

Coyote	Number of Cubs
1	6
2	12

7. How much money would Alice earn for 4 hours of work?

a)

Hours Worked	Dollars Earned in an Hour
1	$7

b)

Hours Worked	Dollars Earned in an Hour
1	$8

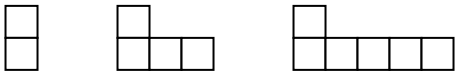
c)

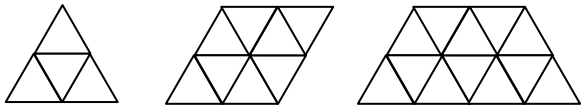
Hours Worked	Dollars Earned in an Hour
1	$6

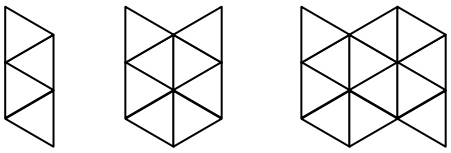
PA3-18: T-tables

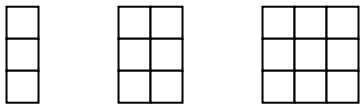
Answer the following questions in your notebook.

1. How many squares or triangles would be used for Figure 6? Explain how you know.

a) 

b) 

c) 

d) 

2. Priya makes a sequence of Ls with nickels.

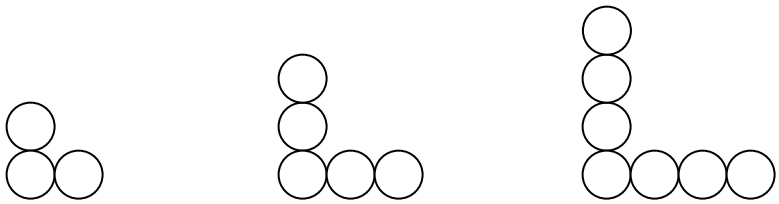
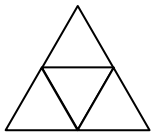


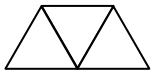
Figure 1 Figure 2 Figure 3

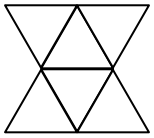
a) How many nickels will be in Figure 5?

b) What is the value of the coins in Figure 5?

3. Indra makes broaches with triangles. She has 16 triangles.
Does she have enough triangles to make 5 broaches if there are …

a) 
4 triangles in each broach?

b) 
3 triangles in each broach?

c) 
6 triangles in each broach?

d) Explain how you know the answer for part a).

BONUS

4. The even numbers (greater than 0) are the numbers you say when counting by 2s:

2, 4, 6, 8, 10, 12, 14 ...

Predict whether the number of squares in Figure 10 in Question 1 d) above will be even or not.

PA3-19: Problems and Puzzles

Answer the following questions in your notebook.

1. Bill saves $6 each month.

   a) How much he will save in 3 months?

   b) How many months will it take him to save $30?

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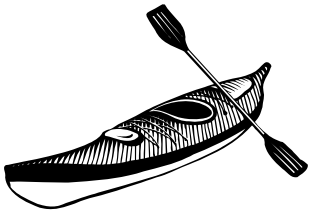
2. It costs $5 to rent a kayak for the first hour.
   It costs $4 for each hour after that.

   a) How much does it cost to rent the kayak for 4 hours?

   b) Sandra has $26. Can she rent the kayak for 6 hours?



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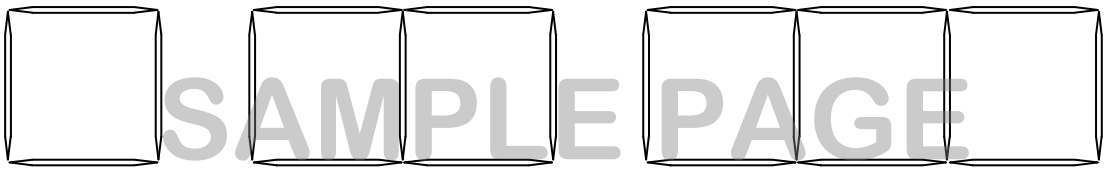
3. Karla has 20 toothpicks.
   Can she make a design with 6 squares?
   Explain how you know.



Step 1 **Step 2** **Step 3**

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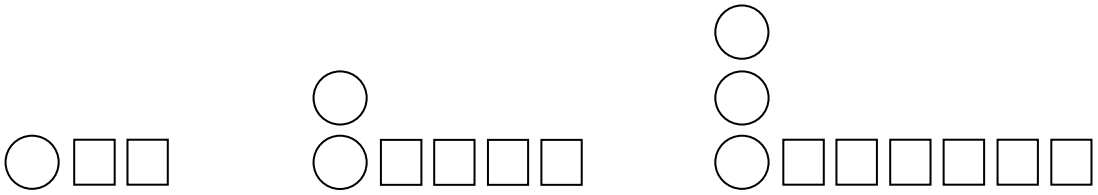
4. How many squares and circles would be in Design E?



Design A **Design B** **Design C**

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5. Each pattern was made by adding a number repeatedly.
   Find the mistake and correct it.

   a) 5, 8, 9, 11, 13

   b) 7, 10, 13, 15, 19

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6. Find an increasing pattern and a repeating pattern in your classroom.