Name: _____ Date: _____

Scaffolding for Getting Started

STUDENT BOOK PAGES 2–3

Cole has 30 marbles and Kate has 12. Cole gives Kate 3 of his marbles at a time.

? Will Cole and Kate ever have the same number of marbles?

A. Model Cole's and Kate's actions using counters.

Cole has 30 marbles.	Kate has 12 marbles.
−3	+3

Cole gives Kate 3 marbles.

Now Cole has ____ marbles. Now Kate has ____ marbles.

Cole gives Kate 3 marbles.

Now Cole has ____ marbles. Now Kate has ____ marbles.

Cole gives Kate 3 marbles.

Now Cole has ____ marbles. Now Kate has ____ marbles.

B. Describe Cole's pattern: Start with 30 and _____

_____

Describe Kate's pattern: _____

_____

C. How are the 2 patterns alike? _____

_____

How are the 2 patterns different? _____

_____

Extend each pattern for 3 more numbers.

Cole's pattern: 30, 27, 24, ____, ____, ____

Kate's pattern: 12, 15, 18, ____, ____, ____

Will Cole and Kate ever have exactly the same number of marbles? Explain.

_____

_____

Name: _____ Date: _____

Scaffolding for Getting Started Page 2

STUDENT BOOK PAGES 2–3

F. Suppose Cole gives Kate 4 marbles at a time instead of 3.

Cole's pattern is 30, ___, ___, ___

Kate's pattern is 12, ___, ___, ___

Describe Cole's pattern: _____

_____

Describe Kate's pattern: _____

_____

How are the 2 patterns alike? _____

_____

How are the 2 patterns different? _____

_____

Extend Cole's pattern: 30, ___, ___, ___, ___, ___, ___

Extend Kate's pattern: 12, ___, ___, ___, ___, ___, ___

Will Cole and Kate ever have exactly the same number of marbles? Explain.

_____

_____

120, 110, 100, 90, 80, 70, ...

㉙ What is the rule for this pattern?

Answer: _____

㉚ What are the next 4 numbers?

Answer: _____

256, 258, 260, 262, 264, ...

㉛ What is the rule for this pattern?

Answer: _____

㉜ What are the next 4 numbers?

Answer: _____

UNIT 9

Patterns

EXAMPLE

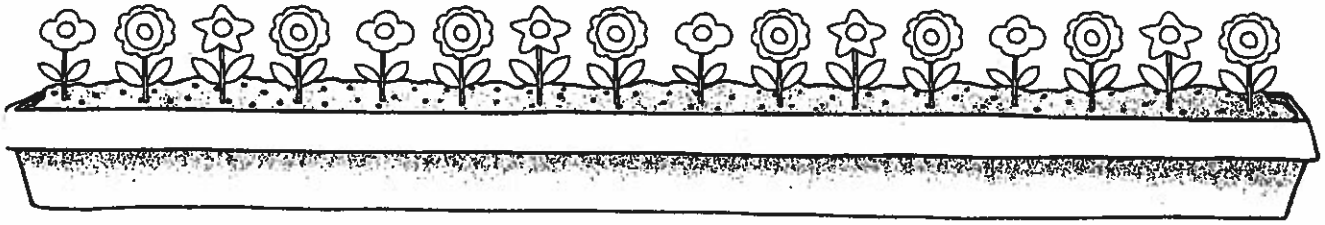
Which 2 figures would be next in the pattern?

Think : What is the pattern? What are the figures in the pattern?

The pattern is  .

Answer : The next 2 figures in the pattern are  and  .

Look at the pattern of Ann's flowers. Answer the questions.



① How many flowers are in a pattern?

Answer: _____ flowers are in a pattern.

② What is the pattern? Draw it.

Answer: _____

③ Which 2 flowers would be next in the pattern?

Answer: _____

④ If Ann picked every 4th flower, which flower would she pick?

Answer: _____

⑤ After picking every 4th flower, how many flowers are in the pattern?

Answer: _____

⑥ What is the new pattern? Draw it.

Answer: _____

⑦ If  is the first flower in the new pattern, which flower is the second?

Answer: _____

⑧ If  is the third flower in the new pattern, which flower is the first?

Answer: _____

ISBN: 978-1-897144-12-6

Look at the table showing how tall Ann's flowers have grown. Answer the questions.

Flower	Week 1	Week 2	Week 3	Week 4
	5 cm	10 cm	15 cm	20 cm
	2 cm	4 cm	6 cm	8 cm
	4 cm	8 cm	12 cm	16 cm

⑨ Describe the growing pattern of  .

Answer: It grows every week.

⑩ Find the height of  in week 6.

Answer: _____

⑪ Describe the growing pattern of  .

Answer: _____

⑫ Find the height of  in week 6.

Answer: _____

⑬ Describe the growing pattern of  .

Answer: _____

⑭ Find the height of  in week 6.

Answer: _____

⑮ How long will  take to reach a height of 35 cm?

Answer: _____

⑯ How long will  take to reach a height of 12 cm?

Answer: _____

⑰ How long will  take to reach a height of 28 cm?

Answer: _____

ISBN: 978-1-897164-13-6

Name:_____ Date:_____

Try These

1. Circle the part that repeats.
   Show the next 4 items in the pattern.

   a) Y Y Y Y Y Y Y Y Y ___ ___ ___ ___...

   b)  ___ ___ ___ ___...

   c) 23, 45, 67, 23, 45, 67, 23, 45, 67, 23, ____, ____, ____, ____, ...

   d)  ___ ___ ___ ___...

2. Circle the part that repeats.
   Fill in the missing parts of the pattern.

   a)  ___ ___ ___ ___

   b) 9, 87, 89, 36, 9, 87, 89, 36, 9, ____, 89, ____, 9, 87, 89, ____

   c) 

   d) 

3. Circle the pattern core.

   a) green, red, blue, red, green, red, blue, red, green, red, blue, red, ...

   b)  ...

   c) 34, 24, 44, 55, 34, 24, 44, 55, 34, 24, 44, 55, 34, 24, 44, 55, ...

Name: _____ Date: _____

4. Compare the 2 patterns. How are they the same?
How are they different?

a) 1, 2, 1, 2, 1, 2, 1, 2, ... and ○☺○☺○☺○☺...

same: _____

different: _____

b) 2, 8, 3, 7, 2, 8, 3, 7, 2, 8, 3, 7, ... and 3, 9, 4, 8, 3, 9, 4, 8, 3, 9, 4, 8, 3, 9, ...

same: _____

different: _____

5. The repeating part of each pattern is described.
Draw or write the pattern for the first 9 pictures or numbers.

a) same number, same number, different number

_____

b) 1 large and 2 small circles, where every 3rd circle is black

6. Use blocks to model each repeating pattern.
Circle the pattern core. Then describe each pattern.

a)  ...

_____

_____

b)  ...

_____

_____

C&P Name: _____ Date: _____

1.1 Patterns in an Addition Table Page 1

Student Book pages 4–6

GOAL

Identify, describe, and complete patterns in an addition table.

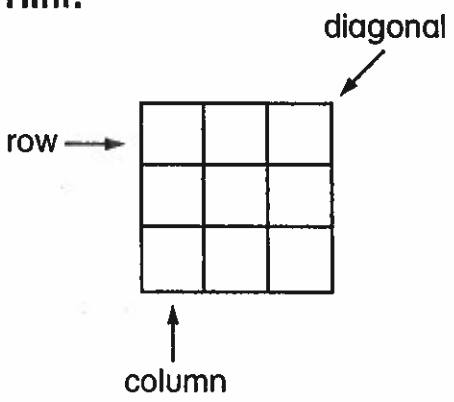
Checking

1. Complete the addition table using patterns.

Use a pattern from a row, a column, and a diagonal.

+	2	4	6	8	10	12	14
2	4	6	8	10	12		
4	6		10		14	16	
6	8	10	12		16	18	
8		12		16		20	22
10			16		20	22	
12	14		18		22	24	26
14	16	18				26	

Hint:



Step 1: Look at the first row.

What do you add to 2 to get 4? _____

What do you add to 4 to get 6? _____

Write the pattern rule. _____

Complete the first row.

Step 2: Look at the first column.

What do you add to 4 to get 6? _____

What do you add to 6 to get 8? _____

Write the pattern rule. _____

Complete the first column.

Step 3: Use patterns to complete the addition table.

C&P Name: _____ Date: _____

1.1 Patterns in an Addition Table Page 2

Practising

2. Complete the addition table using patterns.

Use a pattern from a row, a column, and a diagonal.

+	2	4	6	8	10	12	14
1	3	5	7	9		13	
3	5	7		11	13	15	17
5	7	9	11	13	15		19
7		11	13		17	19	21
9			15		19	21	
11	13			19	21		25
13		17				25	

Step 1: Use a pattern from a row.

Look at the first row.

Write the pattern rule. _____

Complete the first row.

Step 2: Use a pattern from a column.

Look at the first column.

Write the pattern rule. _____

Complete the first column.

Step 3: Complete the rest of the addition table.

Name: _____ Date: _____

Chapter 1 Lesson 1

Patterns in an Addition Table

GOAL

Identify, describe, and complete patterns in an addition table.

1. a) Complete the shaded column, row, and diagonal in this addition table using patterns.

+	2	4	6	8	10	12	14
1	3	5	7	9	11	13	15
2	4		8		12	14	
3	5	7	9	11	13	15	17
4	6		10	12	14		18
5	7		11	13	15	17	19
6	8	10	12	14	16	18	20
7	9	11		15	17	19	21

At-Home Help

A **pattern rule** describes how a pattern starts and how it continues. For example:

- For the pattern 2, 4, 6, 8, ..., here is the pattern rule: Start with 2 and add 2 each time.
- For the pattern 16, 14, 12, 10, ..., here is the pattern rule: Start with 16 and subtract 2 each time.

b) Describe the patterns you used. row: _____

column: _____

diagonal: _____

2. Complete this addition table using patterns. Use at least one pattern from a row, a column, and a diagonal.

+	0	1	2	3	4	5	6
1	1	2	3		5	6	7
3	3		5	6	7		9
5	5	6	7	8		10	
7		8	9		11	12	13
9	9		11	12		14	15
11	11	12	13	14	15		17
13	13			16		18	

row:

column:

diagonal:

Patterns and relationships – skip counting

Skip counting is a good skill to have because you can see number patterns more easily which makes you better at maths. You can also count things much faster!

This is a skip counting pattern of 2 on a hundred grid.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1 **Colour the skip counting pattern on each hundred grid:**

a Show the 5s pattern.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

b Show the 10s pattern.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

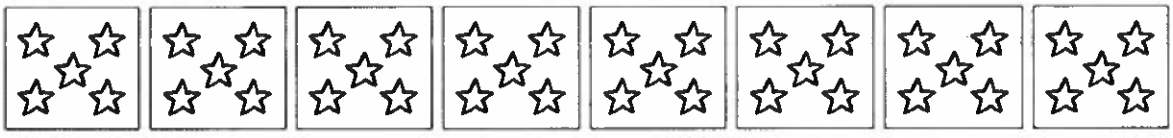
c What do you notice?

_____

2 **Complete these skip counting patterns:**

a	60	65	70			85		95
b	17	22	27		37		47	
c	100	95			80		70	
d	102	92			62			

3 **Count the stars. How many are there?** ☐



L Name: _____ Date: _____

1.2 Extending Patterns in Tables Page 1

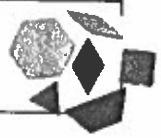
Student Book pages 8–11

GOAL

Use tables to identify and extend patterns.

You will need

- pattern blocks



Problem

An inuksuk is a marker or signpost made of rocks.

Kate modelled an inuksuk using pattern blocks.

She wants to know how many square blocks she will need to make 3 more inuksuit.

Inuksuk (plural: Inuksuit)

How many square blocks does Kate need?

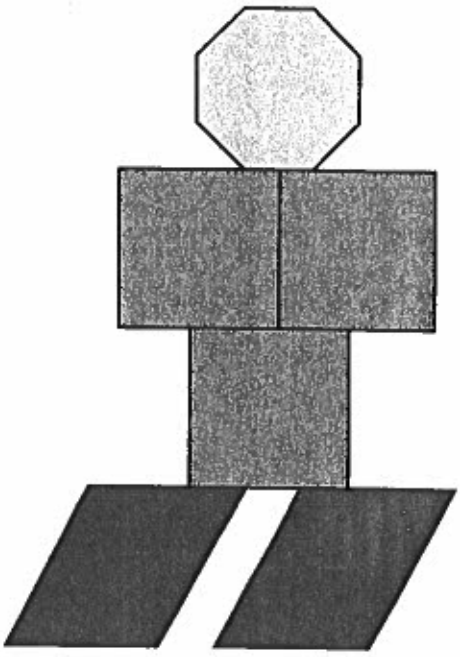
Step 1: Make 3 inuksuit like Kate's.

Step 2: Count the number of square blocks you used to make 1 inuksuk.

Write this number in the table.

Inuksuk Blocks	
Number of inuksuit	Number of square blocks
1	
2	
3	
4	

Kate's Inuksuk



Step 3: Count the number of square blocks you used to make 2 inuksuit.

Write this number in the table.

Step 4: Count the number of square blocks you used to make 3 inuksuit.

Write this number in the table.

C&P Name: _____ Date: _____

1.2 Extending Patterns in Tables Page 1

Student Book pages 8–11

GOAL

Use tables to identify and extend patterns.

Checking

1. a) Kate wants to make 6 inuksuit.

- 1 inuksuk uses 6 large rocks.
- 2 inuksuit use 6 + 6 = _____ large rocks.
- 3 inuksuit use 6 + 6 + 6 = _____ large rocks.

Complete the pattern: 6, _____, _____, ...

Complete the table.

Large Inuksuk Rocks	
Number of inuksuit	Total number of large rocks
1	6
2	
3	
4	
5	
6	

Kate has 26 large rocks.

Does she have enough to make 6 inuksuit? _____

How do you know?

_____

_____

b) Look at the second column.

Write the pattern rule. _____

Name: _____ Date: _____

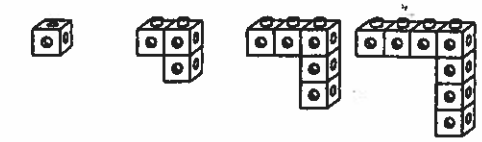
Lesson 2

Extending Patterns in Tables

GOAL

Use tables to identify and extend patterns.

1. Lang made this pattern out of linking cubes.



Shape 1 Shape 2 Shape 3 Shape 4

Lang's Pattern

Shape number	Number of cubes
1	1
2	3
3	
4	

a) Write the number of cubes for Shape 3 and Shape 4 in the table.

b) Describe the pattern in the 2nd column of the table.

_____

_____

_____

c) How many cubes will be in shape 6?

_____ cubes

2. Julia is making models of trees using blocks. She has 25 blocks. Can she make 6 trees?

_____

Julia's Trees

Number of trees	Total number of blocks
1	
2	
3	

At-Home Help

Follow these steps to help you identify patterns using tables:

1. Use the model of the pattern to make a table.
2. Look for a pattern in the 1st column.
3. Look for a pattern in the 2nd column.

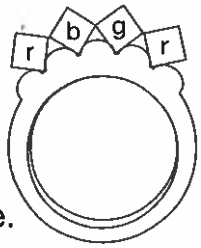
Model number	Number of blocks
1	2 (+3)
2	5 (+3)
3	8

4. If you see a pattern, use it to fill in the next row. If you don't see a pattern, use the model to help you fill in 1 or 2 more rows. Then follow these steps again.

Patterns in T-Charts

Goal **Use t-charts to identify and extend patterns.**

You will need coloured pencils or markers.



1. This ring has 4 birthstones—ruby (red), sapphire (blue), emerald (green), and ruby (red).

   a) Colour the stones in this picture.

   b) Complete the t-chart below to show how many stones of all types are in 8 rings.

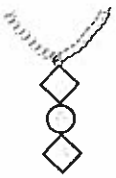
   c) Look at the numbers in the 2nd column. Write a pattern rule.

   _____

   _____

At-Home Help

A pendant has these shapes.



This **t-chart** shows how many ◇ are in increasing numbers of pendants.

Number of pendants	Total number of ◇
1	2
2	4
3	6
4	8
5	10

   d) Complete the t-chart below to show how many ruby stones are in 8 rings.

   e) Look at the numbers in the 2nd column. Write a pattern rule.

   _____

part b)

Number of rings	Total number of stones
1	
2	
3	
4	
5	
6	
7	
8	

part d)

Number of rings	Total number of ruby stones
1	
2	
3	
4	
5	
6	
7	
8	

L Name: _____ Date: _____

1.3 Representing Patterns Page 1

Student Book pages 12–14

GOAL

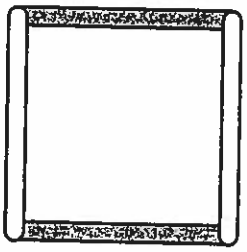
Use models to represent and extend patterns.

You will need

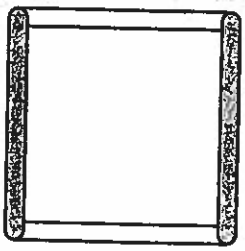
- craft sticks

Problem

Lang is making squares with craft sticks.



How many craft sticks does Lang need to make 8 squares?



Step 1: Make 8 squares like Lang's.

Step 2: Count the number of sticks you used to make 1 square. Write that number in the table.

Craft Stick Squares

Number of squares	Number of craft sticks
1	4
2	
3	
4	
5	
6	
7	
8	

Step 3: Count the number of sticks you used to make 2 squares. Write that number in the table.

Step 4: Complete the table.

Model each square and count the number of sticks you used.

How many sticks does Lang need to make 8 squares? _____

C&P Name: _____ Date: _____

1.3 Representing Patterns Page 2

Practising

4. Bree is making 5-sided frames.

She wants to know how many sticks she needs to make 7 frames.

She uses a model and a table to find out.

My Frames	
Number of frames	Total number of sticks
1	5
2	10
3	15
4	21
5	26
6	31
7	36

Bree made some mistakes in her model and table.

a) Describe a mistake in Bree's model.

_____

_____

Describe a mistake in Bree's table.

_____

_____

b) Was it easier to see the mistakes in the model or in the table? _____

Why?

_____

_____

Name: _____ Date: _____

Chapter 1 Lesson 3

Representing Patterns

GOAL

Use models to represent and extend patterns.

You will need 20 toothpicks.

1. Cara is making triangles with toothpicks.

a) Model the pattern in the table using toothpicks or a sketch.

b) Describe how the model changes.

_____

Cara's Pattern

Number of triangles	Total number of toothpicks
1	3
2	6
3	9

At-Home Help

You can make a model to represent a pattern in a table.

My Pattern

Number of squares	Total number of toothpicks
1	4
2	8
3	12

Use 4 toothpicks to model the first square. Then add 4 more toothpicks each time.

c) Cara has 20 toothpicks. How many triangles can she make?

_____ triangles

2.

Owen is making a different triangle pattern.

a) Model the pattern in the table.

b) How many triangles can Owen make with 10 toothpicks?

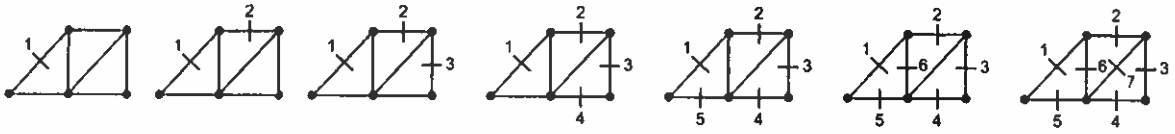
_____ triangles

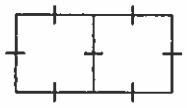
Owen's Pattern

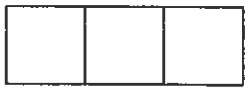
Number of triangles	Total number of toothpicks
1	3
2	5
3	

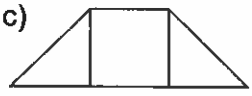
PA4-10 T-tables

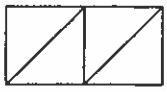
1. Count the number of line segments in each figure. Hint: Count around the outside of the figure first, marking each line segment as you count. Example:

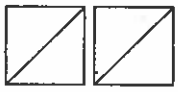


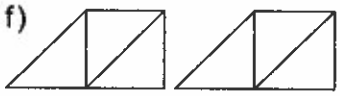
a)  7

b)  _____

c)  _____

d)  _____

e)  _____

f)  _____

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

Figure 1

Figure 2

Figure 3

Figure 4

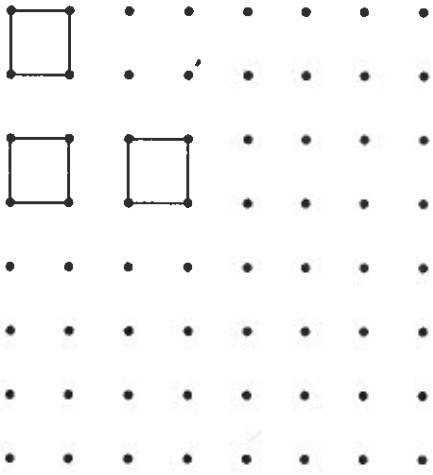


Figure	Number of Line Segments
1	4
2	8
3	
4	

How many line segments would Figure 5 have? _____

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

Figure 1

Figure 2

Figure 3

Figure 4

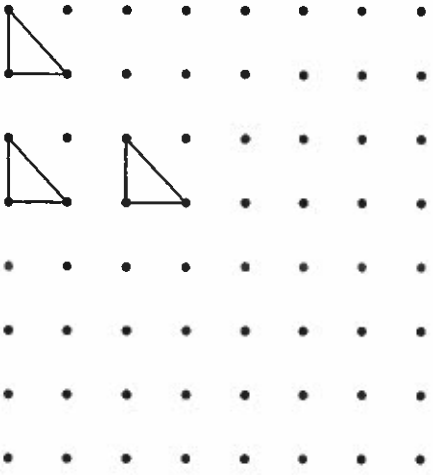
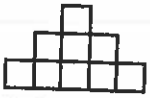


Figure	Number of Line Segments
1	
2	
3	
4	

How many line segments would Figure 5 have? _____

Ann and Joan are building towers with blocks. Follow each pattern to add the next set of blocks.

Tower	Step 1	Step 2	Step 3	Step 4
⑱ A				
⑲ B				
⑳ C				

㉑ Complete the chart to show the number of blocks used to build each step of tower A.

4	6	8					

㉒ How many blocks are used in the 10th step to build tower A?

Answer: _____

㉓ Complete the chart to show the number of blocks used to build each step of tower B.

1	4	9					

㉔ How many blocks are used in the 10th step to build tower B?

Answer: _____

㉕ Complete the chart to show the number of blocks used to build each step of tower C.

1	3	6					

㉖ How many blocks are used in the 10th step to build tower C?

Answer: _____

ISBN: 978-1-897111-10-4

Solve the problems. Show your work.

5, 10, 15, 20, 25, 30, ...

㉗ What is the rule for this pattern?

Answer: _____

㉘ What are the next 4 numbers?

Answer: _____

256, 258, 260, 262, 264, ...

㉛ What is the rule for this pattern?

Answer: _____

㉜ What are the next 4 numbers?

Answer: _____

120, 110, 100, 90, 80, 70, ...

㉙ What is the rule for this pattern?

Answer: _____

㉚ What are the next 4 numbers?

Answer: _____

919, 819, 719, 619, 519, ...

㉝ What is the rule for this pattern?

Answer: _____

㉞ What are the next 4 numbers?

Answer: _____

CHALLENGE

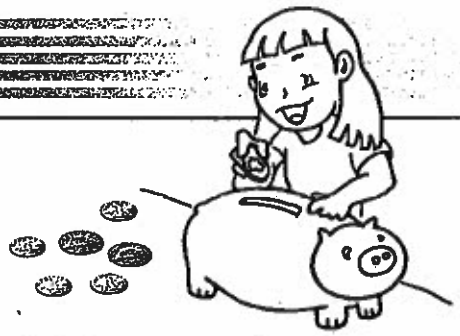
Joan puts 12¢ in her piggy bank every day.

① How much has Joan saved on the 6th day?

Answer: _____

② How long will Joan take to have $1.20?

Answer: _____



1st day 12¢
2nd day 24¢ (+ 12¢)
3rd day 36¢ (+ 12¢)

Follow the pattern to find the answers.

L Name: _____ Date: _____

1.4 Solving Problems Using Patterns Page 1

Student Book pages 18–19

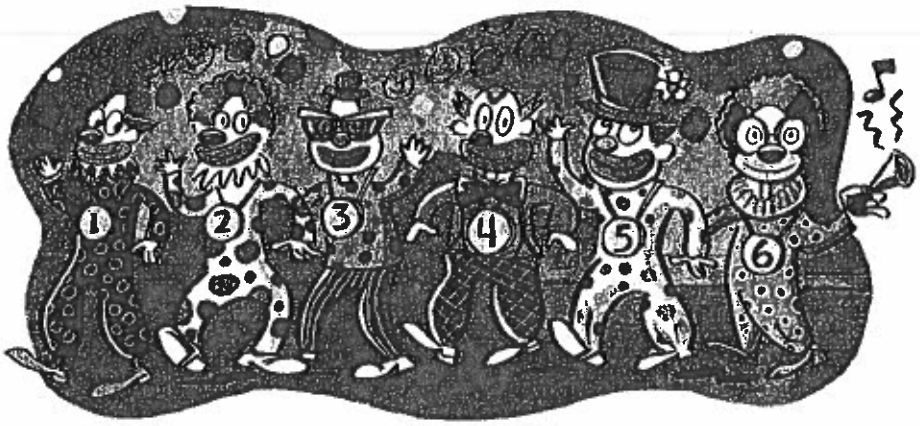
GOAL

Use a pattern in a chart to solve a problem.

Problem

Here comes a parade of 100 clowns!

Every 3rd clown wears glasses.



How many clowns wear glasses?

Use a 100 chart.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

○ wears glasses

\ wears a hat

△ red nose

C&P Name: _____ Date: _____

1.4 Solving Problems Using Patterns Page 1

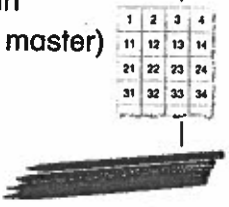
Student Book pages 18–19

GOAL

Use a pattern in a chart to solve a problem.

You will need

- a 100 chart (blackline master)
- pencil crayons



Checking

1. 100 clowns are in a parade.

Every 5th clown wears a hat.

Every 2nd clown has a red nose.

How many clowns have a hat and a red nose?

Use a 100 chart to show the clowns.

Step 1: Every 5th clown wears a hat.

Mark a blue \ on every 5th number for the first 3 rows.

Step 2: Every 2nd clown wears a red nose.

Mark a red △ on every 2nd number for the first 3 rows.

Circle the numbers that have a blue \ and a red /.

Each circle is for a clown that wears a hat and has a red nose.

What pattern do you see?

○ _____

\ _____

△

Continue the pattern for the rest of the chart.

How many clowns wear a hat and have a red nose? _____

C&P Name: _____ Date: _____

1.4 Solving Problems Using Patterns Page 2

Practising

2. 100 clowns are in a parade.

Use a 100 chart to show the clowns.

Every 3rd clown wears glasses.

Mark every 3rd clown with a blue \.

Every 5th clown wears a hat.

Mark every 5th clown with a green /.

a) How many clowns have glasses and a hat? _____

b) Every 2nd clown has a red nose.

Mark every 2nd clown with a red –.

How many clowns have glasses, a hat, and a red nose? _____

3. Shaun walks his dog every 3rd day.

He goes for a run every 4th day.

How many times in a month does Shaun walk his dog and go for a run on the same day? _____

Hint: Mark the days on a calendar.

January						
Sun.	**Mon.**	**Tues.**	**Wed.**	**Thurs.**	**Fri.**	**Sat.**
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Name: _____ Date: _____

Scaffolding for Lesson 4, Questions 2 a) & 4

STUDENT BOOK PAGE 19

4. Britney's family went skating together on a Tuesday.

After that, Britney and her brother Liam skated every 2nd day.

Their mother skated every 3rd day.

Their father skated every 4th day.

- Mark the 1st skate date with an X.
- Choose a symbol or colour for Britney and Liam.
  Mark the days after X that they skated.
- Choose another symbol or colour for their mother.
  Mark the days after X that she skated.
- Choose another symbol or colour for their father.
  Mark the days after X that he skated.

On what day of the week did Britney's family next skate together? _____

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3 X Family skate	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Chapter 1
Lesson 4

Name: _____ Date: _____

Solving Problems Using Patterns

GOAL

Use a pattern in a chart to solve a problem.

Michèle put out the recycling bins on September 2 and every 7th day after that.

1. Michèle watered the plants on September 2 and every 5th day after that. Choose a colour and mark the day numbers.

2. Michèle played hockey on September 2 and every 4th day after that. Choose another colour and mark the day numbers.

3. How many times in 100 days did Michèle put out the recycling and water the plants on the same day?

   _____ times

4. How many times in 100 days did Michèle water the plants and play hockey on the same day?

   _____ times

5. How many times in 100 days did Michèle put out the recycling, water the plants, and play hockey on the same day?

   _____ times

100 Days of the School Year

	S	M	T	W	T	F	S
September		1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	1	2	3	4
October	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	1
November	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	1	2	3	4	5	6
	7	8	9				

Solve Problems Using a Patterning Strategy

Goal **Look for a pattern to solve a problem.**

Show the events on the 100 chart using the mark indicated.

1. Every 2nd day the class has gym. Mark all the day numbers with \.
2. Every 3rd day the class has art. Mark all the day numbers with /.
3. Every 5th day the class has an hour of math games. Circle all the day numbers.
4. **a)** Describe the pattern of the days when the class has gym and art.

   _____

   _____

   _____

   b) How many times in 100 days does the class have gym and art?

   _____

5. **a)** Describe the pattern of the days when the class has gym, art, and an hour of math games. _____

   _____

   b) How many times in 100 days does the class have gym, art, and an hour of math games? _____

At-Home Help

A **100 chart** is another way to find patterns.

100 Days of School

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Name: _____ Date: _____

Chapter 1: Patterns in Mathematics

1. Look at this pattern.

a) Describe the pattern by telling how each item changes.

_____

_____

b) Sketch the next 3 shapes.

Pattern Rules

A pattern rule describes how a pattern starts and how it continues. For example, a pattern rule is "start at 12 and add 3": 12, 15, 18, 21 ...

Increasing and Decreasing Patterns

Increasing patterns grow. For example, the pattern 14, 16, 18, 20 ... starts at 14 and increases by 2 each time.

Decreasing patterns shrink. For example, the pattern 20, 18, 16, 14 ... starts at 20 and decreases by 2 each time.

2. A pattern starts at 62 and increases by 4 each time.
   Write 6 numbers in this pattern. _____

3. A pattern starts at 71 and decreases by 3.
   Write 6 numbers in this pattern. _____

4. A pattern rule is "start at 70 and subtract 5 each time."
   What is the 5th number in the pattern? _____

5. Write the missing numbers and the pattern rule.

   45, 49, 53, 57, _____, 65, _____, ...

Symbols for Missing Numbers

You can use a symbol to represent a missing number in an equation. For example, the equation ___ + 9 = 21 can be read, "What number plus 9 equals 21?" The missing number is 12.

6. What is the missing number in each equation?

   a) ___ + 7 = 14

   b) ___ − 9 = 20

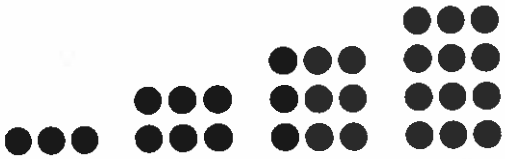
Name: _____ Date: _____

Try These

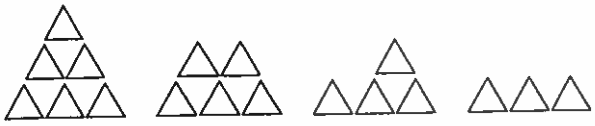
1. Draw or write the next 2 pictures or numbers in each pattern. Write the pattern rule.

Remember

- The purpose of a pattern rule is for someone else to be able to make the pattern without seeing it first.

a)  _____ _____

pattern rule: _____

b)  _____ _____

pattern rule: _____

c) 50, 46, 42, 38, _____, _____

pattern rule: _____

2. Represent each pattern using toothpicks.
Then write the number of toothpicks as a number pattern.

a) 

_____

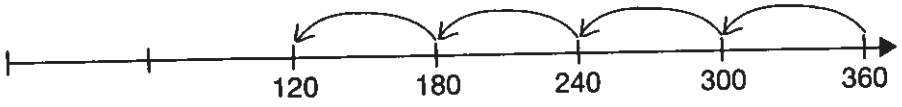
b) 

_____

3. You can show number patterns using arrows on a number line.
For the diagram below, the pattern rule is:
Start at 360 and decrease by 60 each time.
Extend the pattern 2 more times.

Remember

- For growing patterns, you jump forwards.
- For shrinking patterns, you jump backwards.



L Name: _____ Date: _____

1.5 Solving Equations Page 1

Student Book pages 20–23

GOAL

Determine the missing number in an **equation.**

equation

A mathematical sentence in which the value of the left side is the same as the value of the right side

Problem

Kate's club is baking and freezing pies for a fundraiser.
They started with 3 pies.
They baked the same number of pies each week.
The number of pies each week made this pattern.
3, 5, 7, 9, 11, ...

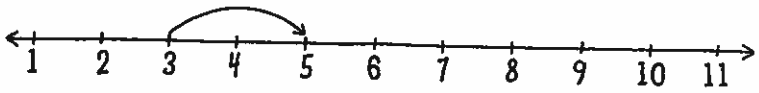
How many pies did Kate's club bake each week?

Use an equation to solve the problem.

$3 + \square = 5$

The missing number tells how much the pattern increases each time.
Use a number line to figure out the missing number.

Step 1: Find 3 on the number line.



Step 2: Jump to 5.

Count the spaces from 3 to 5.

How many pies did Kate's club bake each week? _____

Name: _____ Date: _____

1.5 Solving Equations Page 2

Reflecting

How did using a number line help you solve the problem?

_____

_____

_____

_____

What does ▩ mean in Kate's equation?

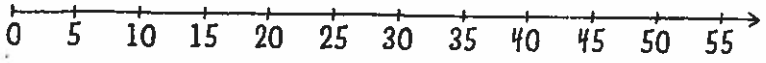
_____

_____

_____

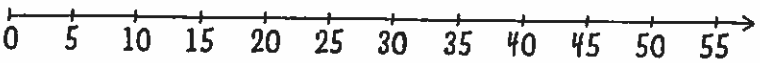
_____

Find the missing number using a number line. $45 - \square = 40$



How many people are in Aaron's family? _____

What is the missing number in each equation?
Use a number line to help you.



a) ▩ + 7 = 16

b) 21 − ▩ = 5

c) ▩ − 9 = 35

d) 6 + 3 = ▩

e) 27 = 11 + ▩

f) 36 + ▩ = 52

Name: _____ Date: _____

Chapter 1 Lesson 5

Solving Equations

GOAL

Determine the missing number in an equation.

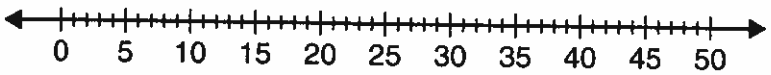
1. What is the missing number in each equation? Use a number line.

a) 7 + _____ = 17

b) 19 − _____ = 6

c) _____ + 11 = 23

d) 18 + 30 = _____



2. Aneela bakes cookies for her class. The first day, she baked 12 cookies. Every day after school, she bakes more cookies. The number of cookies makes this pattern.

12, 18, 24, 30, ...

a) Write an equation with a missing number to represent how the pattern increases.

_____

b) What is the missing number in your equation?

_____

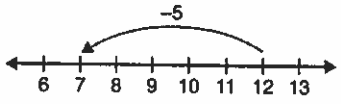
c) How many more cookies does Aneela bake each day?

_____ cookies

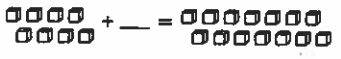
At-Home Help

Here are some ways to figure out the missing number in an equation:

- Use a number line. For example:
  12 − ▒ = 7



  12 − 5 = 7
- Use base ten blocks to model the numbers in the equation. For example:
  8 + ▒ = 14



  8 + 6 = 14

Finding Missing Terms

Goal **Find the missing number in a pattern and in an equation.**

1. Use the equation to find the missing number in each pattern. Then write the pattern rule.

a) ____ + 5 = 28 3, 8, 13, 18, ____, 28, ...

_____

b) ____ + 10 = 45 25, ____, 45, 55, 65, ...

_____

c) ____ + 4 = 23 3, 7, 11, 15, ____, 23, 27, ...

_____

d) ____ + 6 = 51 ____, 51, 57, 63, 69, 75, ...

_____

e) ____ − 4 = 50 ____, 50, 46, 42, 38, 34, ...

_____

f) ____ − 3 = 53 62, 59, ____, 53, 50, 47, ...

_____

At-Home Help

4, 8, 12, 16, ____, 24, ...
In this pattern, the numbers increase by 4.
4 + 4 = 8, 8 + 4 = 12,
12 + 4 = 16, so ask,
"What number + 4 = 24?"
20 + 4 = 24
Also, 16 + 4 = 20.
So the missing number must be 20.

19, 17, 15, 13, ____, 9, 7, ...
In this pattern, the numbers decrease by 2.
19 − 2 = 17, 17 − 2 = 15,
15 − 2 = 13, so ask,
"What number − 2 = 9?"
11 − 2 = 9
Also, 13 − 2 = 11.
So the missing number must be 11.

2. Fill in the blank in each equation.

a) 5 + ____ = 20

b) 23 − ____ = 19

c) 27 + ____ = 31

d) ____ + 8 = 34

e) 82 − ____ = 76

f) ____ − 9 = 26

L Name: _____ Date: _____

1.6 Solving Problems with Equations Page 1

Student Book pages 24–26

GOAL

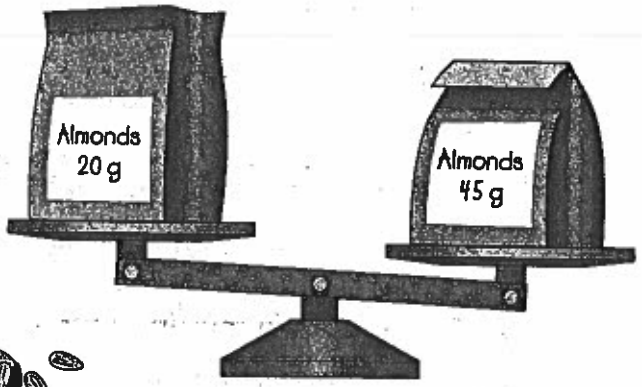
Use equations to solve problems.

Problem

Cole is packaging almonds in 45 g bags.

One bag has 20 g.

Hint: g = grams



How many grams of almonds does Cole need to add to the 20 g bag?

Use an equation to solve the problem.

▒ is the number of almonds

Cole needs to add to the bag.

20 + ▒ = 45

Step 1: Use guess and test to figure out ▒.

20 + 10 = _____

20 + 15 = _____

20 + 20 = _____

20 + 25 = _____

Step 2: Fill in the missing number.

20 + _____ = 45

How many grams of almonds does Cole need to add to the 20 g bag? _____

C&P Name: _____ Date: _____

1.6 Solving Problems with Equations Page 1

Student Book pages 24–26

GOAL

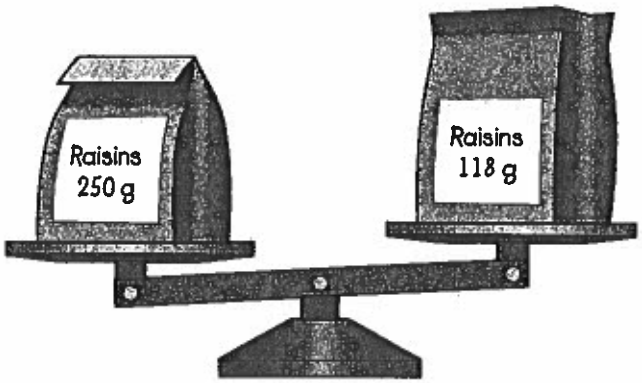
Use equations to solve problems.

You will need

- base ten blocks

Checking

1. Cole needs to make 250 g bags of raisins. So far he has 118 g of raisins in a bag. Does Cole need to add or subtract to get to 250? _____



a) How many more grams of raisins does Cole need to add?

Write an equation to describe the problem.

_____

b) Model your equation with base ten blocks.

Draw your model.

Left side	Right side

Add blocks until both sides have the same value.

What is the missing number? _____

How many grams of raisins does Cole need to add? _____

Name: _____ Date: _____

Chapter 1 Lesson 6

Solving Problems with Equations

GOAL

Use equations to solve problems.

1. What is the missing number in each equation?

a) 100 + _____ = 150

b) 75 − 20 = _____

c) _____ + 32 = 40

d) 230 + _____ = 400

e) 180 − _____ = 125

f) _____ + 187 = 245

At-Home Help

Here are some ways to solve equations:

- use guess and test
- use a number line
- model the problem using base ten blocks or counters

2. Use an equation to solve each problem.

a) Joshua has 250 g of peanuts. He needs 600 g.
How many more grams of peanuts does he need?

b) Rebecca has 30 g of sugar. She needs 70 g.
How many more grams of sugar does she need?

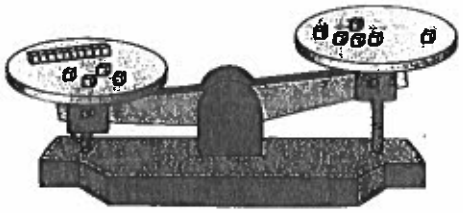
c) Lang wants to make 155 chocolates to give as gifts.
He made 87 last week. How many more does he have to make?

d) Manuel is building a wooden model of a ship. He has 165 g of balsam wood. He needs 198 g of wood.
How many more grams of wood does Manuel need?

Name:_____ Date:_____

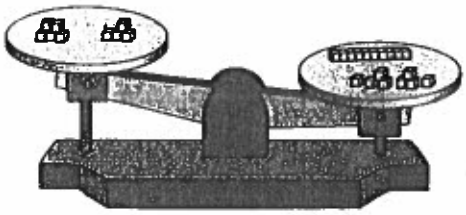
2. How many cubes should you take off one side so that the 2 sides balance? Fill in the missing number.

a)



$14 - \square = 5 + 1$

b)



$5 + 4 = 18 - \square$

c) Explain your solution to part a) *or* part b).

_____

_____

3. What is the missing number?

a) $\square - 2 = 7$

b) $9 = \square + 2$

c) $17 - \square = 9$

Explain your answer to part c).

d) $0 + \square = 2 + 5$

e) $\square - 12 = 7$

f) $0 + \square = 6 + 10$

Explain your answer to part f).

4. Write numbers to make each equation true.
Make both sides equal to 7.

_____ + _____ = _____ + _____

_____ + _____ = _____ + _____ + _____

Name: _____ Date: _____

Chapter 1: Patterns in Mathematics

Identify and describe patterns

Pattern rules can be used to describe how a pattern begins and how it continues. For example, a pattern rule for 5, 8, 11, 14, ... is "start at 5 and add 3."

1. Grace makes bracelets out of beads. The table shows the number of small beads used for every large bead.

Grace's Bracelets

Number of large beads	Number of small beads
1	3
2	6
3	9
4	12

   a) Describe the pattern in the second column of the table.

   _____

   _____

   b) If the pattern continues, how many small beads will Grace need if she uses 7 large beads?

   5
   6
   7

   _____

Extend patterns to solve a problem

Using a chart or table showing a pattern makes a problem easier to solve.

2. Dylan washes the dishes every 3rd day. He sweeps the floor every 2nd day. How many times in a month does Dylan wash dishes and sweep the floor on the same day? Explain what you did.

September

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

dishes X

sweep O

Name: _____ Date: _____

Express a problem as an equation

You can use patterns to write an equation and solve a problem.

3. Chloe started with 48 sparkle pens. She brought the pens to school to share with her classmates every day.
The number of pens Chloe had left each day made the pattern 48, 44, 40, 36, 32, ...

a) How many classmates does Chloe give pens to each day?
Use an equation with a missing number to solve the problem.

_____

_____

b) How many days did it take for Chloe to share all the sparkle pens?

_____

4. Taylor earned $34 by mowing lawns. Then, she bought gasoline for the mower. She had $25 left.
How much money did Taylor spend on gasoline?
Use an equation to solve the problem.

_____

_____

5. What is the missing number in each equation?

a) 8 + _____ = 12

b) 13 + _____ = 30

c) _____ + 34 = 65

d) 72 − _____ = 38

e) _____ + 43 = 65

f) _____ − 54 = 17