

Lesson 3: Missing Numbers (2 Days)

Getting Started

? Questions to Explore

- What patterns can we identify in numbers?
- How do patterns help us in math?

⦿ Skills

- Reason abstractly and quantitatively

✂ Materials

- number cards (kit)
- scissors

Introduction

In this lesson, your child will use his understanding of patterns in numbers to identify missing numbers on number grids and in number sequences. Ask your child to get ready for this lesson by counting up by 5s and 10s to 100.

Next, write the following on the whiteboard, and ask your child to fill in the blanks: 20, 25, __, __, __, __ and 30, 40, __, __, __, __. He should write 30, 35, 40, 45 for the first sequence and 50, 60, 70, 80 for the second one.

Activities

Activity 1: Missing Numbers

If your child needs more practice with locating numbers on a number grid, ask him to cut out the number grid pieces along the black lines on the sheet "A Puzzling Number Grid" and then assemble the pieces so that they create a complete number grid with the numbers in the correct order on the blank number grid provided.

Once your child has reassembled the number grid correctly, invite him to continue his practice at the following web link.



Missing Numbers

www.beyondthepage.com/link/12851/

Have your child's 1-100 number grid handy in case he needs to refer to it during this online activity.

The next part of this activity offers two options. The first option is easier than the second one because the whole number grid is provided, giving your child more hints about the missing numbers. In the second option, those hints are removed because your child can see only part of the grid surrounding the missing numbers. You can skip the first option or ask your child to complete some of both options depending on his ability to identify missing numbers.

Pose the following questions once your child has completed this task.

- How did you use patterns to figure out which numbers were missing?
- What advice would you give to someone else who is trying to figure out missing numbers on a number grid? What steps should he or she follow? Challenge your child to create a list of steps for figuring out missing numbers on a number grid.

Option 1

Complete a number grid with several missing numbers on the "Missing Numbers" (Option 1) sheet.

"Missing Numbers" (Option 1) Answer Key

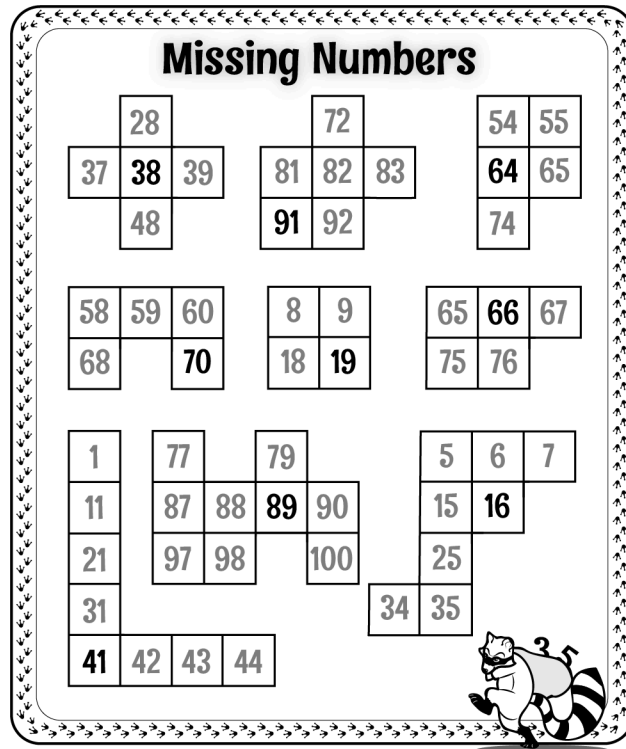
Missing Numbers									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95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



Option 2

Supply missing numbers on pieces of a number grid on the "Missing Numbers" (Option 2) sheet.

"Missing Numbers" (Option 2) Answer Key



Day 2

Activity 2: More Missing Numbers!

Use the sheet "More Missing Numbers!" for this activity. Show: 1, __, 3, __, 5, __, 7, __, 9, __, 11, __. What goes in the blanks? (2, 4, 6, 8, 10, 12) How do you know? What are you counting by when you write the missing numbers? (2's)

On the same sheet, ask your child to use the number line shown to write a list of numbers that show missing numbers when we count by 5s from 1. (1, 2, 3, 4, __, 6, 7, 8, 9, __, etc)

Point out that we can fill in missing numbers in patterns even when we don't start at the number 1: 7, __, 9, __, 11, __, 13, __, 15, __. What numbers are missing? (8, 10, 12, 14, 16)

Number Sense — 3: Missing Numbers

Ask your child to try this challenge: 2, 5, 8, __, __, __ What are the missing numbers here? (11, 14, 17) What are you counting by? (3's)

Direct him to complete the remaining number sets on the page by filling in the blanks with the missing numbers. (Answers to additional number sets: 4, 8, 12, 16, 20, 24; 21, 22, 23, 24, 25, 26, 27; 16, 14, 12, 10, 8, 6, 4; 3, 6, 9, 12, 15, 18, 21)

Activity 3: Create Your Own Number Patterns

This activity asks your child to create his own number patterns for someone else to solve. There are two options available. The first option is easier than the second one because the patterns are easier to create. The second option asks for more abstract thinking because the requirements for the patterns are more complicated.

Read over both "Create Your Own Number Pattern" sheets and then give him one of them. Tell him to follow the directions provided to create and write his patterns on the sheet.

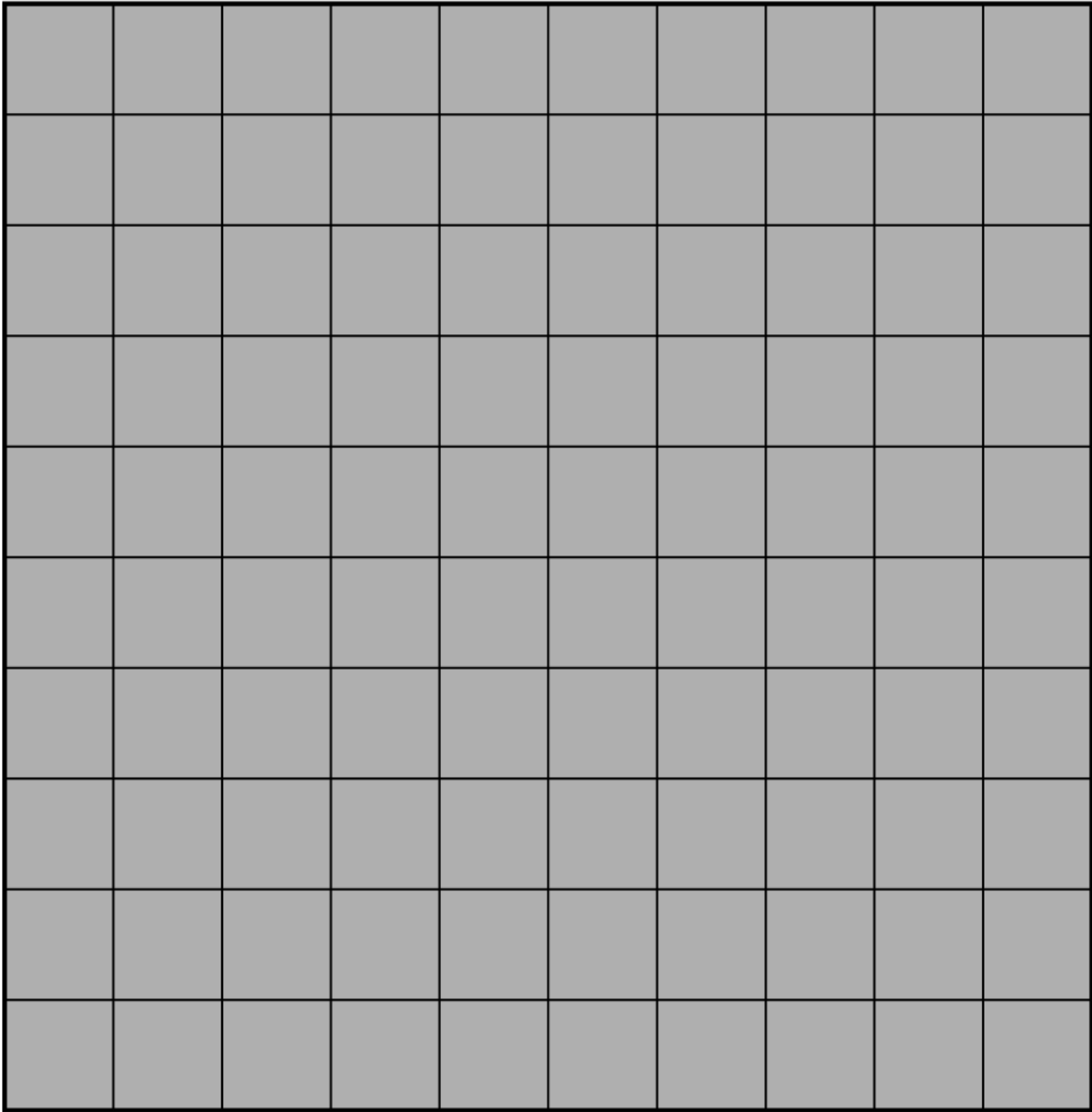
Wrapping Up

Challenge your child to find number patterns around the house (for examples, clock, kitchen timer, oven). Now, give him number cards 1-100 in random order, and tell him to place them face down in a stack. Ask him to draw a card and tell the number that comes before and the number that comes after the card he draws. For example, if he draws 35, he should say "thirty-four" and "thirty-six." Ask him to repeat this process 4 more times.

Learning Gates

Have your child take the [Learning Gates quiz](#) for this lesson.

A Puzzling Number Grid



31	32		
41	42	43	44
51	52	53	54

	6	7	8	9
15	16	17	18	19
25	26			

61	62	63
71	72	
81	82	
91		

	3	4	5
		14	
22	23	24	

			10
			20
27	28	29	30
37			

	73			
	83	84	85	86
92	93	94	95	96

46	47	48	
56	57	58	59
		68	69
			79

38	39	40	
	49	50	
		60	
		70	

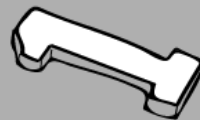
75	76	77	78		80
		87	88	89	90
		97	98	99	100

33	34	35	36	
		45		
		55		
	64	65	66	67
	74			

1	2	
11	12	13
21		

Missing Numbers

	2	3						9	10
11		13	14			17	18	19	
	22		24		26		28		30
31		33					38	39	40
	42		44			47		49	
	52	53				57	58	59	
61		63		65		67		69	70
	72			75	76	77	78		
81					86	87	88	89	90
91		93			96	97			



Missing Numbers

	38	

91		

64	

		70

	19

	66	

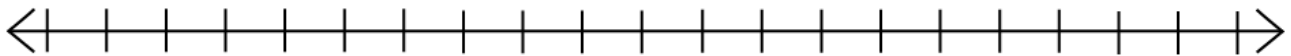
		89	
41			

	16	



More Missing Numbers!

1, __, 3, __, 5, __, 7, __, 9, __, 11, __



7, __, 9, __, 11, __, 13, __, 15

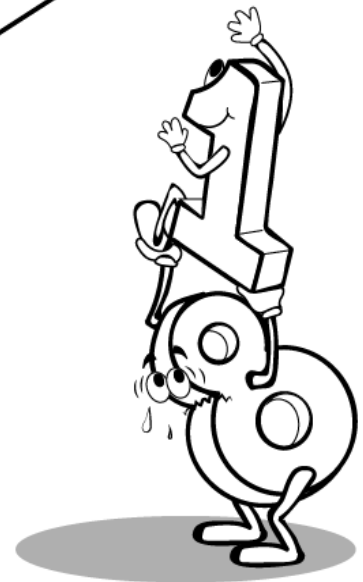
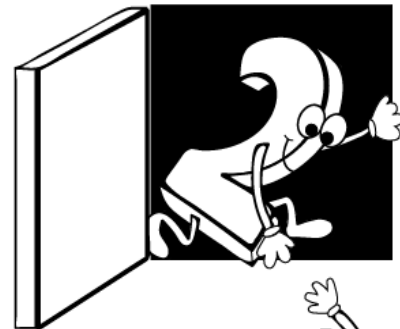
2, 5, 8, __, __, __

4, 8, __, 16, __, 24

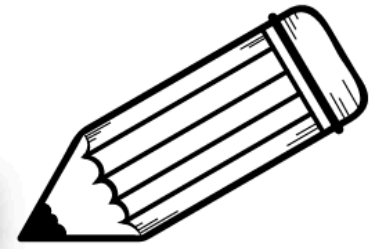
21, __, 23, __, __, __, __

16, 14, 12, __, __, __, __

__, 6, 9, __, __, __, __



Create Your Own Number Patterns



Follow the instructions to create patterns

1) Create a pattern that starts with a one-digit number

____, _____, _____, _____, _____, _____, _____

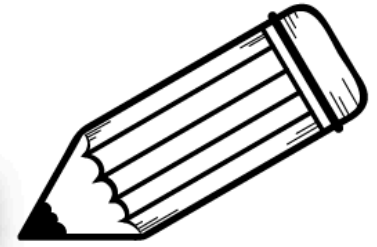
2) Create a pattern that starts with a two-digit number

____, _____, _____, _____, _____, _____, _____

3) Create a pattern that counts backward from 50 by a number other than 1

____, _____, _____, _____, _____, _____, _____

Create Your Own Number Patterns



Follow the instructions to create patterns

- 1) Create a pattern that counts backward from 50 by a number other than 1

_____, _____, _____, _____, _____, _____, _____

- 2) Create a pattern that counts by 5s but doesn't start with a number that ends with a 0 or a 5

_____, _____, _____, _____, _____, _____, _____

- 3) Create a pattern that ends at 100 but doesn't count by 5s or 10s

_____, _____, _____, _____, _____, _____, _____