

bridges
in mathematics

## SAMPLE

Grade 2
Unit 5 Module 3 Session 4

## Session 4

## The Number Line to 1,000

## Summary

The session opens with a warm-up in which students compare a number path and a number line. Then the class works together to build a life-sized number line from 0 to 1,000 , with student-generated numbers and number tags for each multiple of 100 . After completing the related student book pages, students spend time at Work Places and the Numbers from 900 to 1,000 Home Connection is introduced and assigned.

## Module 3 Learning Goals

Students learn about place value of 3-digit numbers.
$\square$ Students construct and compare representations of 3-digit numbers.
$\square$ Students explore expanded form as they compare and order 3-digit numbers.
$\square$ Students investigate relationships between 3-digit numbers on a number path.

- Students investigate relationships between 3-digit numbers on a number line.
$\square$ Students use their place value understanding to skip-count by 100s from numbers within 1,000.


## Materials

| Warm-Up Same \& Different—Number Path \& Number Line |  |
| :--- | :--- |
| Copies \& Display | PO P6 Same \& Different-Number Path \& Number Line |
| Problems \& Investigations Number Lines to 1,000 |  |
| Copies \& Display | PO P7-P10 Number Line Tags <br> SB 66-67 Number Line Problems |
| Classroom Materials | - cord or heavy string (see Preparation) <br> - retractable clothesline (optional, see Preparation) |
| Work Places in Use |  |
| 4B Measuring in Yards (introduced in Unit 4, Module 2, Session 2) <br> 4C Measure \& Compare (introduced in Unit 4, Module 2, Session 3) |  |
| 4D Climb the Beanstalk (introduced in Unit 4, Module 2, Session 4) |  |
| 5A Close to 25c (introduced in Unit 5, Module 2, Session 2) |  |
| 5B Beat You to \$1.00 (introduced in Unit 5, Module 2, Session 3) |  |
| 5C Three Spins to Win (introduced in Unit 5, Module 2, Session 6) |  |

Vocabulary<br>*Word Resource Card available

one thousand $(1,000)$
number line*
number path*

## Warm-Up

## Same \& Different-Number Path \& Number Line

1 Display the Same \& Different-Number Path \& Number Line print original.

- Give students time to think quietly about the images, then ask:
» What do you notice?
» What is mathematically the same about the two pictures?
» What is mathematically different?
- Have students share their ideas, first in pairs then with class. Encourage them to explain their thinking during the discussion.


Students Pictures A and B are the same because their last numbers are 760.
They both show counting by 10s.
They both show the numbers 680, 690, and 760.
The length of each box in $A$ is the same as the distance between the marks
in $B$.
You can use both of them to help count by 10s, add 10s, or subtract 10 s.
Students The pictures are different because $A$ is a number path but $B$ is a number line.
Picture A starts with 680 but B starts with 670.
It would be easier to measure the length of something using $B$.
Picture $A$ has 700, 720, and 730, but those numbers are missing from $B$.
Picture B has the numbers 670, 710 and 740, but those numbers are missing from $A$.
The numbers in Picture A are in squares, but the numbers in B are under those little marks.
Each square in $A$ is 10, but in B you have to make a jump from one mark to the next to represent 10.
Picture B kind of looks like a measuring tape, but A doesn't.

## Math Practices <br> in Action

## Use appropriate tools strategically

A significant development for many second graders is the transition from number paths to number lines. While number paths highlight discrete counting, number lines are continuous and can be used for linear measurement. Understanding the subtle differences will help students choose and use the appropriate tools.

## Problems \& Investigations

## Number Lines to 1,000

## Placing Hundreds on the Number Line

1 Call students' attention to the string hanging in the classroom. Hang the number tag 0 at the far left and the number tag 1,000 on the far right.

- Ask students: What do you notice? What do you wonder?

2 Explain that the string is a large number line from 0 to 1,000 . Let students know you need their help to place several other numbers along the number line.

- Place the number tag for 800 directly in the center of the number line.
- Ask students to think-pair-share: Is the number 800 placed correctly on the number line? Why do you think so? If not, where does it belong?
- Invite volunteers to share their thinking with the class.
- Ask students to guide you as you shift the placement of the 800 number tag. Continue shifting the tag closer to 1,000 or closer to 0 until the class has come to a consensus about its placement.

3 Work with the class to place the rest of the hundreds, in this order: 300, $600,100,500,900,200,400,700$. For each number:

- Show the number to the class, and ask students to think quietly about where it belongs on the number line.
- Choose a student to hang the number tag on the string where they think it belongs and explain their reasoning. Ask the rest of the class to think-pair-share about the placement of the number tag.
- Invite the class to offer suggestions about the placement and explain their reasoning.
- If needed, the student can adjust the placement of the number tags that have already been placed.
- When the class is satisfied with the number's placement, repeat this process with the next number tag.

Equity-Based
Practice
Affirming mathematics learners' identities It is expected that students may incorrectly place some tags along the open number line and adjust their placement as more tags are added. Treat mistakes like these as opportunities for mathematical learning and encourage students to support each other with tips and suggestions.


Students The next card is 100 !
It's less than 300, so it belongs between the 0 and the 300.
But put it closer to 0, because it's 100 away from 0 but 200 away from 300.
Wait! I think we need to move the 300 first. Shouldn't it be halfway between 0 and 600?

4 When all the hundreds have been placed and the class is satisfied with their placements, ask students to count aloud by 100 s from 0 to 1,000 then backward by 100 s from 1,000 to 0 as you point to each number.

## Placing Other Numbers on the Number Line

5 Place a blank number tag on the number line halfway between 300 and 400.

- Ask students to think-pair-share: What number belongs here? How do you know?
- Invite volunteers to share their ideas and reasoning with the class.
- When the class comes to a consensus, write the number 350 on the card and hang it on the number line.

6 Repeat step 5, this time placing the blank about $3 / 4$ of the way between 800 and 900 , approximately where 875 belongs.

- There is likely to be more debate about the number that belongs on this card. It's okay if students come up with another number close to 875 .

7 Have students complete the other blank number tags and place them along the number line where they belong. For each blank number tag:

- Choose a different student to help.
- Ask them to name a number between 0 and 1,000 not already on the number line.
- Write or have the student write the number on the number tag.
- Ask students to quietly think quietly about where the number belongs on the number line.
- Have them hang the number tag on the number line where they think it belongs. As they do so, invite the class to offer suggestions about the placement and explain their reasoning.
- If needed, the student can adjust the placement of the number tags that have already been placed.
- When the class is satisfied with the number's placement, repeat this process with the next blank number tag.
SUPPORTT The open-ended nature of this activity means some students may choose numbers that are more challenging to place accurately, such as 231 or 643. If it's more appropriate for your students, suggest your own numbers (such as 850 or 275) to make the number tags a little easier to place. Alternatively, consider asking students to only suggest numbers with a 0 or 5 in the ones place.
Challenge Invite students to find and place a number tag that lies halfway between two numbers. For example, place the 500 and 800 number tags on the number line. Ask: What number is halfway in between? (650) You may need to make additional copies of the blank number tags on the Number Line Tags print original.


## Note

If possible, keep the number line posted in your classroom for students to reference during the next few weeks. Only the number tags with multiples of 100 need to stay hanging.

## Completing the Student Book Page

8 Display the Number Line Problems page, and ask students to find it in their student books. Read and review the instructions with the class.

9 When students understand what to do, let them work.

To view a digital version of the problem in Step 5, enter share code 4AS8-MSJR in the Number Line app. Add custom ticks to the number line to extend the activity.
Apps are available at apps.mathlearningcenter.org.

## Work Places

10 When they finish or as time allows, let students go to Work Places.
11 Close the session.

- Give students a moment to update their Work Place Logs with the Work Places they visited.
- Have students clean up and put away the Work Place materials and return their Work Place folders.
- Write the number 120 on the board. Invite students to count aloud by 100 s from 120 to 920 , and record each number on the board ( $220,320,420$, and so on). Then ask students to count backward from 920 to 120 as you point to each number in the sequence.


## Home Connection

12 Introduce and assign the Numbers from 900 to 1,000 Connection, which provides more practice with the following skills:

- Counting within 1,000
- Comparing two 3 -digit numbers


# Print Originals <br> GRADE 2 - UNIT 5 - MODULE 3 Session 4 

## Same \& Different-Number Path \& Number Line

What do you notice?
What is mathematically the same about the two pictures?
What is different?


## 6 <br> Number Line Tags page 1 of 4



Number Line Tags page 2 of 4


Number Line Tags page 3 of 4


Number Line Tags page 4 of 4


# Student Book GRADE 2 - UNIT 5 - MODULE 3 Session 4 

## Number Line Problems page 1 of 2

1 Fill in the missing numbers on the number lines.
a

b

c

d

e


Number Line Problems page 2 of 2
2 Mark and label the number line with the numbers listed below.

$$
500 \quad 800 \quad 300
$$



3 Mark and label the number line with the numbers listed below.


4 ChALLENGE Fill in the missing numbers on the number lines below.

b


C


# Home Connections <br> GRADE 2 - UNIT 5 - MODULE 3 Session 4 

## Numbers from 900 to 1,000 page 1 of 2

1 Fill in the missing numbers on the chart below. Use the patterns you know to help.

| 901 |  | 903 | 904 | 905 | 906 | 907 | 908 | 909 | 910 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 911 | 912 | 913 | 914 | 915 | 916 | 917 | 918 | 919 | 920 |
| 921 | 922 | 923 | 924 | 925 |  |  | 928 | 929 | 930 |
| 931 | 932 | 933 |  | 935 | 936 | 937 | 938 | 939 | 940 |
| 941 | 942 | 943 | 944 |  | 946 | 947 | 948 | 949 | 950 |
| 951 | 952 | 953 | 954 | 955 |  | 957 | 958 | 959 | 960 |
| 961 | 962 | 963 | 964 | 965 | 966 | 967 | 968 |  | 970 |
|  | 972 | 973 | 974 | 975 | 976 | 977 | 978 | 979 | 980 |
| 981 | 982 | 983 | 984 | 985 | 986 | 987 | 988 | 989 |  |
| 991 | 992 | 993 | 994 | 995 |  | 997 | 998 | 999 | 1,000 |

2 Describe or show at least three different patterns you see on the chart above.

## Numbers from 900 to $\mathbf{1 , 0 0 0}$ page 2 of 2

3 The carnival in our town started last week. The chart below shows how many tickets they sold each day.

| Day | Number of Tickets |
| :---: | :---: |
| Saturday | 978 tickets |
| Sunday | 995 tickets |
| Monday | 932 tickets |
| Tuesday | 905 tickets |
| Wednesday | 937 tickets |


a Put the number of tickets they sold each day in order from least to greatest.
$\qquad$ , $\qquad$ , $\qquad$
$\qquad$ , least greatest

4 The people who came to the carnival bought 909 hot dogs on Saturday, 990 hot dogs on Sunday, 943 hot dogs on Monday, and 934 hot dogs on Tuesday.
a Which is greater, 909 or 990 ? $\qquad$
b How do you know?

C Which is less, 943 or 934 ? $\qquad$
d How do you know?



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