

Teacher's Manual

JUMP Math

Confidence Building Units

Writing Numbers Challenge — Level A

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This manual accompanies the
Writing Numbers Challenge (Level A).



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Introduction

In this unit, students will learn to write numbers, first by tracing the numbers, then by writing them freehand. They will also arrange numbers in order and add numbers, but these topics are not covered in much depth. (See the JUMP Math Teacher Resources and Student Assessment & Practice (AP) Books for a more thorough treatment of these topics). The primary purpose of this unit is to build students' confidence and to give students practice writing numbers in engaging contexts.

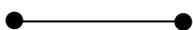
The exercises in this unit work best if you make your students feel that each step is harder than the last (no matter how small the step) and that you are impressed and excited about their successes. When students are allowed to show off in front of their peers by meeting a series of incrementally harder challenges, they start to think that math is fun and they work harder and take more risks. While the steps in these lessons may seem small to an adult, we hope you will find that they are the just the right size for generating excitement with groups of young students.

Lesson W1

Part A. Draw on the board:



SAY: I am going to draw a line to join the dots. Draw the line, as shown below:



NOTE: When drawing the lines on the board, always draw from left to right for horizontal lines, and from bottom to top for vertical lines. However, do not insist that students do the same.

Draw two more dots on the board. Ask a volunteer to draw a line to join the dots. Repeat with several other volunteers. SAY: Now I'm going to make the challenge harder—can anyone join the dots if I move them farther apart? Draw two dots that are a little farther apart than the original pair, and ask a volunteer to join them. Repeat this exercise, moving the dots farther apart each time until they are on opposite sides of the board. SAY: I can't believe you can join dots that are so far apart!

SAY: Now I'm going to draw the dots in a different position—who can join them now? Draw one dot above the other so that students must draw a vertical line. Continue the exercise by moving the dots further apart, then repeat for diagonal lines.

Draw on the board:

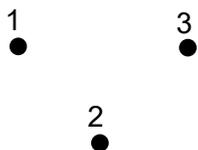


SAY: Who can join three dots? Have a volunteer draw lines to join the dots. Repeat the exercise with dots in various positions, adding more dots with numbers on them. Ask students to count

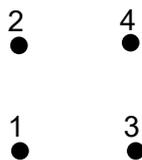
as they join the dots. Make sure you position some dots so that students will have to draw some right angles.

For a more advanced exercise, you could draw the arrangements of dots below. Ask students to predict the letter they will make when they join the dots, and record their predictions as shown:

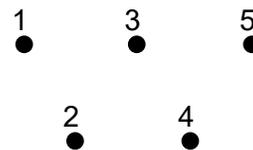
These make a V.



These make an N.

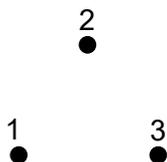


These make a W.

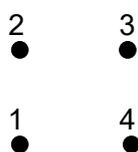


You could also draw the following arrangements of dots. Ask students to predict the shape that will be made if they connect all the dots and then join the last dot to the first. Record their predictions as shown:

These make a triangle.



These make a square.



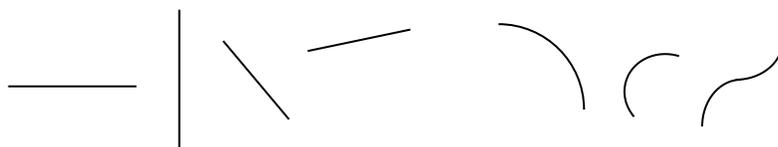
Give each student a sheet of paper and a pencil or crayon. Ask them to draw two dots on their paper and join them. Ask them to do this again, with dots in various positions or with more dots. More advanced students could draw dots to make shapes like triangles or rectangles. Students can also work on worksheet page 1.

Part B. Place cards with the numbers 1 to 10 on the board in order, with the number 1 on the left. Ask your students to count, starting at 1, as you point to each number. Then ask students to point to particular numbers as you say their names (not necessarily in order).

Draw two dots, one above the other, and ASK: If I join these dots, what number will I make? (1) Ask volunteers to come to the board to practise making the number 1 by joining a pair of dots. Then ask a volunteer to draw a 1 without dots. Repeat the exercise with three dots in position to make the number 7 and then five dots in position to make a 4, as shown on worksheet page 2. After you finish these exercises, students can work on worksheet page 2. They can also practise writing the numbers 1, 4, and 7 on a separate piece of paper.

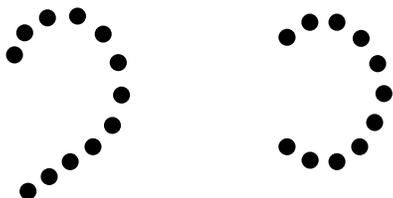
Lesson W2

Part A. Draw on the board:



Point to each straight line and SAY: This is a straight line. Point to each curve and SAY: This line is not straight; it is curved. Then, point to all of the straight lines and SAY: These lines are all straight. Point to the curves and SAY: These lines are all curved (or are curves). Draw more straight lines and curves, and have volunteers say whether each line is curved or straight.

Draw the sets of dots shown below, and ask a volunteer to join the dots. Point out that when you join the dots they make curves:



The curve on the first set should look like it will make the top part of the number 2, and the curve on the second set should look like the bottom part of the number 5.

Draw several sets of dots so that some sets will make a straight line and some will make a curve. Ask students to predict the kind of line they will make when they join the dots.

Draw the number 2, and point out that the top part of the number is curved and the bottom part is a straight line. Draw dots on the board, as shown on the top of worksheet page 3, and ask volunteers to practise drawing the number 2. For a challenge, make the number smaller. Repeat the exercise with the number 5, as on worksheet page 3. Then ask student to complete the worksheet. For extra practice ask students to draw the numbers 2 and 5 on a separate piece of paper.

Parts B–C. Draw on the board sets of dots that are arranged to make the numbers 3, 8, 9, and 6, as shown on worksheet pages 4–5. Students can practise making these numbers on the worksheets and on their own. For an extra challenge, assign worksheet pages 6–8.

Lesson W3

For this lesson, you will need cards numbered from 1 to 10 and a hundreds chart with clear plastic pockets (to hold the cards). If you don't have a pocket chart, you could use tape or adhesive putty to post the cards on the board.

Place cards with the numbers from 1 to 5 in order on the board. Place the remaining cards underneath and out of order. Count from 1 to 5, pointing at the cards as you say each number. ASK: What number comes after 5? (6) Ask a volunteer to help you find the number 6 and put it in the right position, after the 5. Repeat the exercise for the rest of the numbers up to 10.

Tell the class that you are going to try to trick them by switching the position of two numbers, so that the numbers are in the wrong places (or in the wrong order). Ask students to close their eyes, and then switch the position of two of the numbers (e.g., the 5 and the 7). Ask a volunteer to find the numbers you switched and put them in the correct positions. Repeat this with several volunteers, gradually increasing the number of cards you switch.

Line up the cards from 1 to 10 in order, and tell the class that you are now going to remove one of the cards. Ask students to close their eyes. After you have removed a card, ask a volunteer to tell you what number is missing. Then ask another volunteer to write the number in the space of the missing card.

NOTE: For a more advanced variation, you could place the numbers up to 30 in three rows.

Lesson W-4

Write the numbers 1 and 2 on the board. SAY: When I count, I first say the number 1, then the number 2. ASK: What number do I say next? (3) Write “3” on the board, after the 2. ASK: What number do I say next? (4) Repeat this process until you have written all of the numbers up to 9.

Repeat this exercise again, but ask students to tell you the next two numbers each time. Then repeat the exercise, but ask for the next three numbers. You could ask volunteers to write some of the numbers on the board.

Draw three circles in a row and write the numbers 1, 2, and 3 under the circles. ASK: How many circles did I draw? (3) SAY: I wrote numbers under the circles because it helps me to count them. Repeat this exercise with different numbers of circles.

Draw three circles in a row again and write the numbers 1, 2, and 3 under them. ASK: How many circles did I draw? (3) Draw another circle at the end of the row and SAY: I added another circle. ASK: How many circles do I have now? (4) Write “4” under the last circle. Repeat the exercise with different numbers of circles, adding one circle each time. Repeat the exercise again, adding two more circles each time.