

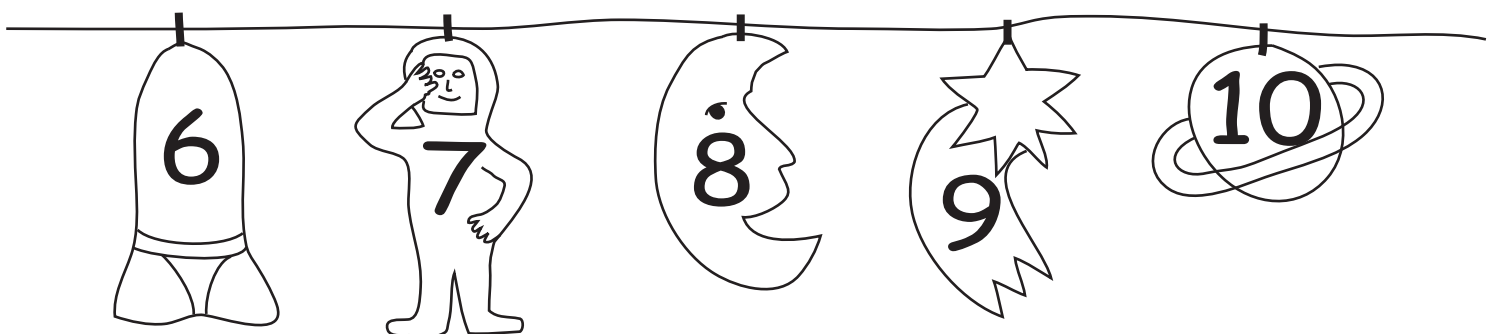
## Number Line Activities

### General Points

The number line can be clearly used for both direct and indirect teaching. Indirect teaching occurs when situations involving numbers arise spontaneously in the course of other classroom activities, and the number line can then be used to reinforce the children's understanding. For example, a child may be encouraged to find the number on the line which matches their tower of bricks, or their age, or the number of biscuits they have on a plate. Children can also be urged to use the numbers on the line to help them to remember which numeral matches which number, and how to write the numerals. There are many such uses of the number line, as a teaching aid in response to what might be called incidental teaching of numeracy.

However, the number line is also an invaluable aid to the teacher who wants to direct the children's attention to a specific aspect of number. Indeed, it is not too much of an exaggeration to say that without it, we cannot teach some parts of the numeracy curriculum. The following activities may be useful within the context of this direct teaching.

**Please note:** All these activities may be used in R, Y1, Y2 or Y3 with number lines from 1 to 20. However, some of the activities may also be used with larger numbers (e.g. 3-digit numbers) or with decimal numbers. Teachers should select number for the line appropriate to each activity and to their class.



## 1. Building from the middle

### Teaching point: counting and ordering numbers

Remove the numbers from the number line and give them out - one per child or pair of children. Choose a child with a number which goes somewhere in the middle of the line e.g. 11 on a 1-20 line or 1.1 on a decimal 0.1-2.0 line. They peg it up in the middle of the line. Read the number in unison. Point at the number and consult the class. Who has the number which comes before this number? That child has to come and peg up their number. Read all three numbers in the sequence e.g. 'eleven, twelve, thirteen'. Continue to build up the number line from the middle outwards. Children will often find 'the number before' harder than 'the number after'. When the number line is complete, count along it in unison.

## 2. Missing Numbers

### Teaching Point: counting and sequencing numbers

Remove every other number from the number line. The children count as normal each child saying one number, starting with the first number on the line. E.g. Tim says 'one', Annie says 'two', Pearl says 'three' and so on. If a child says a number which is missing from the number line they must stand up. When the count is over, give each standing child their 'missing number' and ask them to peg it up in the right place.

Variation: Remove every third number, or a few numbers at random (some consecutive).

## 3. Guess the Number

### Teaching Point: comparing numbers larger and smaller

Send three children out of the room or around a corner so that they cannot see! Point silently at one of the number on the line e.g. 8. Check that everyone in the class has seen which number you are pointing at. This is our secret chosen number. Ask the three children to come back in. They have to guess which number the class has chosen! They may ask one question each. Encourage the children to ask questions about the number's comparative size. E.g. Is it larger than 5? Is it smaller than 10? Discourage them from simply guessing. E.g. Is it seven? After asking one question each they can compile a joint guess. Were they right? Choose three other children to go outside and be the guessers. Choose another number.

#### 4. Crocodile Number

**Teaching Point:** Comparing numbers, larger and smaller using greater-than and less-than signs (< and >)

Draw the two signs on separate sides of the board or on two large pieces of paper. Choose one child. They may unpeg a number from the line. They stick the number on one side of one of the signs. Explain to the children that these signs are like crocodiles! They are big open mouths.



Now crocodiles are greedy and they always face the bigger fish! So the open mouth always faces the larger number. Point at the chosen number and the sign. Choose a child to come and unpeg another number to go the other side of the sign. Allow children from the class to advise her on what number to choose. Read the whole number sentence e.g. 12 is less than 15. Check that it is true. Replace the number on the line and choose another child to start again.

#### 5. Guess the Rule

**Teaching point:** using the number line for performing simpler number operations

You think of a rule, e.g. 'add 4'. Do not tell the children what it is. They have to guess it! They can point to a number on the line. Choose a child to write that number on the board. You draw an arrow and apply your rule, writing the answer after the arrow. The children can discuss what they think your rule is and then 'test' their theory by pointing at another number on the line and waiting to see what the answer is when you apply your rule. When they feel sure they know what your rule is, you can point to the number on the line, and they must apply your rule and tell you what the answer is!

Variations: Use simple multiplication or subtraction to make it harder. Use adding or subtracting 1 to make it easier for young infants.

## 6. Counting Round (only for R, Y1)

**Teaching point: counting and recognising numbers**

The children have to count, each child saying one number in the chant. E.g. Fred says 'one', Gemma says 'two', Chuy says 'three', and so on. Every two or three numbers stop the count. The child who said the last number has to go and unpeg that number from the line. Continue the count. When you reach the last number on the line, start again at the first number and continue counting. Keep stopping every three or four numbers to make a child go and unpeg a number. When all the number are unpegged, count in unison and each child pegs up their number as the class says it.

## 7. Keep Fit Maths (only for R, Y1, Y2)

**Teaching point: recognising the tens and units aspect of numbers**

Sit the children on the rug so that each child has room to stretch out their legs in front of them. You may want to remove shoes (!) to avoid kicking. The children start with their knees bent and their legs pulled in. You silently point to a number on the line. The children must all 'make' that number using their fingers and (if necessary) their toes e.g. you point to 14. The children must stretch out their legs to make ten toes and hold up four fingers. Ten and four is fourteen. You then point to 8. They immediately withdraw their legs (no 'tens' in 8) and hold up 8 fingers. The rapid stretching and withdrawing their legs is why this is called 'Keep fit maths' and it is why the children like it so much! Each time you point to a number, the children must immediately 'make it' using their feet as a 'ten' and their fingers as units. You check that they have all made it correctly. You can appoint a child to be the 'pointer' and to choose a different number on the line.

Variation: Point to a number and then, when the children have all 'made it' correctly, ask them to add or subtract a number of units. E.g. point to 18 and then ask them to take away 5. They must fold down five fingers. What number remains? Ten toes and three fingers, i.e. 13. Do this for addition or subtraction.

## 8. Shuffle the Numbers

**Teaching point: counting and ordering numbers**

Take down the numbers and shuffle them! Place them in a pile face down on a table. Divide the class into two teams. Choose a child from one team to come and take the top number. They have to go and peg this number on the line, trying to peg it in the right place. The rest of their team can help them by shouting 'lower' or 'higher' to indicate which peg it should go on. When they have placed the number, check with the class and make sure it is correctly positioned. Count upwards from the first peg. Then choose a child from the second team to come and position the next number in the pile. Remember, when choosing children, that this task gets easier as you go on because there are more numbers already on the line!

Variation: The children must peg up the numbers so that they go along the line in descending order!

## 9. Actions for Numbers (only suitable for R, Y1, Y2)

**Teaching point: counting and matching quantities to numbers**

Choose a child to point at a number on the line. Give them an action to do that many times e.g. they point at 4. The action you give them is jumping! They must jump four times. The whole class counts to make sure they are right. They can then unpeg that number and take it. Choose another child and let them point to a different number on the line. Give them a different action, e.g. clapping their hands. The whole class counts as they clap. Then they can unpeg the number. Continue like this until all the numbers are unpegged. Choose two or three other children to peg the numbers back up. How far can the class count in unison while they do this?

## 10. Number animals (use 1-20 for R, Y1, Y2 and a sequence of multiples for older children, e.g. 2, 4, 6, 8, ... or 6, 12, 18...)

**Teaching point: counting and matching quantities to numbers**

Choose a child. They come and stand by a number on the line. Choose an animal or bird e.g. a duck. They must make that number of duck noises or they must say the relevant multiplication sentence like a duck e.g. 'Quack, quack, three sixes are eighteen, quack, quack.' The rest of the class check that they have done it correctly. Choose another child. Consult the class. What number shall we give them? What animal noise shall they have? Keep playing like this until every number has been chosen!

## 11. Muddled Numbers

### Teaching point: counting and ordering numbers

Choose three children. They have to go out of the class. While they are gone, choose two other children. They have to come and muddle up the numbers in the line! They do this by unpegging up to six numbers (no more!) and pegging them back up in the wrong spaces. The three children come back in. They have to put the number on the line back into their correct order. But, they have six points. Draw 6 circles on the board to represent these points. Every time they unpeg a number, this costs them a point. So they also should only unpeg six numbers. Can they put the line back in order by only unpegging six? When they have finished, choose three more children to go out!

Variation: With young children only unpeg two or three number and do not worry about how many they have to unpeg to re-order the line!

## Daily Rituals

The number line can be used for a number of useful short daily routines to reinforce the children's grasp of number. The benefit of these is that they are done little and often.

- Count along the line, and count backwards. Count as a whole class, and also in groups (choose four or five children to stand up and count in unison. The whole class claps them).
- Count in tens, first in multiples of ten, 'ten, twenty, thirty, etc'. (Try going as far as you can until you pass one hundred!) Then count in tens, starting at any single-digit number, 'four, fourteen, twenty-four etc'.
- Count in sequences, starting by counting in two's, 'two, four, six, eight, ...' or 'one, three, five, seven, ...'. With very young children, encourage them to say the missing number silently to themselves. Count round the class like this, each child taking responsibility for one number. With older children, count in multiples, 'four, eight, twelve', and so on.