

# 120 Straw Subtract

**Number of Students:** Small groups or pairs

**Materials:**

- 120 drinking straws per person (bundled into groups of 10)
- Rubber bands or pipe cleaners (for bundling straws with)
- 1 Score Sheet per person
- 1 Spinner 0 – 30 per group
- 1 Spinner 0 – 9 per group
- 1 paperclip per group
- 1 pencil (or whiteboard marker if score sheet laminated) per group

**Preparation:**

Straws bundled into groups of 10 (can be done by students, particularly through completing the Part-Part-Whole Place Value Straw Bundling activity first)

Photocopy or print sufficient score sheets so that there is one for each person

Photocopy or print sufficient spinner sheets so that there is one of each type for each group

Spinner sheets need to be cut (there are 2 spinners per page)

Both spinner sheets and score sheets can be laminated for longevity, although this is not strictly necessary.

**How :**

Each student receives 120 straws (as 12 bundles of 10) to begin. Students take turns to spin both spinners, and remove the indicated number of straws from their collection. After spinning both spinners, students must write down the number indicated as a

numeral in the space provided on the score sheet (“Number of Straws Taken Away”). After removing this number of straws from their collection the student must then write a numeral for the number of straws remaining in the “Final Number of Straws” box. The student then writes the equation for the subtraction performed in the space provided.

After three rounds, players check each others’ calculations and make sure that the final number matches their remaining collection of straws. The player with the least number of straws after three rounds wins.

Students initially determine the calculations using the straws. When they are confident with this method, teachers should then explicitly show students the connection between the straws and a written strategy (see supplement). Students can then progress to use pen and paper methods, in conjunction with the visual cues provided by the chart, before they move to using pen and paper methods or mental calculation to state the total before using the straws to check their answer.

# Addition and Subtraction - Bundling Straws Supplement

**Bridging understanding from materials to written strategies:**

If students are to work flexibly with written algorithms, clear connections need to be made between the material support and each aspect of the written strategy. An example of these connections is shown below:

## **Straw Bundles - Subtraction**

**Written form**

**Matching straw bundles support**

$$34 - 28$$

**(Subtracting 10s first)**

$$34$$

$$-20$$

$$= 14$$

$$- 8$$

$$= 6$$

or

$$34 - 28$$

**(Subtracting 1s first)**

$$34$$

$$- 8$$

$$= 26$$

$$-20$$

$$= 6$$

**Starting with 3 bundles of 10 straws and 4 single straws**

**Removing 2 bundles**

**1 bundle and four straws left**

**Removing 8 straws, particularly noting that the bundle must be 'broken' after removing 4**

**6 single straws left**

**Starting with 3 bundles of 10 straws and 4 single straws**

**Removing 8 straws, particularly noting that a bundle must be 'broken' after removing 4**

**2 bundles and 6 straws left**

**Removing 2 bundles**

**6 singles straws left**

Note: It is not important at this point whether the 10s or 1s are subtracted first. Either way eventually yields to an efficient mental technique and also paves the way for the understanding of later algorithms for dealing with bigger numbers. In many ways, subtracting the 10s first often seems to be a more 'natural' way of proceeding.

## Straw Bundles - Addition

### Written form

$$34 + 28$$

(Adding 10s first)

$$34$$

$$+20$$

$$= 54$$

$$+8$$

$$= 62$$

or

$$34 + 28$$

(Adding 1s first)

$$34$$

$$+ 8$$

$$= 42$$

$$+20$$

$$= 62$$

### Matching straw bundles support

Starting with 3 bundles of 10 straws and 4 single straws

Adding 2 bundles

Gives 5 bundles and four straws

Adding 8 straws, particularly noting that an extra bundle is made after adding 6

Gives 6 bundles and 2 single straws

Starting with 3 bundles of 10 straws and 4 single straws

Adding 8 straws, particularly noting that an extra bundle is made after adding 6

Gives 4 bundles and 2 straws

Adding 2 bundles

Gives 6 bundles and 2 singles straws

Note: It is not important at this point whether the 10s or 1s are added first. Either way eventually yields to an efficient mental technique and also paves the way for the understanding of later algorithms for dealing with bigger numbers. In many ways, adding the 10s first often seems to be a more 'natural' way of proceeding.