



Number Strategies



# Working On Number

Aligned with the Australian National Curriculum

Ages 8-10 years



**Slice It Up**

Slide up each of these shapes into the correct number of equal parts and shade the amount to be shared.

TABLE 1:  $\frac{1}{2}$  (square),  $\frac{1}{3}$  (circle),  $\frac{1}{4}$  (square)

TABLE 2:  $\frac{1}{2}$  (square),  $\frac{1}{3}$  (circle),  $\frac{1}{4}$  (square)

**Share and Share Alike**

Share each of these items equally among the number of people shown. How many of each item will each person get?

TABLE 3:  $\frac{1}{2}$  (cube),  $\frac{1}{3}$  (cube),  $\frac{1}{4}$  (cube)

**Changing the Order**

TABLE 4: Fill in the empty boxes to make each calculation true.

a.  $2 \times 3 + 8 = 3 \times 2 + \square$     d.  $3 \times \square = 7 = \square \times 4 + 3$

b.  $6 \times \square + 5 = 2 + 5 \times \square$     e.  $10 \times \square + 4 = 4 \times 2 + \square$

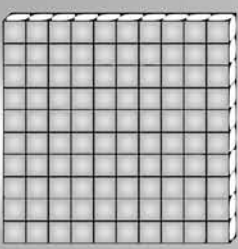
c.  $4 \times 5 \times 1 = 5 \times \square \times 4$     f.  $\square \times 2 \times 5 + 5 \times 9 = \square$

TABLE 5: Circle True or False for each equation below.

$4 \times 5 = 5 \times 4$      $7 \times 2 = 2 \times 7$      $10 \times 13 = 13 \times 10$

$200 + 100 = 100 + 200$      $15 - 7 = 7 - 15$      $25 + 12 = 12 + 25$

Write down anything remaining you noticed about which calculations seem true and which were false.



**Numbers in Cubes and Colour**

TABLE 6: Colour in the correct number of cubes needed to make each number.

83    57

TABLE 7: How many of each block do you need to represent each of these numbers?

462

TABLE 8: 897

TABLE 9: How many hundreds, tens, and ones blocks do we need to make each of these numbers?

102    386    714    999

**Add or Subtract?**

TABLE 10: Fill in each of the empty boxes to make each calculation true.

a.  $21 + 5 = \square$     d.  $128 - 5 = \square$

$\square - 5 = 24$     e.  $\square + 6 = 128$

b.  $\square - 10 = 30$     f.  $430 + 90 = \square$

$30 + \square = 40$     g.  $480 - \square = 430$

c.  $\square + 3 = 42$     h.  $1110 - 200 = \square$

$\square - 3 = 39$     i.  $\square + 200 = 1110$

TABLE 11: Sometimes when we need to subtract, it's easier to do addition instead. Fill in the empty boxes and circles to help you calculate these subtractions. Use the same technique for you.

$15 - 17 = \square$      $20 - 29 = \square$

$\begin{array}{r} 15 \\ - 17 \\ \hline \end{array}$      $\begin{array}{r} 20 \\ - 29 \\ \hline \end{array}$

$\begin{array}{r} 15 \\ - 17 \\ \hline \end{array}$      $\begin{array}{r} 20 \\ - 29 \\ \hline \end{array}$

$17 - 28 = \square$      $80 - 7 = \square$

$\begin{array}{r} 17 \\ - 28 \\ \hline \end{array}$      $\begin{array}{r} 80 \\ - 7 \\ \hline \end{array}$

$\begin{array}{r} 17 \\ - 28 \\ \hline \end{array}$      $\begin{array}{r} 80 \\ - 7 \\ \hline \end{array}$



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# Teachers' Notes

This resource is focused on the Number Strand of the Australian Curriculum for students aged between 8 to 10 years old.

Although each of the five sections is matched up with an elaboration from the Australian Curriculum, each section can also be thought of as a specific skills area for students to work on.

Each section contains eight activities and while there are some stand-alone tasks, most activities are arranged in such a way that skills based tasks come first in the section, followed by further practice questions or application problems.

Each section is also prefaced by a Teachers' Notes page, explaining the idea and purpose behind each activity. Included here are methods to extend the activities or modify the activities based on the level of individual student ability.

The majority of activities are scaffolded into two sections: Task A builds up the general skill to be mastered, usually with two digit numbers; Task B explores the skill further with a more in-depth investigation or consideration and often the use of three digit numbers.

Most activities contain a Challenge at the bottom of the page. These challenges range from Individual Challenges, through to Research and Small Group Challenges. Each of these are designed to complement the activity page, yet extend beyond the material. They are designed to engage student interest and appreciation for Mathematics as well as exposing students to the idea that Mathematics can be a creative and investigative pursuit. Challenges can be included in the lesson of the day, or used as a stand-alone lesson when time permits. Many can be set as homework or assignment tasks over a longer period of time. Research tasks do tend to include the use of internet resources and it is advisable that computer resources are organized in advance.

It is hoped that Working On Number will be used to help guide teachers in their teaching strategies and methods of presentation. While some activities are designed to be extra practice for students, many others can be used to present and teach students new concepts.

# National Curriculum Links

- Investigate the conditions required for a number to be odd or even and identify odd and even numbers (ACMNA051)
- Recognise, model, represent and order numbers to at least 10 000 (ACMNA052)
- Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems (ACMNA053)
- Recognise and explain the connection between addition and subtraction (ACMNA054)
- Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation (ACMNA055)
- Recall multiplication facts of two, three, five and ten and related division facts (ACMNA056)
- Represent and solve problems involving multiplication using efficient mental and written strategies and appropriate digital technologies (ACMNA057)
- Model and represent unit fractions including  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{5}$  and their multiples to a complete whole (ACMNA058)
- Investigate and use the properties of odd and even numbers (ACMNA071)
- Recognise, represent and order numbers to at least tens of thousands (ACMNA072)
- Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems (ACMNA073)
- Investigate number sequences involving multiples of 3, 4, 6, 7, 8, and 9 (ACMNA074)
- Recall multiplication facts up to  $10 \times 10$  and related division facts (ACMNA075)
- Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder (ACMNA076)
- Investigate equivalent fractions used in contexts (ACMNA077)
- Count by quarters halves and thirds, including with mixed numerals. Locate and represent these fractions on a number line (ACMNA078)
- Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation (ACMNA079)

## Numeration

### How Many Tens Are There?

This activity can be made more tangible by asking students to create and cut out their own Xs and Is for this task. Task C can be a casual activity or you may like students to create a more formal "mini test" to try on their partner, with a separate solutions guide.

### How Many Hundreds Are There?

This activity is best completed after "How many tens are there?". As an extension activity for more able students you may like to turn Task C into an activity on numbers greater than 1000 using a separate symbol for 1000.

### Numbers in Cubes and Colour

This activity can be done without actual MSB cubes, but some lower ability students may like to assemble numbers using cubes before attempting the tasks.

### Words to Numbers

You may like to talk about the different way we say numbers. As an example you can discuss how to say the number 2 307 and when we use the word "and". Task C will enable students to simultaneously participate in the creation of mathematics and to practise a larger variety of numbers. Take note of each number as they say it so that you can go through all the solutions at the end.

### Numbers in a Row

This task is best completed after "Words to Numbers", especially when attempting Task C. You may like to encourage students to cross off each number once they've used it to keep track of which numbers are left to order.

### Measuring Numbers

Materials required for this activity: a 30cm ruler with cm and mm markings. As a discussion point you may like to talk about the connection between cm and mm and their different uses depending upon the accuracy required. You can extend Task C by asking students to measure and order other lengths: the distance between their eyes, from elbow to wrist. You can extend this even further by a research assignment on the Golden Ratio and body lengths.

### Large Numbers

This activity is designed to expose students to numbers beyond 1000 and their existence in the real world. The above six activities should be completed first.

### Numbers to Words

Once again this task is designed to expose students to numbers beyond 1000 and how we read and write them. This is also an opportunity for some small group research and you can extend this further to look at other occupations. A good place is to look at government jobs, where salaries are often numbers like \$76 201 and \$42 523.

# ★ How Many Tens Are There?

**\* TASK A** Circle the number of tens and ones needed to make each number.

24

X X X X X X X X X  
I I I I I I I I I I I

17

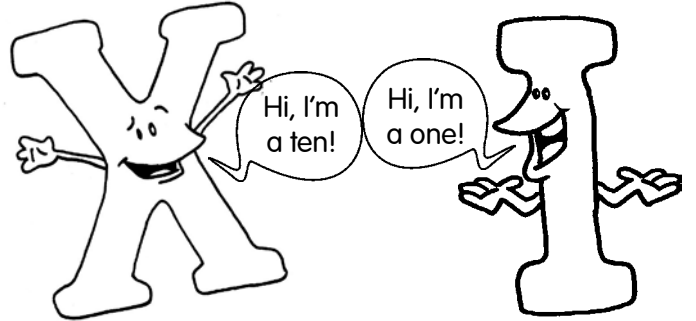
X X X X X X X X X  
I I I I I I I I I I I

85

X X X X X X X X X  
I I I I I I I I I I I

92

X X X X X X X X X  
I I I I I I I I I I I



52

X X X X X X X X X  
I I I I I I I I I I I

92

X X X X X X X X X  
I I I I I I I I I I I

X X X X X X X X X  
I I I I I I I I I I I

**\* TASK B** Draw the number of tens (X) and ones (I) you need to make each number.

7

32

46

71

**\* TASK C: CHALLENGE YOUR PARTNER**

Give your partner ten different numbers between 1 and 100 and see if they can draw the correct number of tens and ones.



## Words to Numbers

### \* TASK A

Each of the numbers below are written in words.  
Next to each one write them using numerals.

- a) Seventeen \_\_\_\_\_ e) Seven hundred and twenty three \_\_\_\_\_
- b) Forty five \_\_\_\_\_ f) Ninety \_\_\_\_\_
- c) One hundred and six \_\_\_\_\_ g) Four hundred and thirteen \_\_\_\_\_
- d) Eighty nine \_\_\_\_\_

### \* TASK B

Circle the answer that is the correct way to write each number in words.

**72**

Seventy two

OR

Seventy and two

**301**

Three hundred one

OR

Three hundred and one

**512**

Five hundred twelve

OR

Five hundred and twelve

**34**

Thirty four

OR

Thirty and four

**1203**

One thousand twenty and three

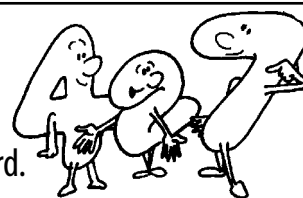
OR One thousand two hundred and three

### \* TASK C: CLASS CHALLENGE

Listen to each person in the class as they say their favourite three digit number.

Write down the number they say using numerals.

See how many you got correct when your teacher writes the answers on the board.



## Numbers in a Row

**\* TASK A** These numbers are in the wrong order. Write them from smallest to largest.

a) 15, 4, 1, 10, 9, 12, 19, 8, 6

---

b) 24, 17, 35, 91, 72, 50, 33, 19, 42, 63

---

c) 207, 27, 720, 702, 72, 720, 727

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**\* TASK B** These numbers are in the wrong order. Write them from largest to smallest.

a) 57, 14, 88, 92, 24, 51, 80, 45, 30, 17, 31

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b) 420, 370, 810, 590, 840, 960, 720, 630, 110, 340

---

c) 612, 745, 315, 621, 361, 872, 782, 351, 827, 754

---

d) 321, 142, 231, 213, 123, 423, 234, 342, 214, 241

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### **\* TASK C: PERSONAL CHALLENGE**

These numbers are in the wrong order. Write them from smallest to largest using words.

85, 304, 32, 6, 173, 210, 98, 27, 246, 351, 18



## Mental Mania 2

Use the different mental strategies you've learnt to calculate each of the following.

1.  $110 + 54$

2.  $368 - 20$

3.  $452 + 105$

4.  $785 - 203$

5.  $623 + 111$

6.  $583 - 222$

7.  $124 + 345$

8.  $587 - 365$

9.  $784 + 213$

10.  $956 - 354$



21.  $435 + 225$

22.  $782 + 516$

23.  $637 + 271$

24.  $238 + 491$

25.  $549 + 625$

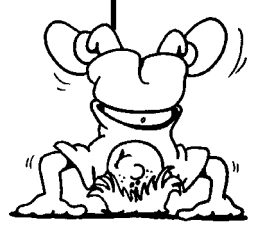
26.  $754 - 236$

27.  $887 - 293$

28.  $945 - 762$

29.  $672 - 538$

30.  $453 - 236$



11.  $252 + 345$

12.  $864 - 741$

13.  $381 + 416$

14.  $659 - 325$

15.  $324 + 563$

16.  $120 + 235 + 342$

17.  $550 + 235 - 162$

18.  $895 - 342 - 121$

19.  $234 + 421 + 534$

20.  $688 - 432 - 144$



31.  $542 + 813$

32.  $775 - 491$

33.  $262 + 374$

34.  $995 - 128$

35.  $724 + 269$

36.  $529 - 381$

37.  $341 + 923$

38.  $462 - 225$

39.  $246 + 671$

40.  $949 - 362$



## ★ Real Life Addition

**\* TASK A** Answer each of these word problems and be sure to show how you got your answer.

**1**

If James has \$25 and Melissa has \$32 more than James, how much does Melissa have?



**2**

The Kirtz family drank 5423 mL of milk last week and this week they've drunk 2374 mL of milk. How much milk have they drunk in two weeks?



**3**

In the summer months the Bradley household uses 742 units of electricity and in the winter months they use 595 units of electricity. How much have they used altogether?



**4**

Brett and Susie are going on a holiday. They drive 175 km from Perth to Bunbury and then another 279 km. How far is the total journey?



**\* TASK B** Answer each of these word problems and be sure to show how you got your answer.

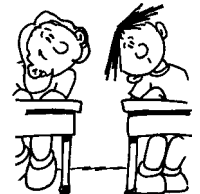
**1**

Michael is 12 years older than Nicole. Nicole is 32 years older than Jamie. Jamie is 8 years old. How old is Michael?



**2**

In a local primary school there are 24 students in Year 1, 31 students in Year 2 and 29 students in Year 3. How many students are there in total in these three year groups?



**3**

Max looks at his bank statement and sees that he spent \$230 on clothes, \$157 on groceries and \$75 on petrol. How much did he spend altogether?



**4**

Samantha is writing a story. On Monday she wrote 435 words, on Tuesday she wrote 240 words and on Wednesday she wrote 562 words. How many words has she written so far?



### **\* TASK C: RESEARCH CHALLENGE**

Each evening this week watch the weather report and write down the maximum and minimum temperatures for each day. How much did the temperature increase by each day this week?