

MENTAL CALCULATION STRATEGIES

Unit 5

• SESSION 1 •

TOTAL TIME

30
MINUTES

OBJECTIVES

- Use the knowledge that addition can be done in any order
- Use known number facts and place value to add/subtract mentally

VOCABULARY

add, subtract,
counting on in
tens,
counting on in
ones,
larger/smaller
number

RESOURCES

individual white boards or number cards;
number grid 0–99 (resource sheet 5, unit 3);
place value cards (resource sheet 11);
digit cards;
1–9 paperclip spinners for homework
(resource sheet 12)

HOMEWORK

Play the *Plus 11* game using a paperclip spinner (resource sheet 12)

STARTER

5
MINUTES

Practise adding and subtracting 10, 20 or 30 from any number on the 0–99 grid. Practise adding and subtracting 1 from any number on the grid. Use individual white boards (or number cards) for answers and tell children to hold them up.

KEY QUESTIONS

- What is 64 add 30?
- What is 64 subtract 30?
- How can you use the grid to find a number 10 more or 10 less? 1 more or 1 less?

MAIN ACTIVITY

20
MINUTES

Write $35 + 4$ on the board. Ask the children how they will do this. They should know that 5 and 4 make 9 without counting on in ones. Now make 35 with place value cards and show how only the ones card changes when we add 4.

Write $35 + 40$ on the board. Encourage everyone to count on in tens this time.

Using both place value cards and the 0–99 grid, demonstrate counting on from 35 to 75.

Write $53 + 30$ on the board. *Do we count on in ones or tens?* Demonstrate on the grid and with place value cards. Write $53 + 3$. Do this.

Repeat for other examples including $46 + 4$ (next 10) and $46 + 40$. Encourage the children to recognise when it is appropriate to deal with ones and when with tens.

Write $5 + 62$ on the board. *Which number do we start with to do the addition?* Demonstrate that we start with 62 because it's larger. *Do we count on in ones or tens?*

Now write $20 + 74$. *Which number do we start with?* Repeat this process for $47 - 3$ and $47 - 30$, encouraging the children to decide whether to count back in tens or ones. Repeat this a number of times with a range of numbers.



Play the *Plus 11* game in pairs. Each pair needs two sets of digit cards; one represents the tens and the other the ones. Shuffle both packs. Place each pile face down. The players take it in turns to make a two-digit number from the cards. Write it down and add 11 to it. Make sure that everyone knows that to add on 11, they add 10 then 1. After three turns each, the player in each pair who scores closer to 50 (above or below) is the winner.

Explain activity sheet 5.1, which the children should complete before the next session.

KEY QUESTIONS

- Which number do we start with when adding? (the larger)
- How do we know whether to count on in ones or tens?

PLENARY

5
MINUTES

Practise adding and subtracting multiples of ten below 100, then practise adding or subtracting single-digit numbers. Make sure the children recognise the difference.

Unit 5

SESSION 2

TOTAL TIME

30
MINUTES

OBJECTIVES

- When adding know to start with the larger number
- Know whether to count on in ones or tens

VOCABULARY

add, plus,
subtract, minus,
double,
near double,
halve

RESOURCES

individual white boards or pieces of paper to hold up;
number cards 20–90;
dice with 10, 20, 30, 1, 2, 3
or paperclip spinner
(resource sheet 13);
1–9 paperclip spinner
(resource sheet 12)

STARTER

5
MINUTES

Check that children are familiar with the words 'plus' and 'minus'. Rehearse adding and subtracting 10 from any number on the 0–99 grid. Rehearse adding and subtracting 1 from any number on the grid. Ask the children to hold up individual white boards or pieces of paper with the answers.

Write on the board a few questions such as $36 + 20 = \square$, $36 + \square = 56$ and $\square + 20 = 56$. Ask the children to complete these orally.

KEY QUESTIONS

- What is 44 plus 30?
- What is 44 plus 3?
- What is 44 minus 30?
- What is 44 minus 3?

MAIN ACTIVITY

20
MINUTES

Children work in pairs. They take a card from a pile of 20–90 number cards. This gives them their first number. They get their second number by throwing a dice, or using the paperclip spinner, with 10, 20, 30, 1, 2, 3 on it. They must add these numbers together and write the process down as a number sentence, for example $24 + 30 = 54$. Each pair should aim to complete at least four examples. Work with the children to make sure they are carrying out the task correctly.



Write the following number sentences on the board:

$$4 + 75 = \square$$

$$30 + 49 = \square$$

$$5 + 10 + 54 = \square$$

$$6 + 10 + 63 = \square$$

$$20 + 2 + 57 = \square$$

Tell the children they all have the same answer except for one. Ask them to say which one that is. They should work in pairs to find out. Go through each number sentence on the board, stressing that they should start with the larger or largest number.

Follow up the work on number sentences with examples that go above 100, for example:

$$80 + 30 = \square$$

$$86 + 30 = \square$$

$$98 + 5 = \square$$

Explain activity sheet 5.2, which the children should complete before the next session.

KEY QUESTIONS

- ☐ Were some calculations easier than others?
- ☐ Which ones?
- ☐ Why is it easier to start with the larger number?

PLENARY



What easy ways are there for adding your numbers? Consider with the children the key questions above.

Name

Date

Dear Parents/Carers,

In our mathematics lessons, we have been adding and subtracting mentally.
Please help your child by playing the game below.

Thank you for your help.

Your child's teacher

Plus 11

Each player takes it in turn to use the 1–9 paperclip spinner. Spin it twice to make a two-digit number; the first spin gives the tens, and the second the ones. Write down the number you get, then add 11. Write down the answer.

Each player has five turns. The person who has scored closest to 50 (above or below) in any turn is the winner.

Example: Your spins give you a 4 and a 2. This means that your number is 42. Add 11 to score 53 for the round.

Name

Date

Activity
sheet

5.1

1. Add 10 to each number.

10	26	52	86	14	31	69
20						

2. Subtract 10 from each number.

30	57	96	13	72	81	64
20						

3. John's ride costs 35p.

Avtar's ride costs 10p more.

How much is Avtar's ride?

4. Mel's goldfish cost 88p.

Jim's goldfish cost 10p less.

How much is Jim's goldfish?

5. Fill in the gaps.

$$\boxed{} - 10 = 56$$

$$\boxed{} + 10 = 23$$

$$87 = \boxed{} + 10$$

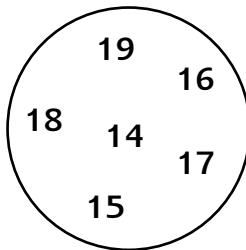
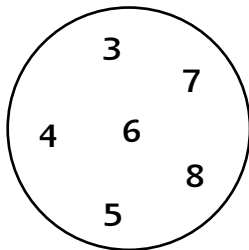
$$52 = \boxed{} - 10$$

Name

Date

**Activity
sheet****5.2**

1. Choose one number from each circle.
Add them together and write the number sentence.
Do this five more times.



$$3 + 14 = 17$$

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.....

.....

.....

.....

2. I had 15p in my pocket.
I put in another 6p.
How much is in my pocket now?

.....

3. Ruby buys a comic.
She gives the shopkeeper 5p, then another 22p.
How much does the comic cost?

.....

4. Sam has 57 pence in his wallet.
He buys sweets for 40p.
How much does he have left?

.....

5. Make up some number calculations with the number 20 in them:
 $20 + 1 = 21$

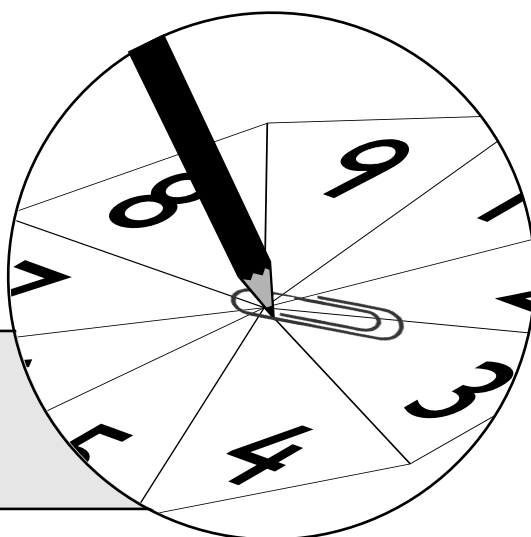
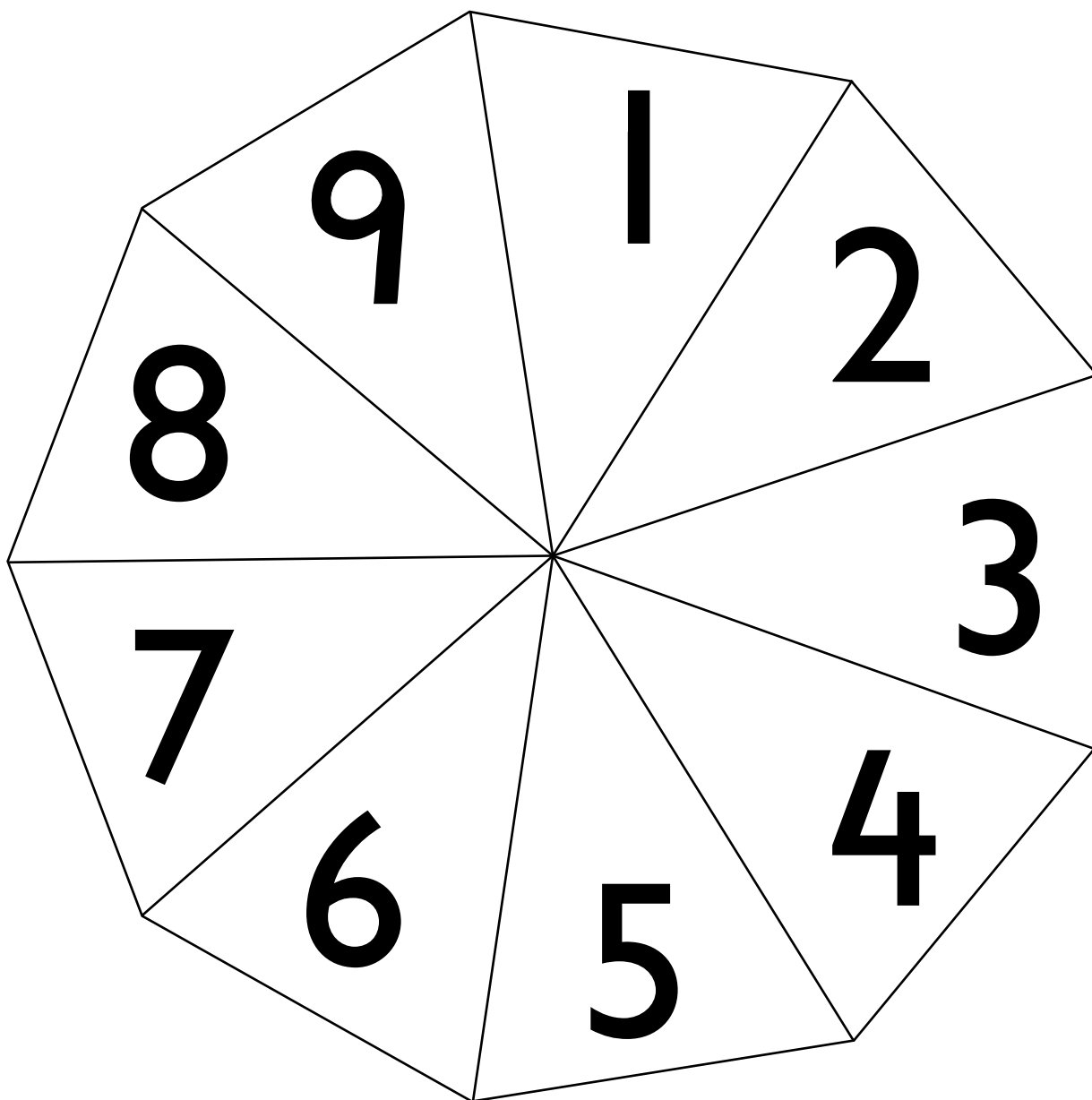
Unit 5

RESOURCE SHEET 11

UNIT

5

1	01	100
2	02	200
3	03	300
4	04	400
5	05	500
6	06	600
7	07	700
8	08	800
9	09	900



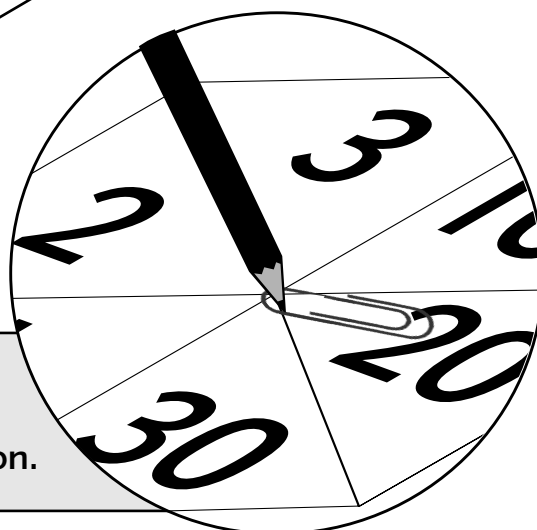
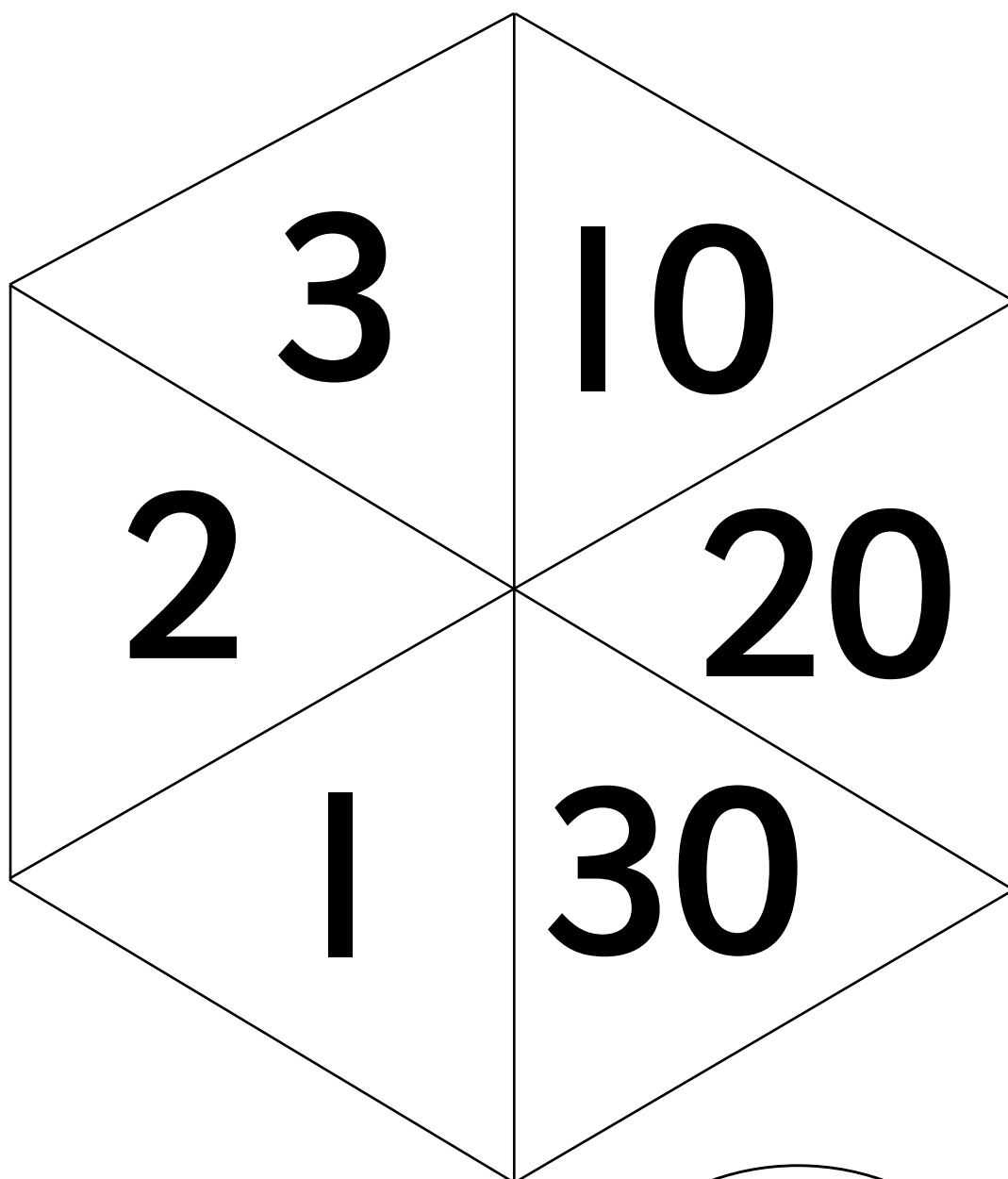
Hold the pencil fixed and flick the paperclip around. Read the number that the paper clip stops on.

Unit 5

RESOURCE SHEET 13

UNIT

5



Hold the pencil fixed and flick the paper clip around. Read the number that the paper clip stops on.