

Adding and Subtracting Strategies

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Compatible numbers to ten

We are learning about compatible numbers to 10

Exercise 1: compatible numbers in additions

What to do

Some of these additions make the number 10. 10 is a tidy number. Write down the questions numbers that make the total 10

- | | | |
|-------------|--------------|---------------|
| 1) $2 + 8$ | (2) $3 + 6$ | (3) $7 + 4$ |
| 4) $6 + 4$ | (5) $7 + 2$ | (6) $3 + 7$ |
| 7) $3 + 5$ | (8) $5 + 5$ | (9) $4 + 7$ |
| 10) $1 + 9$ | (11) $6 + 6$ | (12) $0 + 10$ |

What to do

For these next sentences, copy out the question, then write down if it is true or false

- | | | |
|------------------|-------------------|--------------------|
| 13) $5 + 4 = 10$ | (14) $8 + 5 = 10$ | (15) $8 + 2 = 10$ |
| 16) $9 + 1 = 10$ | (17) $4 + 7 = 10$ | (18) $3 + 9 = 10$ |
| 19) $5 + 2 = 10$ | (20) $3 + 8 = 10$ | (21) $10 + 0 = 10$ |
| 22) $3 + 7 = 10$ | (23) $6 + 5 = 10$ | (24) $2 + 7 = 10$ |

25) Something to think about

If $4 + 6 = 10$, can we also write $10 = 4 + 6$? Explain your answer

- *26) For questions 13 to 24, some additions were more than 10, some were less than 10. Is there a quick way of telling if the answer will be less than 10 or more than 10? Look through the questions that were false again and see if you can work out a pattern.

Exercise 2: sentences with inequalities

What to do

For these next sentences, some of the additions are more than 10, some equal 10 and some are less than 10. Copy out each sentence and use the correct sign $<$, $=$, or $>$ to make the sentence true

- | | | |
|----------------|-----------------|-----------------|
| 1) $6 + 4$ 10 | (2) $2 + 7$ 10 | (3) $8 + 4$ 10 |
| 4) $9 + 1$ 10 | (5) $7 + 4$ 10 | (6) $5 + 5$ 10 |
| 7) $6 + 5$ 10 | (8) $4 + 4$ 10 | (9) $1 + 8$ 10 |
| 10) $7 + 3$ 10 | (11) $2 + 9$ 10 | (12) $6 + 6$ 10 |

13) $7 + 5 = 10$

(14) $2 + 8 = 10$

(15) $9 + 3 = 10$

16) $4 + 6 = 10$

(17) $8 + 5 = 10$

(18) $3 + 6 = 10$

19) $3 + 5 = 10$

(20) $5 + 4 = 10$

(21) $0 + 10 = 10$

Exercise 3

What to do

Replace the box with a number that makes the sentence true. Write the sentence in your book

1) $9 + \square = 10$

(2) $5 + \square = 10$

(3) $1 + \square = 10$

4) $8 + \square = 10$

(5) $\square + 8 = 10$

(6) $3 + \square = 10$

7) $\square + 1 = 10$

(8) $6 + \square = 10$

(9) $\square + 7 = 10$

10) $2 + \square = 10$

(11) $\square + 2 = 10$

(12) $\square + 5 = 10$

13) $7 + \square = 10$

(14) $4 + \square = 10$

(15) $\square + 0 = 10$

Exercise 4

1) $\square + \triangle = 10$

This sentence shows that two different numbers add up to 10. What pairs of number add up to 10? Make a list of all the possibilities you can think of.

Exercise 5: compatible numbers with subtraction

What to do

Use your facts to 10 to replace the box with a number that makes the sentence true. Write the sentence

1) $10 - 1 = \square$

(2) $10 - \square = 8$

(3) $10 - 9 = \square$

4) $10 - \square = 7$

(5) $10 - \square = 5$

(6) $10 - 4 = \square$

7) $10 - \square = 6$

(8) $10 - \square = 2$

(9) $10 - 6 = \square$

10) $\square - 5 = 5$

(11) $10 - \square = 7$

(12) $\square - 9 = 1$

What to do

For these next sentences, copy out the question then write down if it is true or false

13) $10 - 1 = 8$

(14) $10 - 5 = 5$

(15) $10 - 2 = 9$

16) $10 - 4 = 6$

(17) $10 - 7 = 2$

(18) $10 - 6 = 4$

19) $10 - 3 = 6$

(20) $10 - 8 = 2$

(21) $10 - 3 = 7$

- 22) $9 + 1 = 10$ is an addition fact. Addition facts can be rewritten as subtraction facts. $10 - 1 = 9$ is one subtraction fact you can write, $10 - 9 = 1$ is another. For each fact to 10 you can think of, write two subtraction facts that are also true.

Exercise 6: using compatible numbers with additions

What to do

Use your knowledge of compatible numbers to help you to work out the answers to these additions

- | | | |
|-------------------------|--------------------------|--------------------------|
| 1) $5 + 3 + 5$ | (2) $9 + 1 + 8$ | (3) $2 + 3 + 8$ |
| 4) $4 + 5 + 6$ | (5) $7 + 9 + 3$ | (6) $2 + 8 + 7$ |
| 7) $4 + 10 + 6$ | (8) $20 + 7 + 3$ | (9) $6 + 40 + 4$ |
| 10) $3 + 4 + 6 + 7$ | (11) $5 + 8 + 5 + 2$ | (12) $1 + 4 + 9 + 6$ |
| 13) $9 + 2 + 3 + 1 + 7$ | (14) $4 + 5 + 2 + 8 + 6$ | (15) $8 + 3 + 2 + 2 + 8$ |
| 16) $2 + 1 + 9 + 3$ | (17) $6 + 6 + 4 + 1$ | (18) $5 + 3 + 2 + 7$ |

Exercise 7: word problems

What to do

Some of these problems have compatible numbers in them that make the problem easier. Write out each problem with numbers, and show which are easy to do if you know about compatible numbers

- John has 6 plums and eats 4 of them. How many does he have left?
- Serena has 3 CDs and Claire has 7. How many do they have in total?
- Shane has written 3 pages for his maths project, while Sam has written 7. How many more pages has Sam written?
- From an accident, Elle has 8 stitches in her arm and two in her cheek. How many stitches does she have in total?
- For netball training, Susie has done 6 laps of the courts. If she has to do ten laps in total, how many more laps must she do?
- Rewi and Saskia go to the shops. Rewi buys five pens. Saskia does the same. How many pens in total do they buy?
- Mrs Smith has 10 tickets to the movies to give away as spot prizes on mufti day. She has given away 3. How many more does she have to give away?
- Tai likes fast sports cars. On one trip he sees six Porsches and four Ferraris. How many of these cars did he see altogether?
- Alice has seven pairs of shoes. She throws out three pairs as they are old. How many pairs does she have left?
- April needs to save \$10 to go out with some friends. She has \$2, how much more does she need?
- Syd has eight books for a school project. His friend Amy borrows 2 of them. How many does he have left?
- Zane has 10 books of raffle tickets to sell. His uncle takes one. How many are left to sell?
- John has 7 cousins. Peter has 4 fewer cousins than John. How many cousins do both John and Peter have?

- 14) Paul wants 10 “most valuable player” awards. He has 4. How many more does he need to get?
- 15) Write five word questions of your own that use your knowledge of compatible numbers. Hand them in for marking tomorrow.

Exercise 8: making tidy numbers

- 1) Can you spot the pattern? If you can, finish the pattern to 100 and explain what the pattern is
 - $7 + 3 = 10$
 - $17 + 3 = 20$
 - $27 + 3 = 30$
 - $37 + 3 = 40$
 - $47 + 3 = 50$
 - $57 + 3 = 60$
- 2) Make a pattern that starts with the fact $8 + 2 = 10$
- 3) Make up 2 other patterns with compatible numbers

Exercise 9: tens to one hundred

- 1) Can you spot the pattern in these facts to 100?
 - $70 + 30 = 100$
 - $60 + 40 = 100$
 - $10 + 90 = 100$
 - $50 + 50 = 100$
- 2) Write two other facts to 100 that follow the pattern
- 3) Complete the sentence below
If I know my facts to 10, I also know _____

Exercise 10: ones to make you think

- 1) $\square + 3 = 10$
The sign is missing in this sentence, along with a number. Make 3 different true sentences, each using a sign $>$, $=$, $<$ and a different number for the box
- 2) If $\square + \square = 10$, what number or numbers make this true?
- 3) If $\square + \square + \square + \square + \square = 10$, what number or numbers make this true?
- 4) If $\square + \square + 2 = 10$, what number or numbers can make this true?
- 5) $500 + 500 = 1000$.
Explore your facts to 1000. Write up anything you learn about them

Compatible numbers to 10

Answers

Exercise 1

These make 10

1, 4, 6, 8, 10, 12

- | | | | |
|-----------|------------|------------|------------|
| 13) False | (14) False | (15) True | (16) True |
| 17) False | (18) False | (19) False | (20) False |
| 21) True | (22) True | (23) False | (24) False |
- 25) Yes. Both equations are true because each side is equal to the other
- 26) This question should be discussed with your teacher and other students working on this activity

Exercise 2

- | | | | |
|-------|--------|--------|--------|
| 1) = | (2) < | (3) > | (4) = |
| 5) > | (6) = | (7) > | (8) < |
| 9) < | (10) = | (11) > | (12) > |
| 13) > | (14) = | (15) > | (16) = |
| 17) > | (18) < | (19) < | (20) < |
| 21) = | | | |

Exercise 3

- | | | | |
|-------------------|--------------------|---------------------|--------------------|
| 1) $\square = 1$ | (2) $\square = 5$ | (3) $\square = 9$ | (4) $\square = 2$ |
| 5) $\square = 2$ | (6) $\square = 7$ | (7) $\square = 9$ | (8) $\square = 4$ |
| 9) $\square = 3$ | (10) $\square = 8$ | (11) $\square = 8$ | (12) $\square = 5$ |
| 13) $\square = 3$ | (14) $\square = 6$ | (15) $\square = 10$ | |

Exercise 4

10 + 0 1 + 9 2 + 8 3 + 7 4 + 6 5 + 5 6 + 4 7 + 3 8 + 2
 9 + 1 0 + 10

Your teacher will want to talk about your list as well

Exercise 5

- | | | |
|------------------|-------------------|-------------------|
| 1) $10 - 1 = 1$ | (2) $10 - 2 = 8$ | (3) $10 - 9 = 1$ |
| 4) $10 - 3 = 7$ | (5) $10 - 5 = 5$ | (6) $10 - 4 = 6$ |
| 7) $10 - 4 = 6$ | (8) $10 - 8 = 2$ | (9) $10 - 6 = 4$ |
| 10) $10 - 5 = 5$ | (11) $10 - 3 = 7$ | (12) $10 - 9 = 1$ |
| 13) False | (14) True | (15) False |
| 17) False | (18) True | (19) False |
| 21) True | | (20) True |

22) For the answers to this question, compare your answers with those of your group and be prepared to share them with your teacher

Exercise 6

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|-------|--------|--------|--------|
| 1) 13 | (2) 18 | (3) 13 | (4) 15 |
| 5) 19 | (6) 17 | (7) 20 | (8) 30 |

- | | | | | | | | |
|-----|----|------|----|------|----|------|----|
| 9) | 50 | (10) | 20 | (11) | 20 | (12) | 20 |
| 13) | 22 | (14) | 25 | (15) | 23 | (16) | 15 |
| 17) | 17 | (18) | 17 | | | | |

Exercise 7

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|-----|--|--|
| 1) | $6 - 4$ or $6 - 4 = \square$ | don't add to 10, so are not compatible |
| 2) | $3 + 7$ or $3 + 7 = \square$ | compatible to 10 |
| 3) | $7 - 3$ or $7 - 3 = \square$ or $3 + \square = 7$ | don't add to 10, so are not compatible |
| 4) | $8 + 2$ or $8 + 2 = \square$ | compatible to 10 |
| 5) | $10 - 6$ or $10 - 6 = \square$ or $6 + \square = 10$ | compatible to 10 |
| 6) | $5 + 5$ or $5 + 5 = \square$ | compatible to 10 |
| 7) | $10 - 3$ or $10 - 3 = \square$ or $3 + \square = 10$ | compatible to 10 |
| 8) | $6 + 4$ or $6 + 4 = \square$ | compatible to 10 |
| 9) | $7 - 3$ or $7 - 3 = \square$ | don't add to 10, so are not compatible |
| 10) | $10 - 2$ or $10 - 2 = \square$ or $2 + \square = 10$ | compatible to 10 |
| 11) | $8 - 2$ or $8 - 2 = \square$ | |
| 12) | $10 - 1$ or $10 - 1 = \square$ or $1 + \square = 10$ | compatible to 10 |
| 13) | $7 - 4 = 3$, then $7 + 3$ or $7 + 3 = \square$ | compatible to 10 (Well done) |
| 14) | $10 - 4$ or $10 - 4 = \square$ | don't add to 10, so are not compatible |
| 15) | Your problems need to be handed in for marking for this question | |

Exercise 8

- 1) $67 + 3 = 70$
 $77 + 3 = 80$
 $87 + 3 = 90$
 $97 + 3 = 100$

The pattern is: If you know your facts to 10, you can use compatible numbers to make 20, 30, 40, 50, ...

(The pattern you have discovered should be discussed with your teacher and other members of your group)

- 2) $8 + 2 = 10$
 $18 + 2 = 20$
 $28 + 2 = 30$
 $38 + 2 = 40$
 $48 + 2 = 50$
 $58 + 2 = 60$
 $68 + 2 = 70$
 $78 + 2 = 80$
 $88 + 2 = 90$
 $98 + 2 = 100$
- 3) Compare your pattern with those of other members of your group. Also show them to your teacher

Exercise 9

- 1) The pattern is that the facts to 100 work just like the facts to 10, so if you know your facts to 10, you also know the tens facts to 100. (You should discuss what you have found with your teacher).
- 2) 2 other facts like $90 + 10 = 100$ or $20 + 80 = 100$
- 3) my tens facts to 100

Exercise 10

- 1) Your answers for this problem may vary. Examples are
 $7 + 3 = 10$
 $6 + 3 < 10$
 $8 + 3 > 10$
- 2) Only the number 5 makes this true
- 3) Only the number 2 makes this true
- 4) Only the number 4 makes this true
- 5) Show and discuss what you have learned with your teacher and other members of your group.