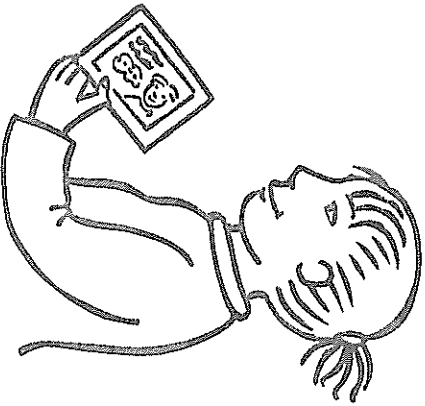


Learning outcome cards for addition and subtraction strategies

The following learning outcome cards link the *No Nonsense Number* teaching books for addition and subtraction to the number framework. Each card contains a clear example of the specific learning outcome that it represents.

Learning outcome cards have been designed to be used, stored and re-used with ease. To put them to best use:

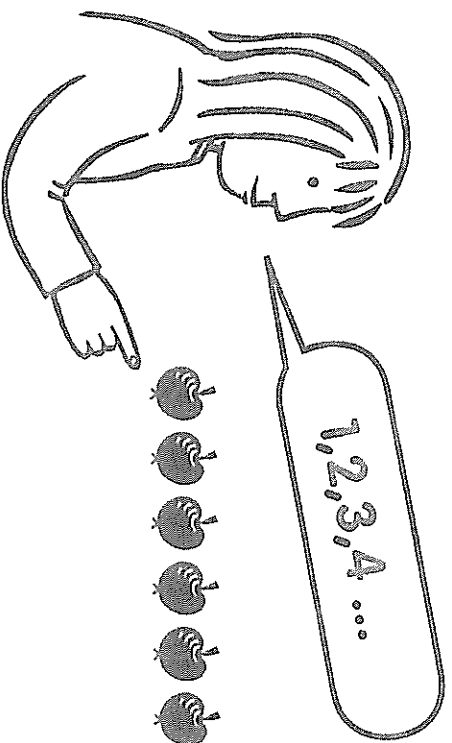
- copy and laminate the cards
- file them according to the stage (as identified in the bottom right-hand corner of each card)
- use them to introduce the specific learning outcome and as a reminder for students when they are practising each strategy
- use a photocopy of these cards in the teacher modelling book.



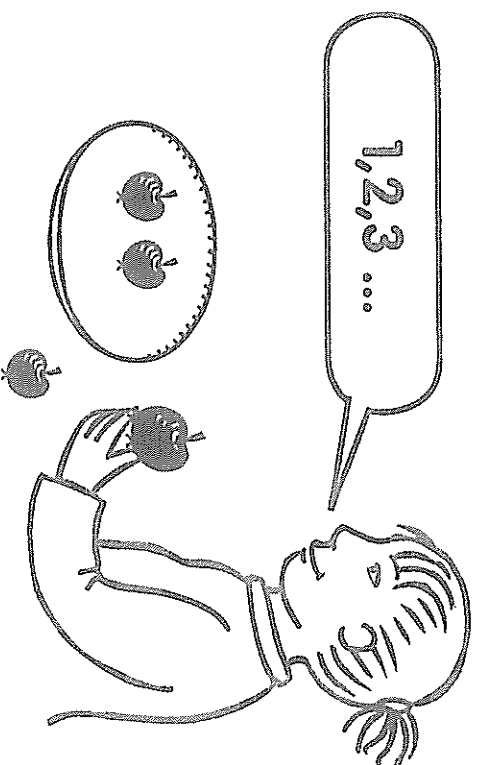
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I am learning to count sets of objects.

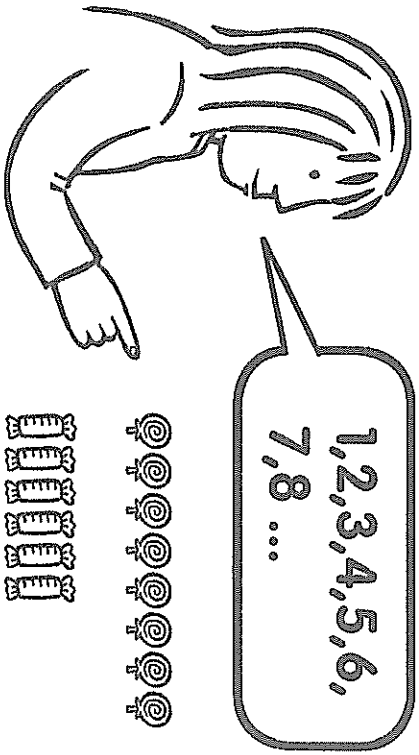


I am learning to form a set of objects.



Card 3: Addition and subtraction

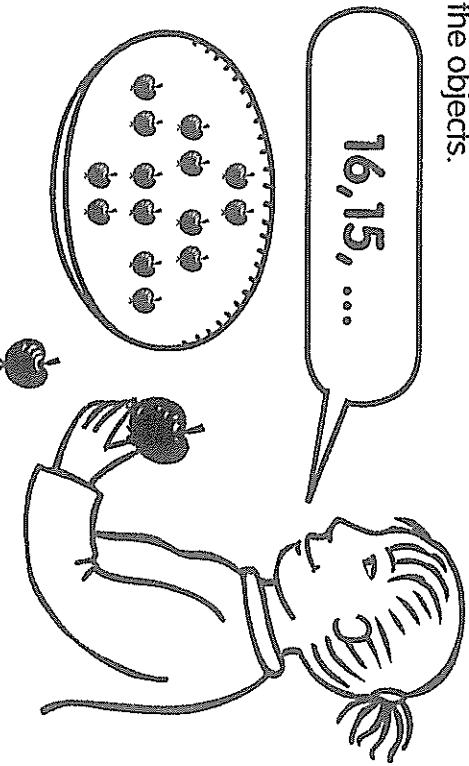
I am learning to find the answer to simple addition problems by joining the sets and counting all the objects.



Stage 2

Card 4: Addition and subtraction

I am learning to find the answer to simple subtraction problems by separating sets and counting the objects.



Stage 2

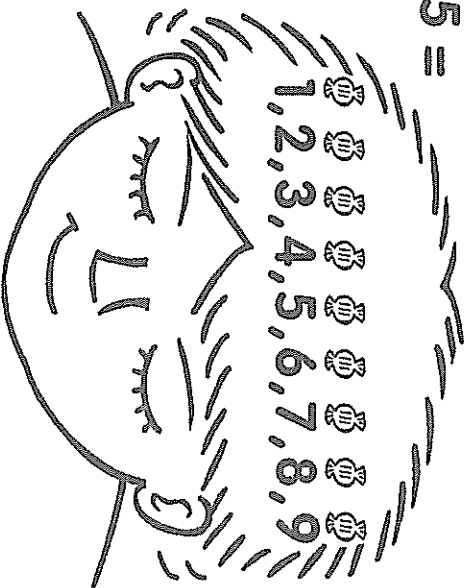
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Card 5: Addition and subtraction

I am learning to find the answer to simple addition problems by counting all the objects in my head.

$$4 + 5 =$$

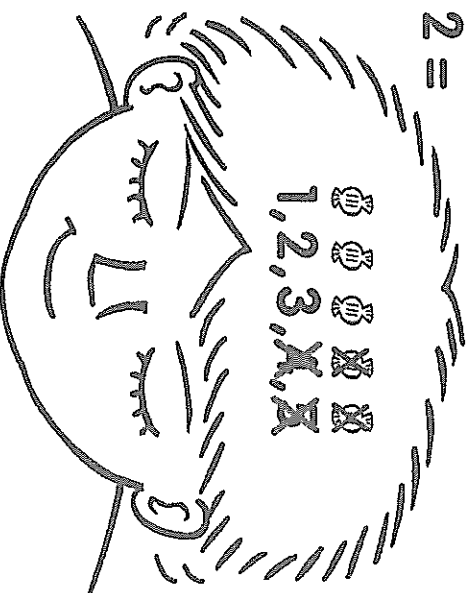


Stage 3

Card 6: Addition and subtraction

I am learning to find the answer to simple subtraction problems by counting all the objects in my head.

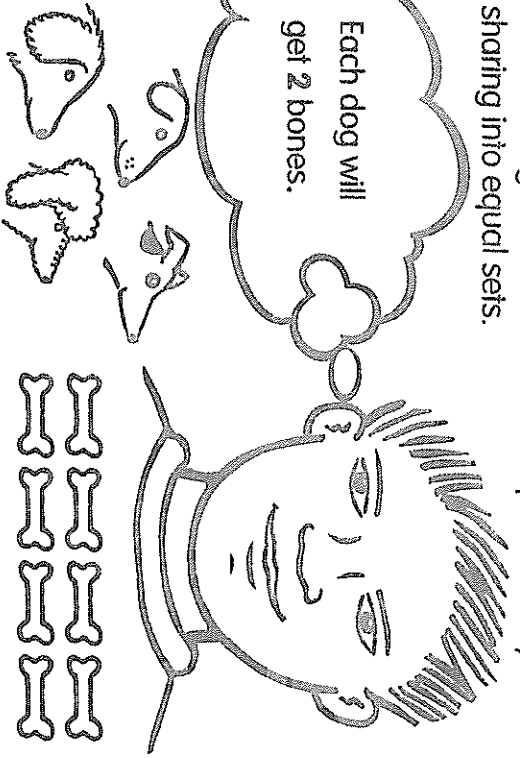
$$5 - 2 =$$



Stage 3

I am learning to find the answer to problems by sharing into equal sets.

Each dog will get 2 bones.

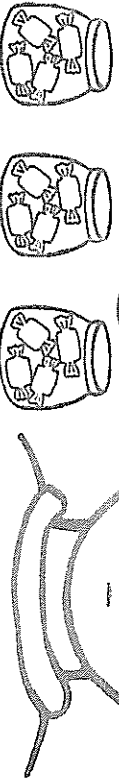


Stage 5

I am learning to use repeated addition, and adding and subtracting from basic facts I know to find the answer to simple division problems.

$$12 \div 3 =$$

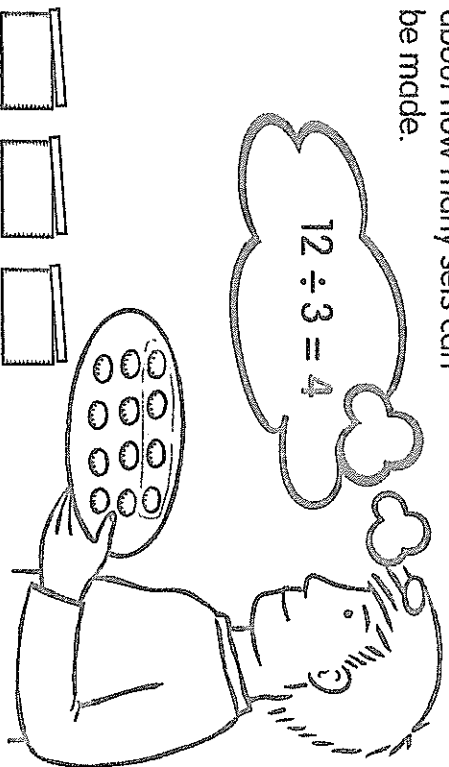
I know that $4 + 4 + 4 = 12$
so I know that $12 \div 3 = 4$.



Stage 5

I am learning to find the answer to division problems about how many sets can be made.

$$12 \div 3 = 4$$

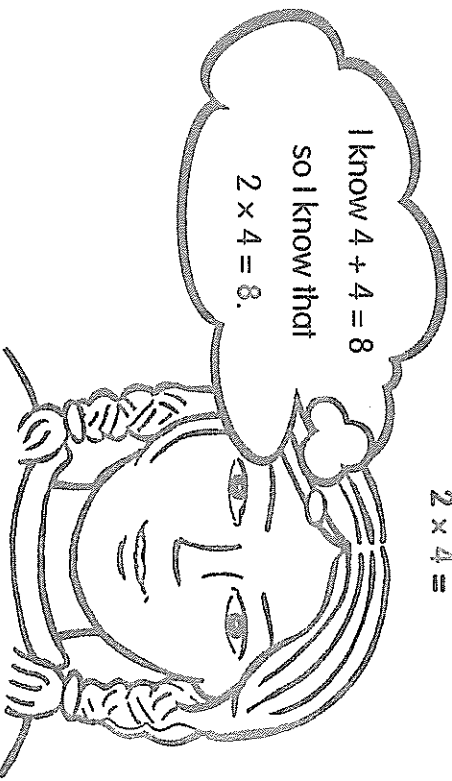


Stage 5

I am learning to find the answer to multiplication facts from what I know about twos.

$$2 \times 4 =$$

I know $4 + 4 = 8$
so I know that $2 \times 4 = 8$.

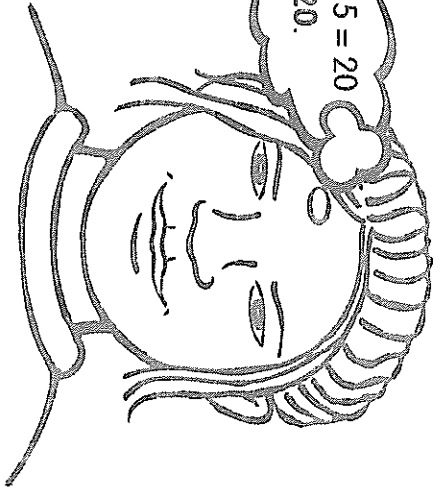


Stage 5

I am learning to find the answer to multiplication facts from what I know about fives.

$$4 \times 5 =$$

I know that $5 + 5 + 5 + 5 = 20$
so I know that $4 \times 5 = 20$.



Stage 5

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I am learning to find the answer to multiplication problems from what I know about tens.

$$3 \times 10 =$$

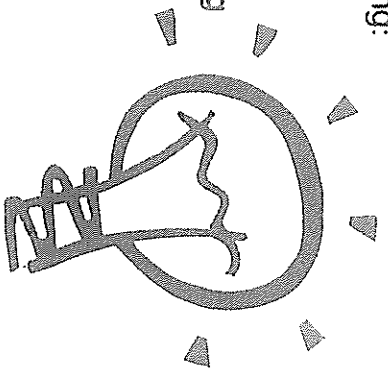
I know that $10 + 10 + 10 = 30$
so I know that $3 \times 10 = 30$.



Stage 5

I am learning to find the answer to multiplication and division problems from other facts I know, using a variety of strategies, including:

- doubling
- adding and subtracting
- reversing
- rounding.



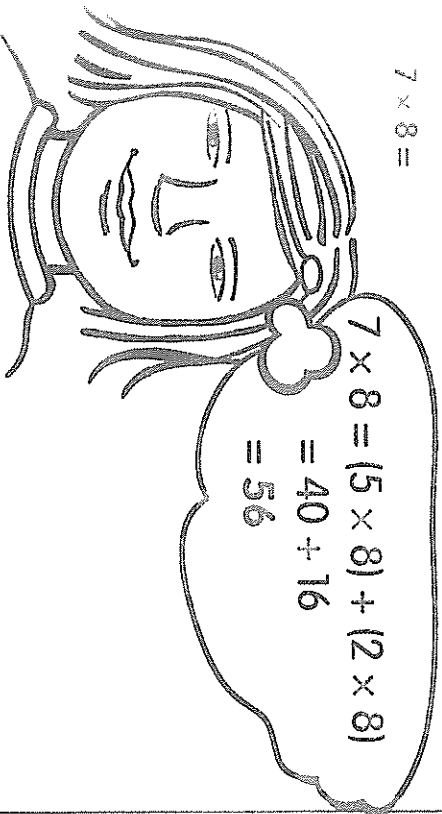
Stage 6

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I am learning to work out my six, seven and eight times tables from my five times table.

$$7 \times 8 =$$

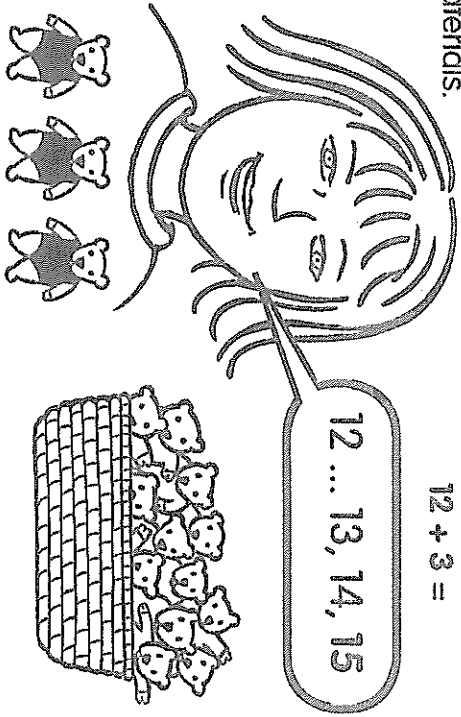
$7 \times 8 = (5 \times 8) + (2 \times 8)$
 $= 40 + 16$
 $= 56$



Stage 6

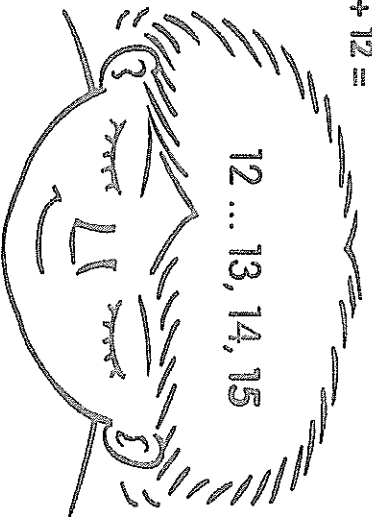
I am learning to find the answer to addition problems by counting on from the largest number using materials.

$$12 + 3 =$$



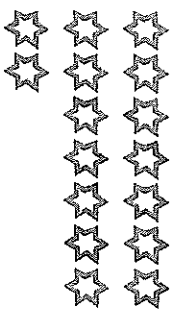
I am learning to find the answer to addition problems by counting on from the largest number by imagining.

$$3 + 12 =$$



I am learning to find the answer to subtraction problems by counting back from the largest number using materials.

$$16 - 7 =$$

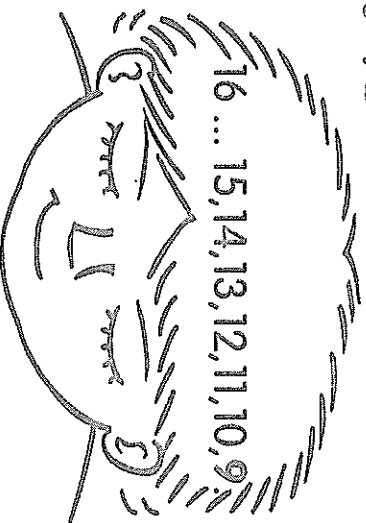


16 ... 15, 14, 13, 12, 11, 10, 9



I am learning to find the answer to subtraction problems by counting back from the largest number by imagining.

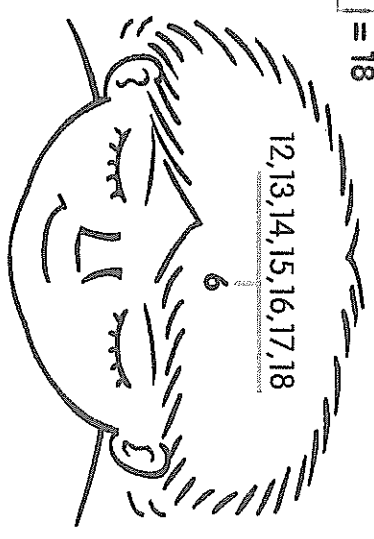
$$16 - 7 =$$



Card 11: Addition and subtraction

I am learning to count on to find the answer to problems like $12 + \square = 18$.

$12 + \square = 18$



Stage 4

Card 12: Addition and subtraction

I am learning to find the answer to addition problems by counting on in tens.

$27 + 30 =$



Stage 4

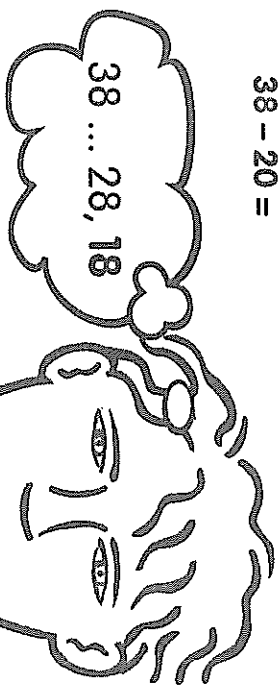
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Card 13: Addition and subtraction

I am learning to find the answer to subtraction problems by counting back in tens.

$38 - 20 =$



Stage 4

Card 14: Addition and subtraction

I am learning to find the answer to addition problems by counting on in tens and ones.

$27 + 34 =$



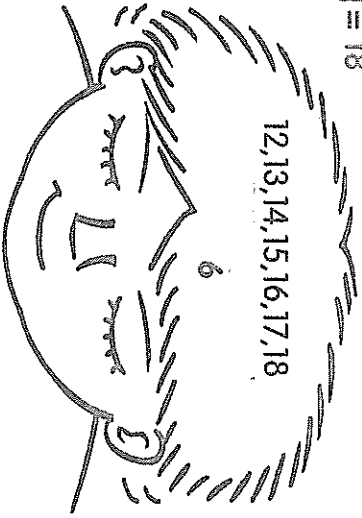
Stage 4

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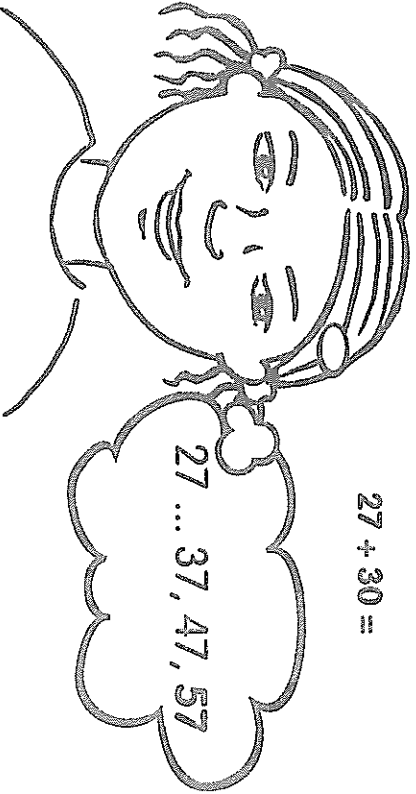
I am learning to count on to find the answer to problems like $12 + \square = 18$.

$$12 + \square = 18$$



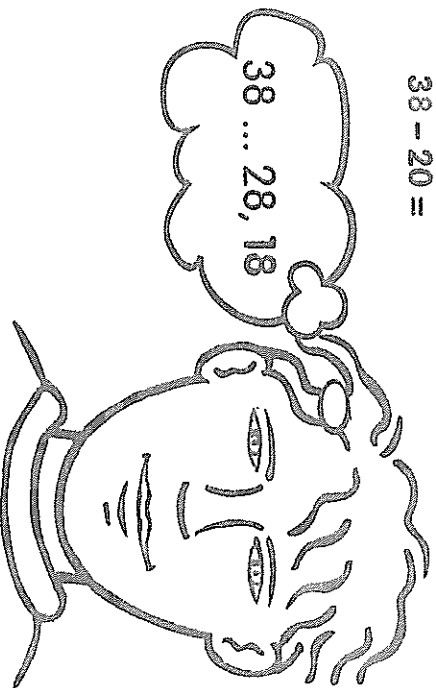
I am learning to find the answer to addition problems by counting on in tens.

$$27 + 30 =$$



I am learning to find the answer to subtraction problems by counting back in tens.

$$38 - 20 =$$



I am learning to find the answer to addition problems by counting on in tens and ones.

$$27 + 34 =$$

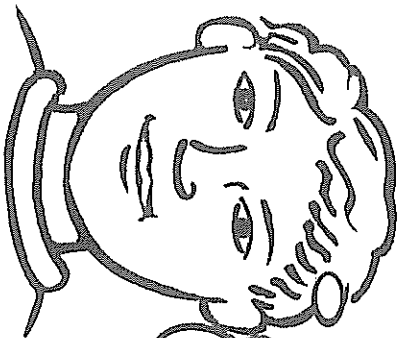


Card 15: Addition and subtraction

I am learning to find the answer to subtraction problems by counting back in tens and ones.

$$54 - 26 =$$

54 ... 44, 34 ...
33, 32, 31, 30, 29, 28

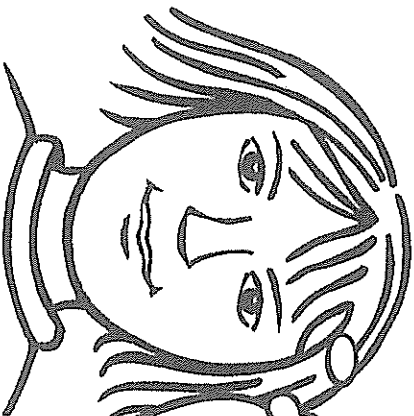


Stage 4

Card 16: Addition and subtraction

I am learning to find the answer to problems like $24 + \square = 47$, which do not involve renaming.

$$24 + \square = 47$$
$$24 + 3 = 27$$
$$27 + 20 = 47$$
$$23$$



Stage 4/5

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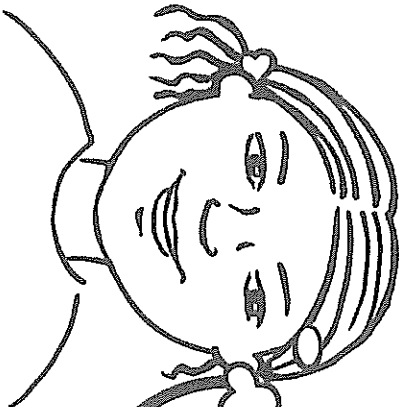
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Card 17: Addition and subtraction

I am learning to add three or more numbers by first finding numbers that add up to 10.

$$5 + 2 + 7 + 3 + 8 =$$

$$5 + 2 + 7 + 3 + 8 =$$
$$10 + 10 + 5 = 25$$



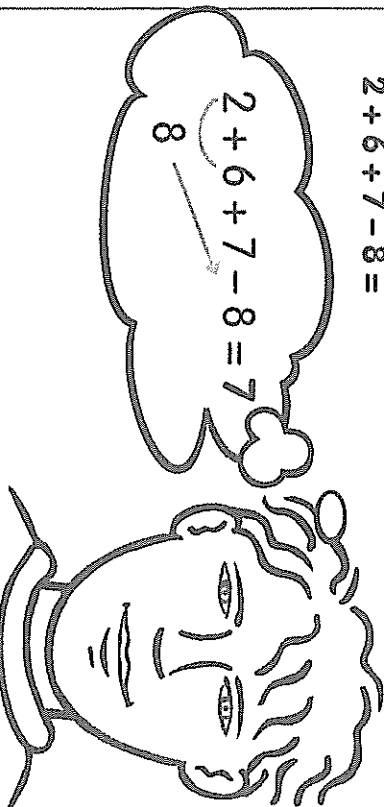
Stage 4/5

Card 18: Addition and subtraction

I am learning to use compatible numbers to find the answer to problems like $2 + 6 + 7 - 8 = \square$ by first adding 2 and 6 to get 8 then taking the 8 away.

$$2 + 6 + 7 - 8 =$$

$$2 + 6 + 7 - 8 = 7$$
$$8$$



Stage 4/5

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I am learning to find the answer to addition problems in my head by using doubles.

$$9 + 8 =$$

Double 9 take away 1

$$9 + 9 - 1 = 17$$



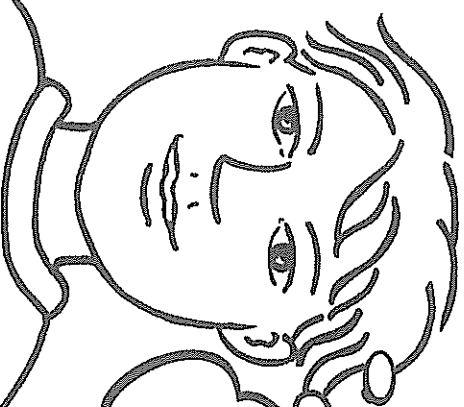
Stage 5

I am learning to find the answer to addition problems by using groupings of fives.

$$9 + 6 =$$

(5 + 4) and (5 + 1)

$$5 + 5 + 5 = 15$$



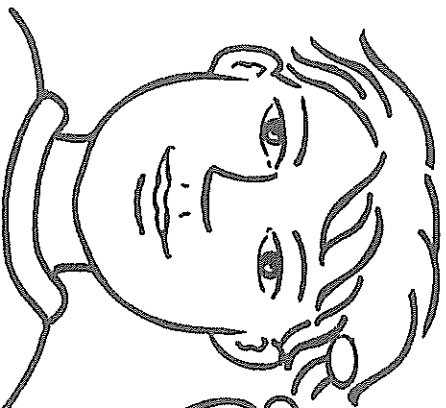
Stage 5

I am learning to find the answer to addition problems in my head by making tens.

$$9 + 8 =$$

$$9 + 8 =$$

$$10 + 7 = 17$$



Stage 5

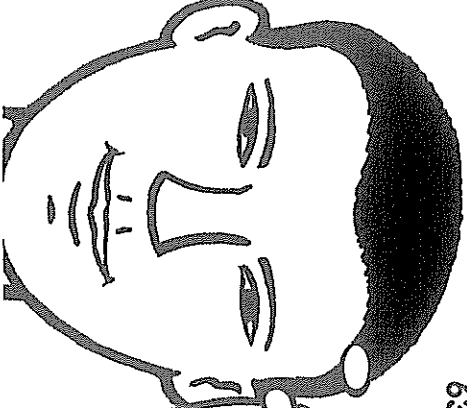
I am learning to add by breaking numbers into parts to make tens.

$$63 + 15 =$$

$$63 + 15 = \square$$

$$63 + 7 = 70$$

$$70 + 8 = 78$$

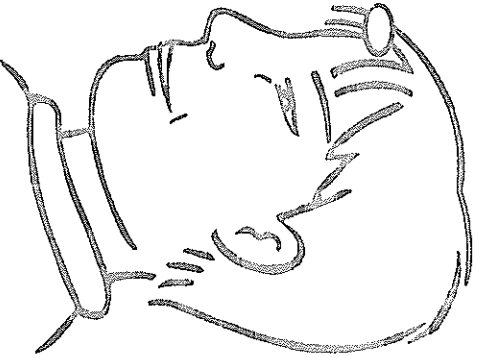


Stage 5

I am learning to find the answer to division problems by reversing.

$$120 \div 4 =$$

$120 \div 4$
is the same as
 $4 \times \quad = 120$
 $4 \times 30 = 120$



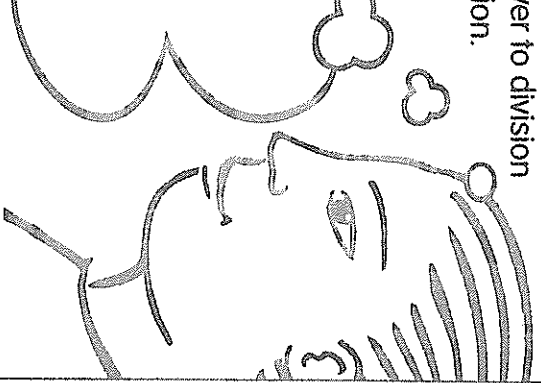
Stage 6

I am learning to find the answer to division problems by using multiplication.

$$63 \div 9 =$$

How many groups of 9
can I get from 63?

$$9 \times \quad = 63$$
$$9 \times 7 = 63$$
$$\quad \times 9 = 63$$
$$7 \times 9 = 63$$



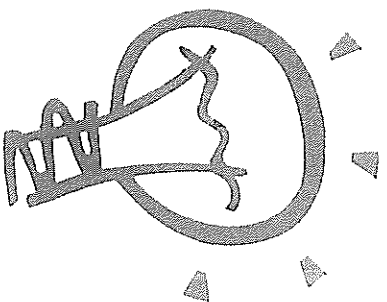
Stage 6

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I am learning to find the answer to multiplication problems using a variety of strategies, including:

- compensation
- place value
- commutativity
- doubling and halving
- trebling and thirding.



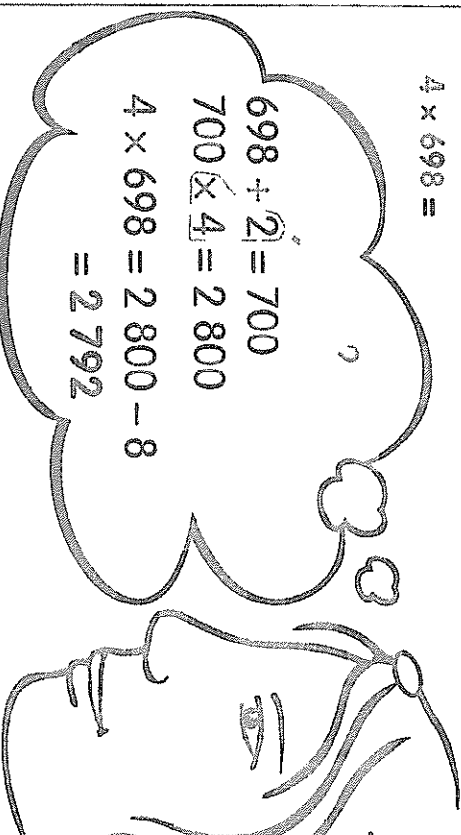
Stage 7

Core 2.5: Multiplication and Division

I am learning to find the answer to multiplication problems by using compensation from tidy numbers.

$$4 \times 698 =$$

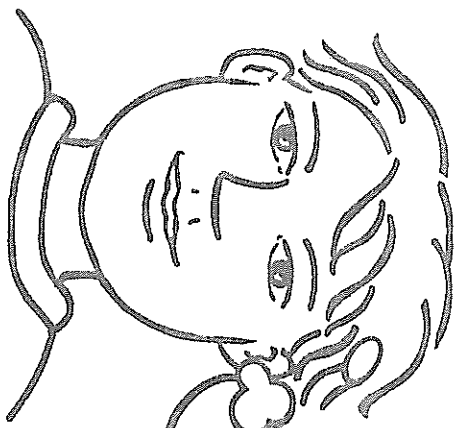
$$698 + 2 = 700$$
$$700 \times 4 = 2800$$
$$4 \times 698 = 2800 - 8$$
$$= 2792$$



Stage 7

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I am learning to find the answer to subtraction problems in my head by using doubles.



$$14 - 8 =$$

Double 7 is 14 so ...
 $14 - 7 - 1 = 6$

I am learning to find the answer to subtraction problems in my head by making tens.



$$17 - 9 =$$

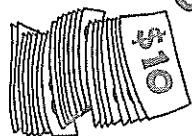
$9 + 1 = 10$
 $17 - 10 = 7$
Add the 1 back on.
 $7 + 1 = 8$

I am learning how many tens there are in numbers smaller than 1 000.



Sam gets 23 \$10 notes for his birthday. He wonders how much money he has been given in total.

$$23 \times 10 = \$230$$



I am learning how many hundreds there are in numbers greater than 1 000.



3 764
has 37 hundreds
or 376 tens.

I am learning to find the answer to addition problems with two-digit numbers using groupings of ten (place value).

$$34 + 25 =$$

$$(30 + 20) + (4 + 5) =$$

$$50 + 9 = 59$$



Stage 5

I am learning to find the answer to addition problems with two-digit numbers using groupings of ten (place value).

$$34 + 25 =$$

$$(34 + 20) + 5 =$$

$$54 + 5 = 59$$



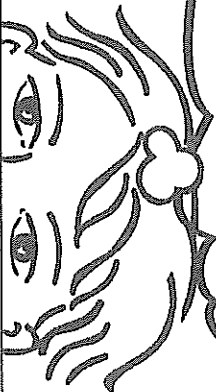
Stage 5

I am learning to find the answer to addition problems with three-digit numbers using groupings of hundreds and tens (place value).

$$224 + 343 =$$

$$(200 + 300) + (20 + 40) + (4 + 3) =$$

$$500 + 60 + 7 = 567$$



Stage 5

I am learning to find the answer to addition problems with three-digit numbers using groupings of hundreds and tens (place value).

$$224 + 343 =$$

$$224 + 300 = 524$$

$$524 + 40 = 564$$

$$564 + 3 = 567$$



Stage 5

I am learning to find the answer to subtraction problems with two-digit numbers using groupings of ten (place value).

$$59 - 36 =$$

$$(59 - 30) - 6 =$$
$$29 - 6 = 23$$



5073

I am learning to find the answer to subtraction problems with three-digit numbers using groupings of hundreds and tens (place value).

$$756 - 134 =$$

$$756 - 100 = 656$$
$$656 - 30 = 626$$
$$626 - 4 = 622$$



5073

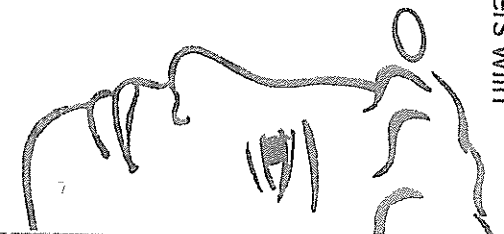
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I am learning to find the answer to addition problems with two-digit numbers using tidy numbers with compensation.

$$68 + 34 =$$

$$68 + 34 = \square$$
$$70 + 32 = 102$$

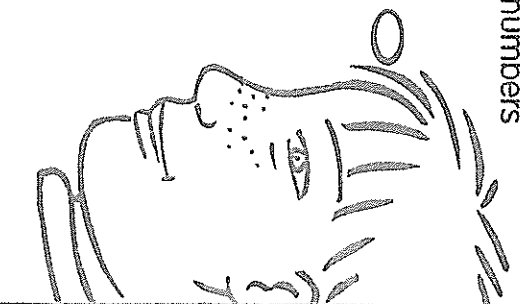


5073

I am learning to find the answer to addition problems with three-digit numbers using tidy numbers with compensation.

$$698 + 265 =$$

$$698 + 265 = \square$$
$$700 + 263 = 963$$



5073

I am learning to find the answer to subtraction problems with two-digit numbers using tidy numbers with equal additions.

$$69 - 32 =$$

$69 - 32 = 70$
 $70 - 32 = 38$
 $70 - 33 = 37$

Figure 4.3

I am learning to find the answer to subtraction problems with three-digit numbers using tidy numbers with equal addition.

$$298 - 146 =$$

$298 - 146 = 152$
 $300 - 148 = 152$

I am learning to find the answer to subtraction by breaking through the ten.

$$64 - 8 =$$

I can break 8 into 4 and 4.
 $(64 - 4) - 4 =$
 $60 - 4 = 56$

Figure 4.4

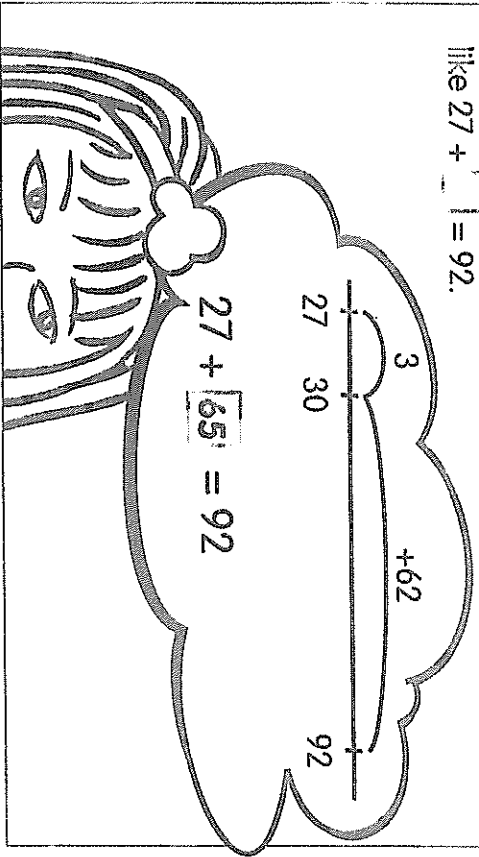
I am learning how my knowledge of "10 ones make one 10, and 10 tens make 100" can help me find a solution to problems like $238 + \square = 800$.

$$238 + \square = 800$$

$238 + 2 = 240$
 $240 + 60 = 300$
 $300 + 500 = 800$
 562

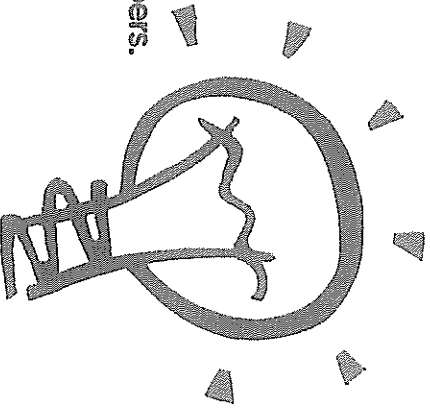
Figure 4.5

I am learning to jump through a tidy number on a number line to find the solution to problems like $27 + \square = 92$.

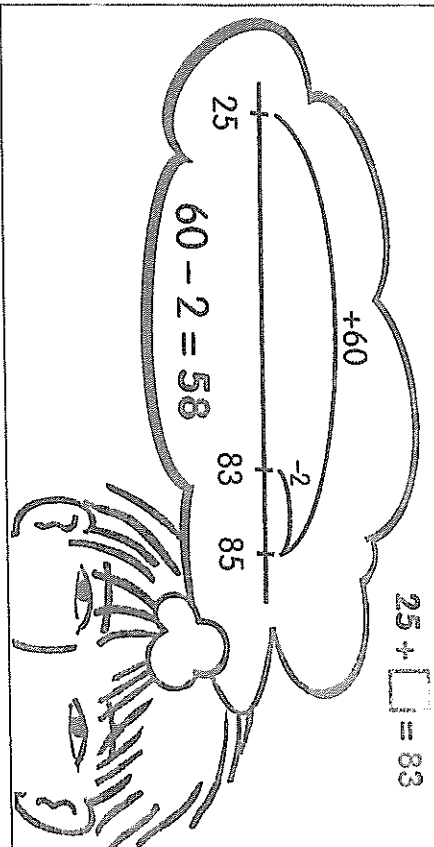


I am learning to choose appropriately from a full range of strategies to find the answer to addition problems in my head including:

- compensation
- place value
- compatible numbers.

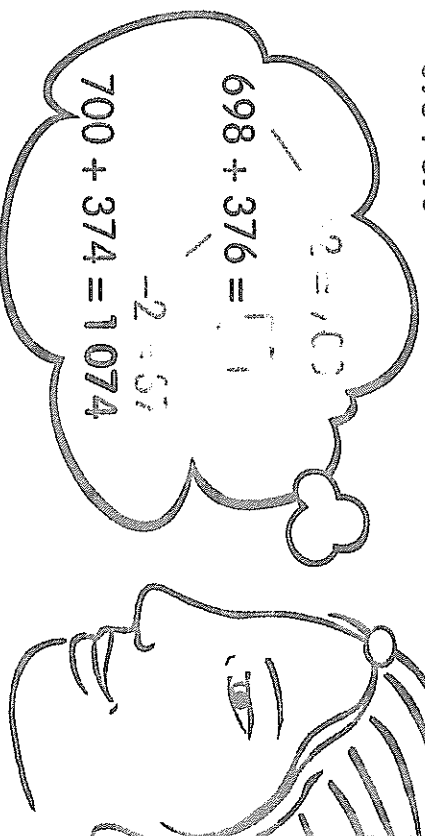


I am learning to find the answer to problems like $25 + \square = 83$ by jumping a tidy number on a number line and then jumping back.



I am learning to find the answer to addition problems in my head by using compensation.

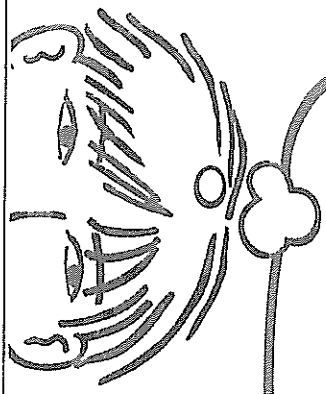
$$698 + 376 =$$



I am learning to find the answer to addition problems in my head using place value.

$698 + 376 =$

$698 + 300 + 70 + 6 = 1074$

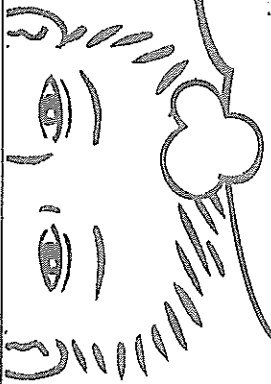


Stage 3

I am learning to find the answer to addition problems in my head using compatible numbers.

$163 + 78 + 37 =$

$163 + 78 + 37 = 200 + 78 = 278$



Stage 3

I am learning to choose appropriately from a full range of strategies to solve subtraction problems in my head, including:

- compensation
- place value
- compatible numbers
- reversibility
- equal addition
- decomposition.

Stage 3

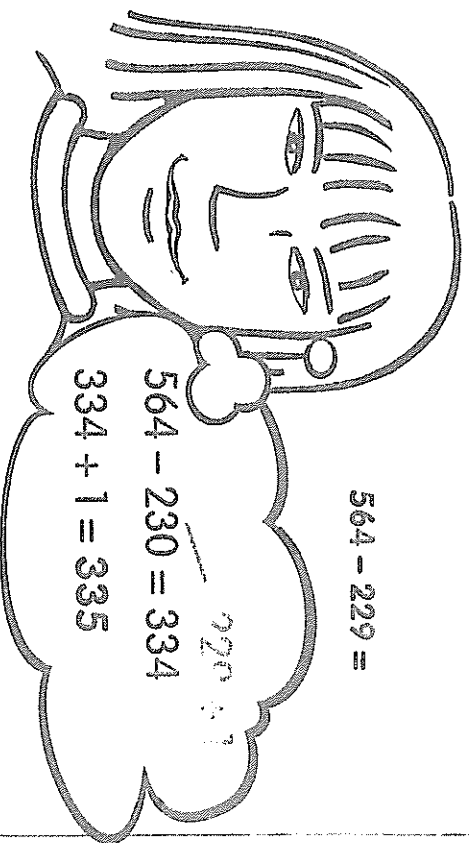
I am learning to find the answer to subtraction problems in my head using compensation.

$564 - 229 =$

$564 - 200 = 364$

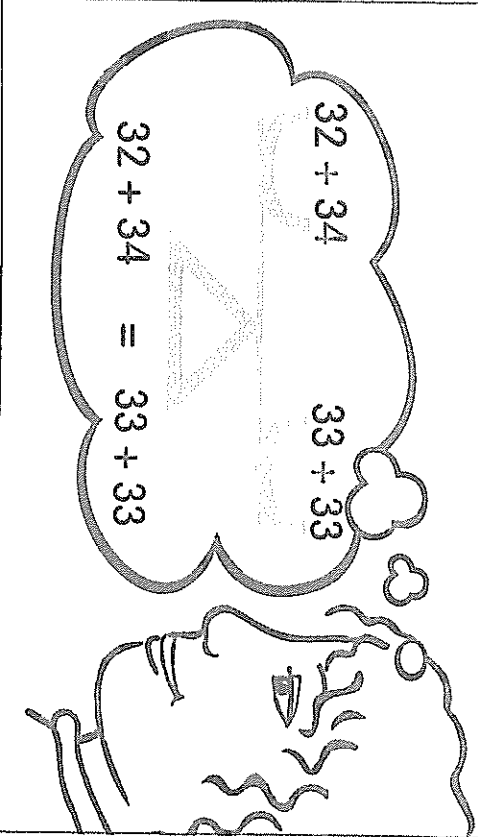
$364 - 30 = 334$

$334 + 1 = 335$

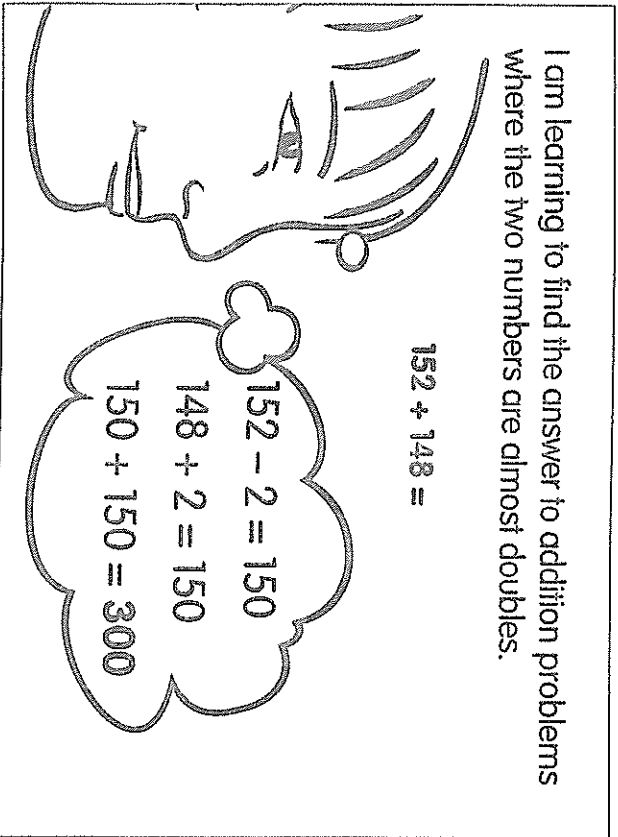


Stage 3

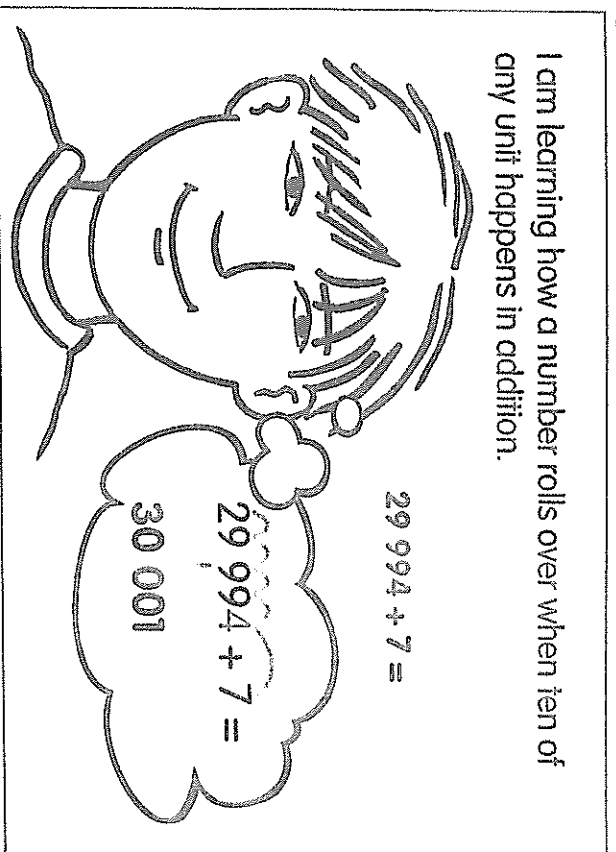
I am learning that the answers on each side of the equal sign are the same.



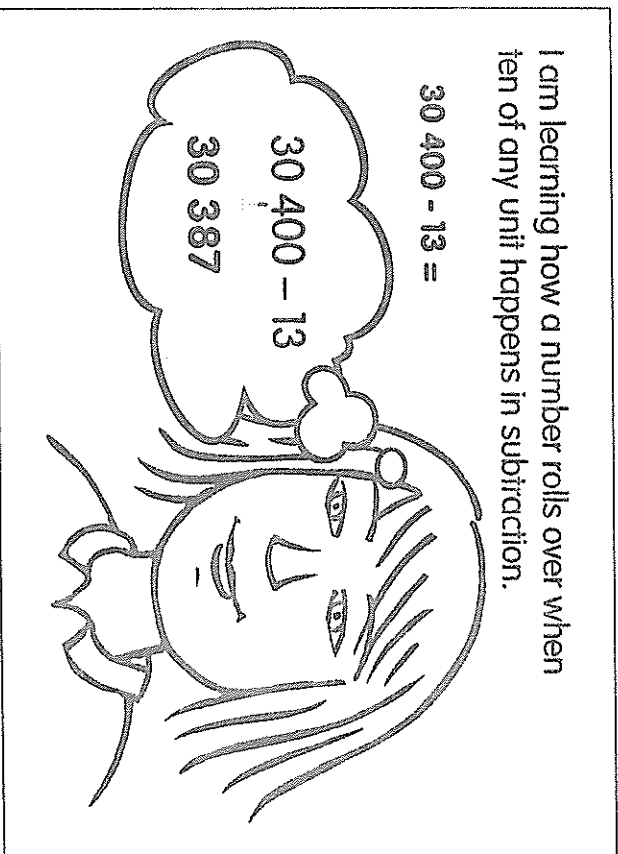
I am learning to find the answer to addition problems where the two numbers are almost doubles.



I am learning how a number rolls over when ten of any unit happens in addition.



I am learning how a number rolls over when ten of any unit happens in subtraction.



I am learning to find the answer to subtraction problems in my head using place value.

$$564 - 109 =$$

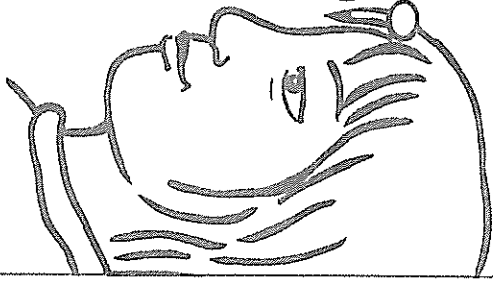
$$(564 - 100) - 9 = 455$$



I am learning to find the answer to addition and subtraction problems in my head using compatible numbers.

$$704 + 292 - 92 =$$

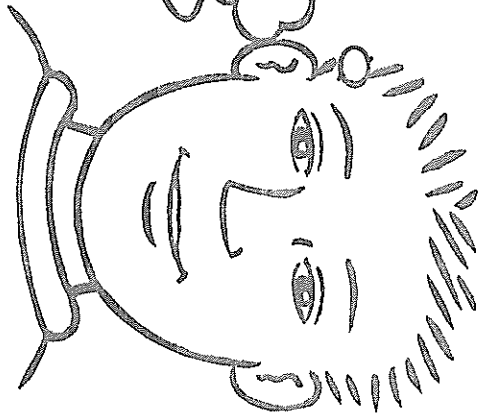
$$704 + 292 - 92 = 904$$



I am learning to find the answer to subtraction problems in my head using reversibility.

$$78 - \square = 27$$

$$27 + \boxed{51} = 78$$



I am learning to find the answer to subtraction problems in my head using equal addition.

$$569 - 239 =$$

$$569 - 239 = \square$$

$$570 - 240 = 330$$



I am learning to find the answer to subtraction problems in my head using decomposition.

751 - 578 =

6	7	14	11	1
-	5	7	8	
1	7	3		

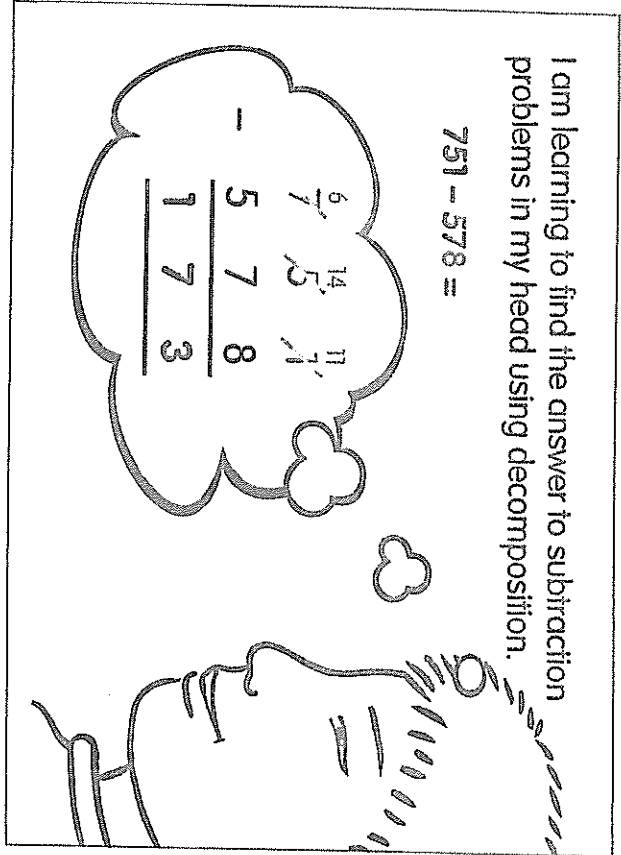


Image 1

I am learning to find the answer to addition problems using an algorithm.

8 612 + 4 789 =

1	8	1	4	8	1	2
+	4	7	8	9		
1	3	4	0	1		

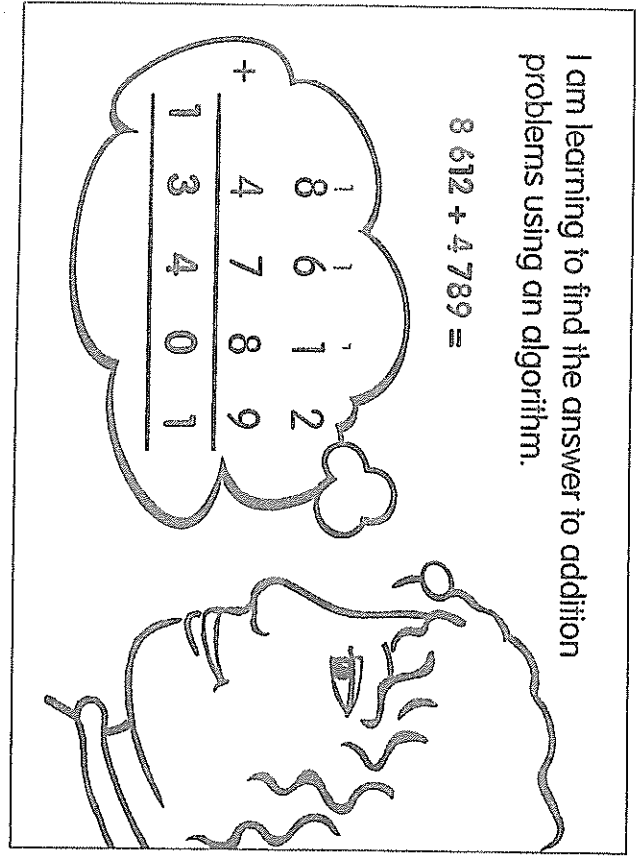


Image 2

I am learning to check any addition problem I cannot find the answer to in my head by estimating the answer.

3 476 + 3 297 =

The answer will be about 6 700 because 3 500 + 3 300 is 6 800.

3	4	7	6	
+	3	2	9	7
6	7	7	3	

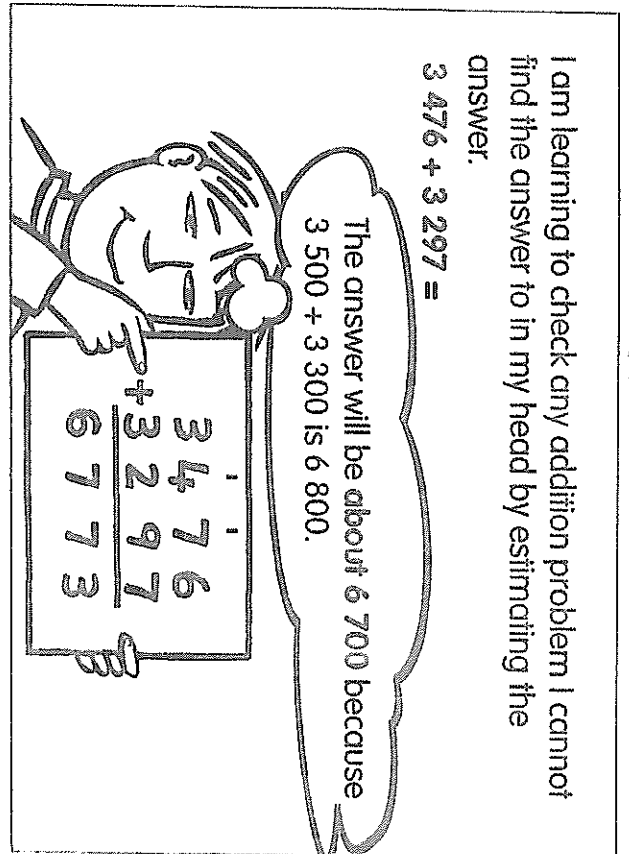


Image 3

I am learning to check any subtraction problem I cannot find the answer to in my head by estimating the answer.

11 423 - 7 846 =

The answer will be about 3 000 because 11 000 - 8 000 is 3 000.

1	1	4	2	3	
-	7	8	4	6	
3	5	7	7		

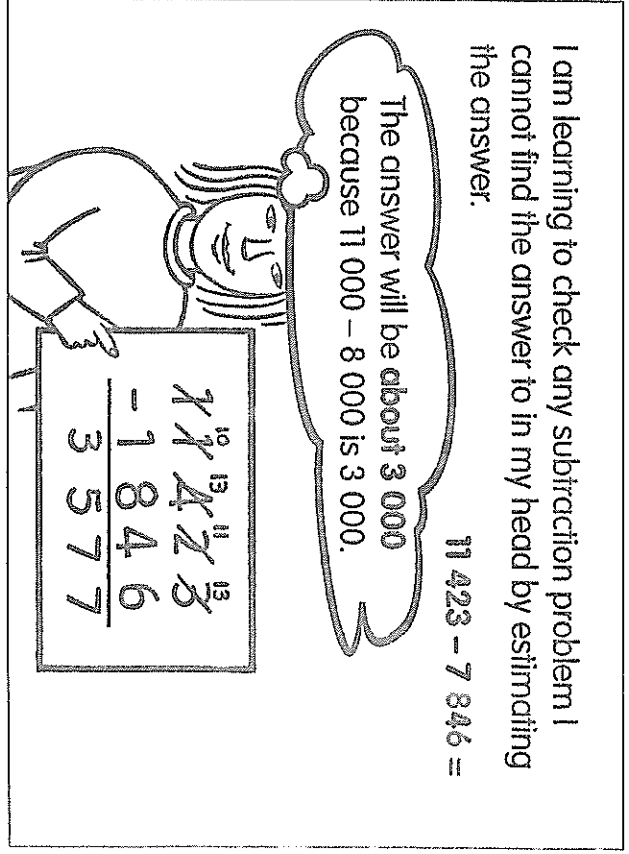


Image 4