MATH BRIDGE

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Navnirmiti Learning Foundation Team

Universal Active Math

Studybook

NAVNIRMITI LEARNING FOUNDATION
Quality for Equality

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Universal Active Math

BRIDGE COURSE

WORKBOOK

CONCEPT & WRITING

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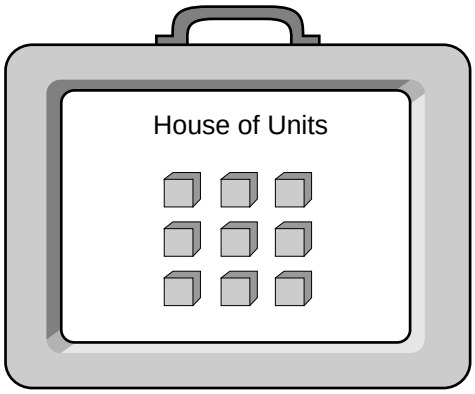
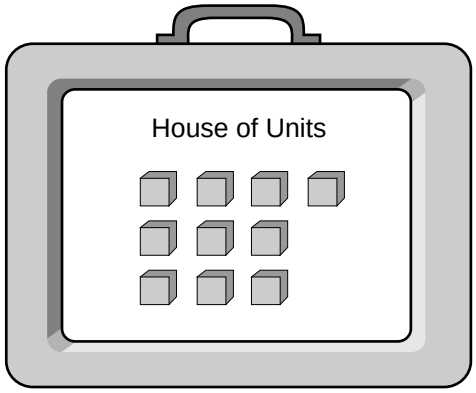
Numbers 1 to 99

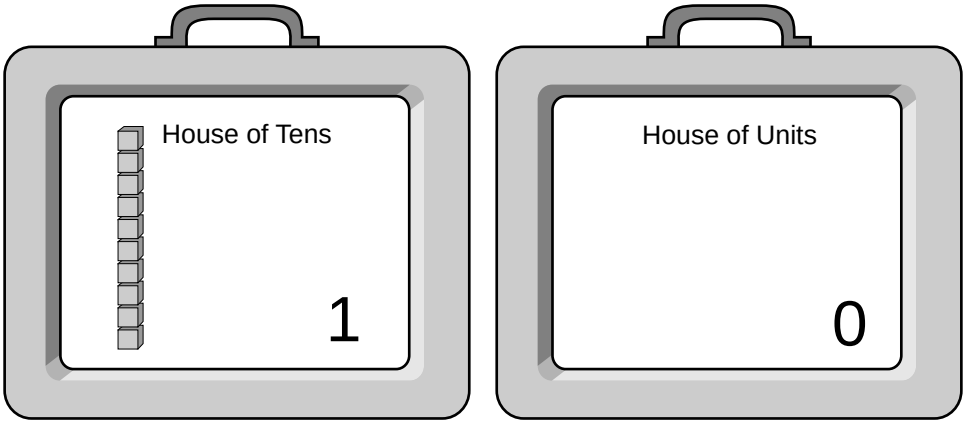
Take 9 unit cubes on the slate.



Add one more unit. Now there are ten units on the slate.



Join ten units to make a rod. This is called a Ten's Rod. Make a house of Tens to the left of units' house with a new slate. Keep the ten's rod in the house of tens.



Ten Units = 1 Ten =

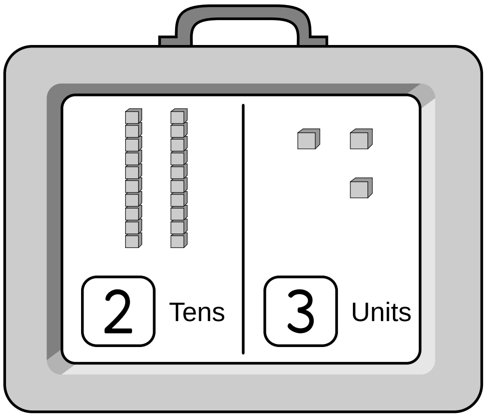
Tens	Units
1	0

= 10

Add one more unit. Keep it in the house of units. Keep adding units one by one. When you have ten units make a rod of ten and keep it in the house of tens. Keep adding one until you reach 99.

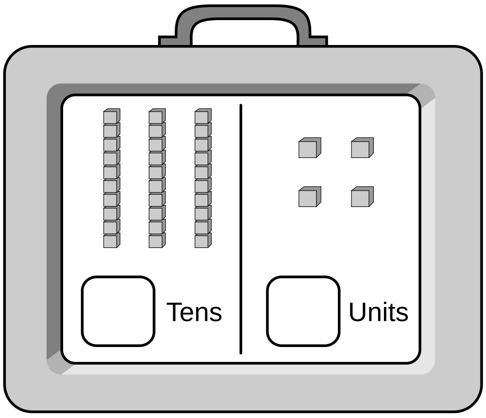
Make numbers with rods and cubes and place them in their correct houses in the slate.

How many tens? How many units? Write the number.



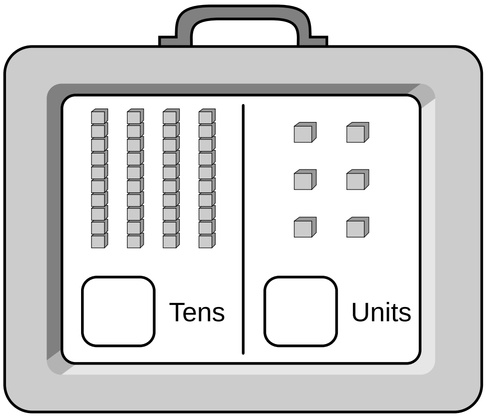
Tens	Units
2	3

= 23



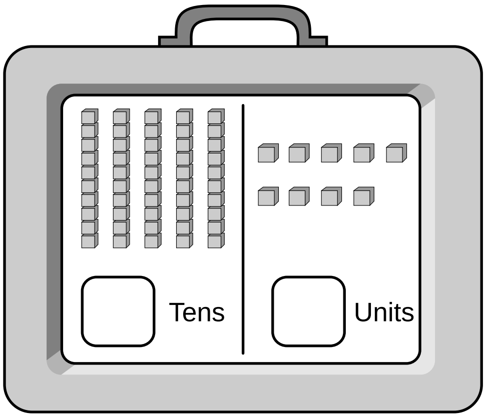
Tens	Units

=



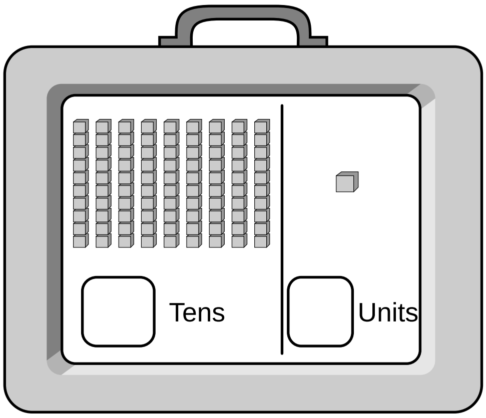
Tens	Units

=



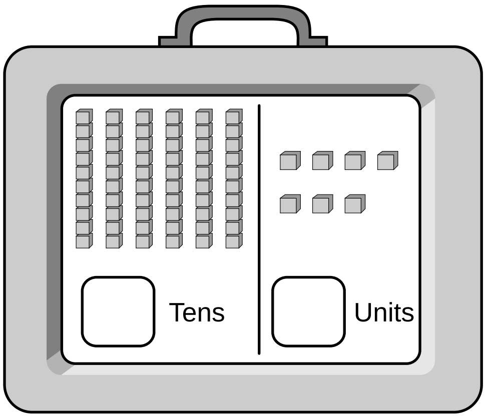
Tens	Units

=



Tens	Units

=

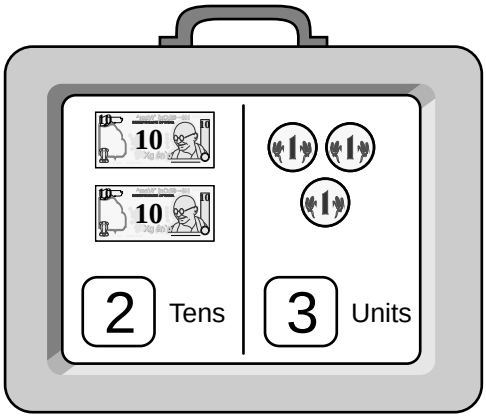


Tens	Units

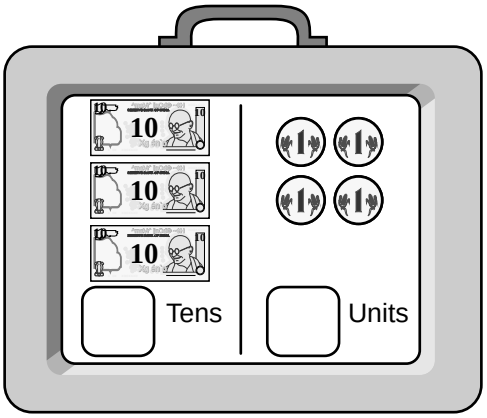
=

Make numbers with ten rupee and one rupee coins or notes. Place them in their correct houses on the slate.

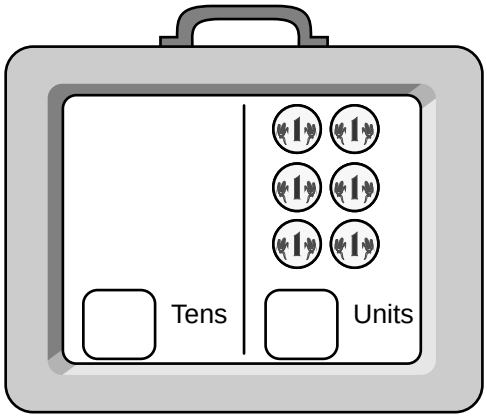
How many tens? How many units? Write the number.



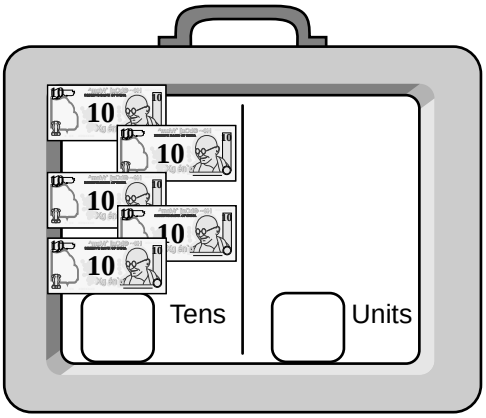
Tens	Units		
2	3	=	23



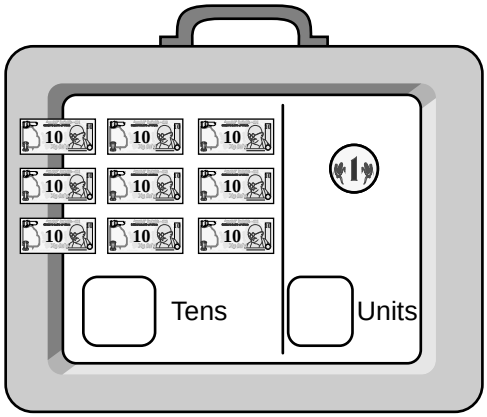
Tens	Units		
		=	



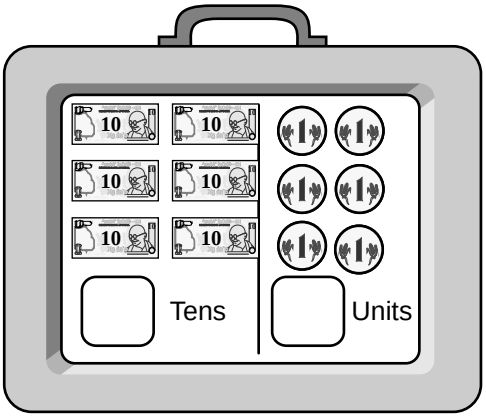
Tens	Units		
		=	



Tens	Units		
		=	



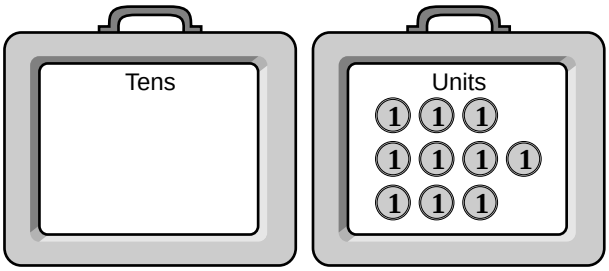
Tens	Units		
		=	



Tens	Units		
		=	

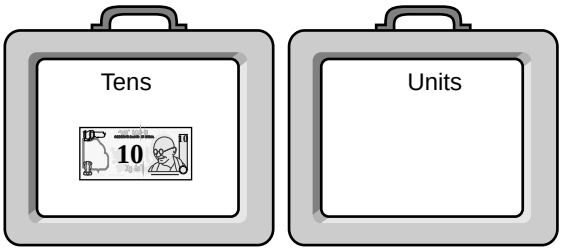
Make house of Tens and house of Units with slates. Using Ten rupee notes and one rupee notes or coins, make the numbers from ten to twenty in loose form and tight form. Place the number made in the correct houses. Write the number.

Ten rupees in loose form



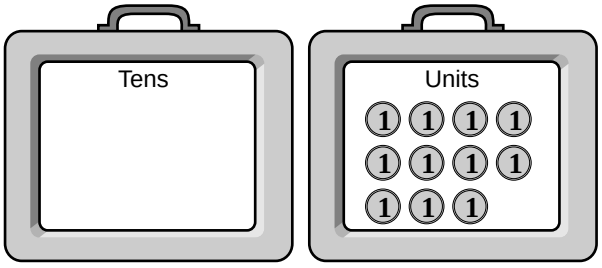
Tens	Units
	10

Ten rupees in tight form



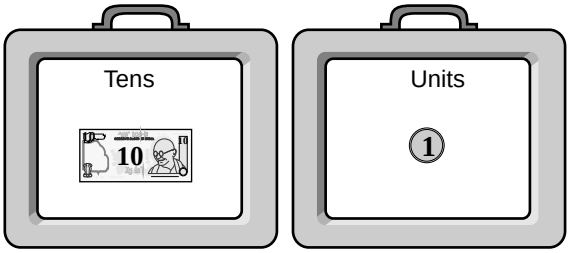
Tens	Units
1	0

Eleven rupees in loose form



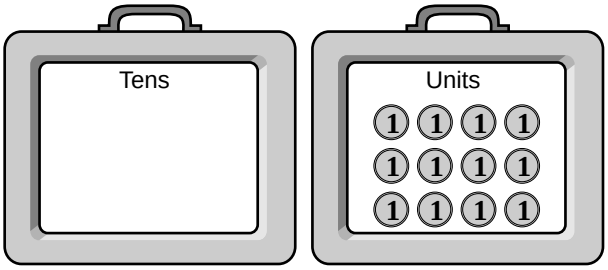
Tens	Units

Eleven rupees in tight form



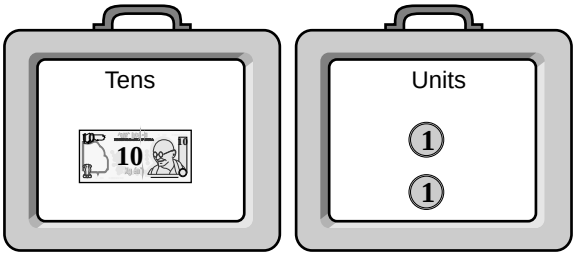
Tens	Units

Twelve rupees in loose form



Tens	Units

Twelve rupees in tight form

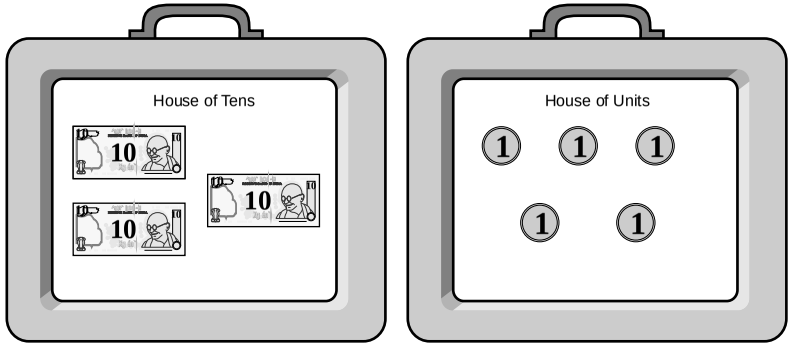


Tens	Units

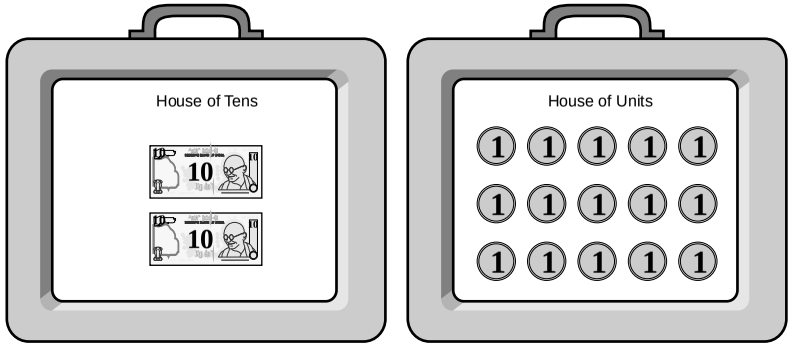
Make houses with slates. Make the numbers in loose form and tight form. Write each form.

	Loose form		Tight form	
	Tens	Units	Tens	Units
12 →		12	1	2
16 →				
17 →				
18 →				
15 →				
11 →				
10 →				
13 →				

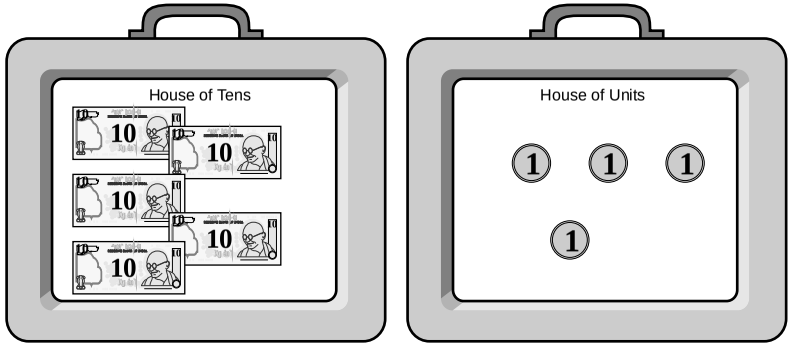
Change one ten into loose form and write the number.



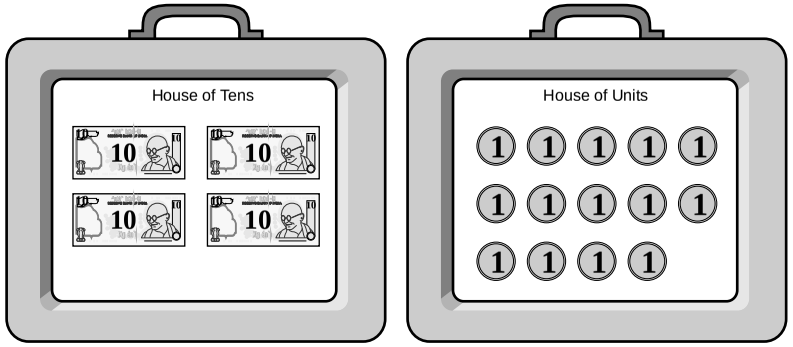
Tens	Units
3	5



Tens	Units
2	15



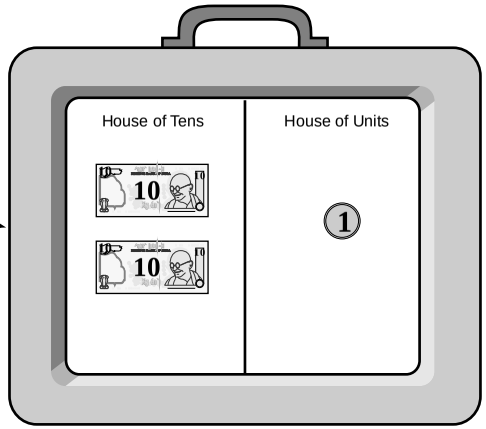
Tens	Units



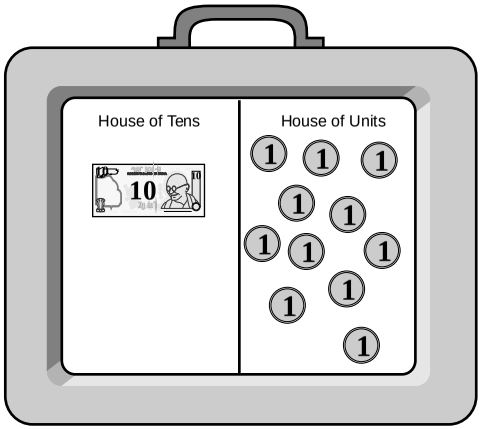
Tens	Units

Make and place each number in three forms. Write the numbers made in the currect houses.

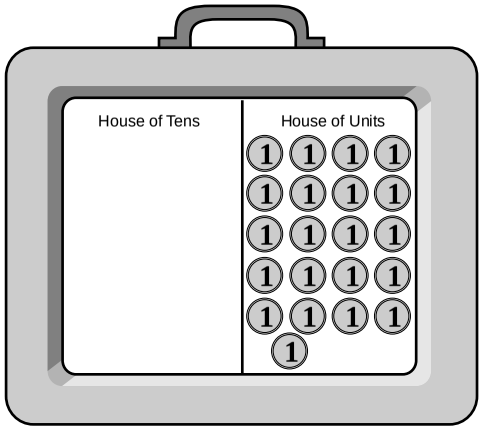
21



Tens	Units

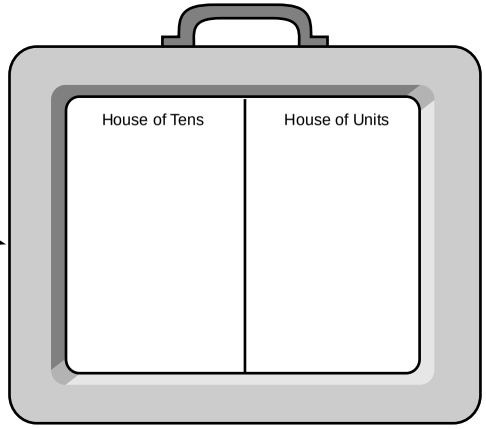


Tens	Units

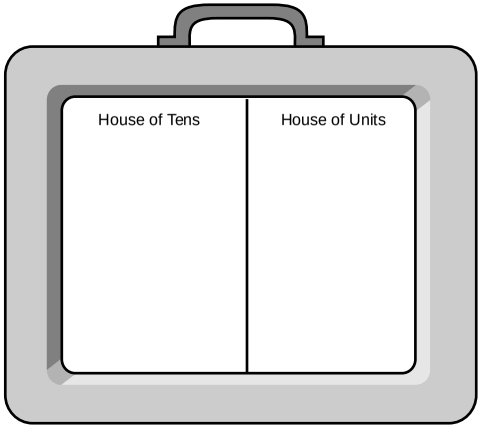


Tens	Units

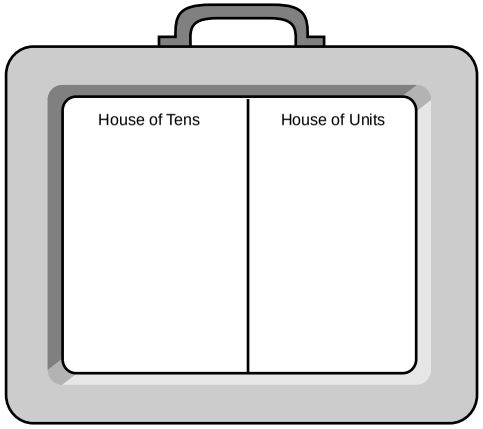
30



Tens	Units

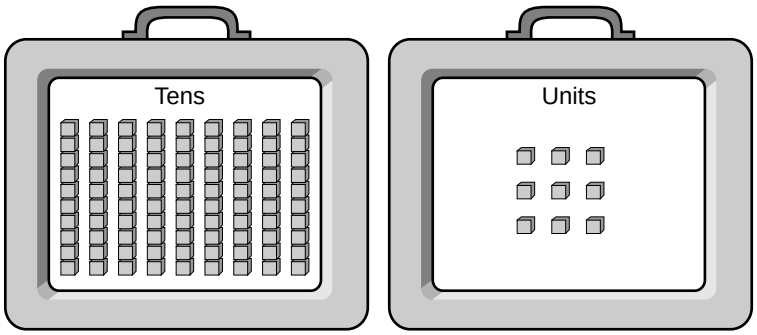


Tens	Units



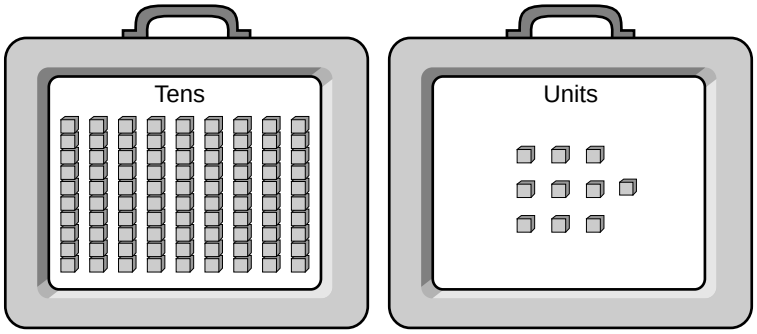
Tens	Units

Make houses with slates. Make 99 with rods and cubes. Place the numbers made in appropriate houses and write them in the correct houses.

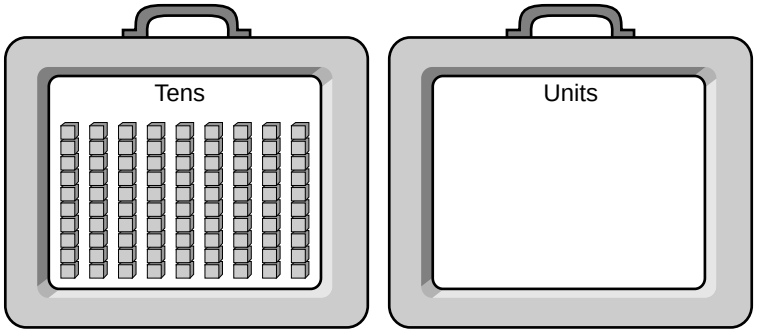


Tens	Units
9	9

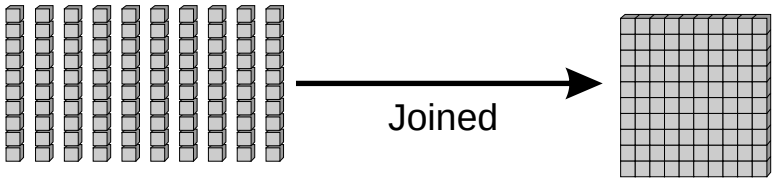
Take one more unit.



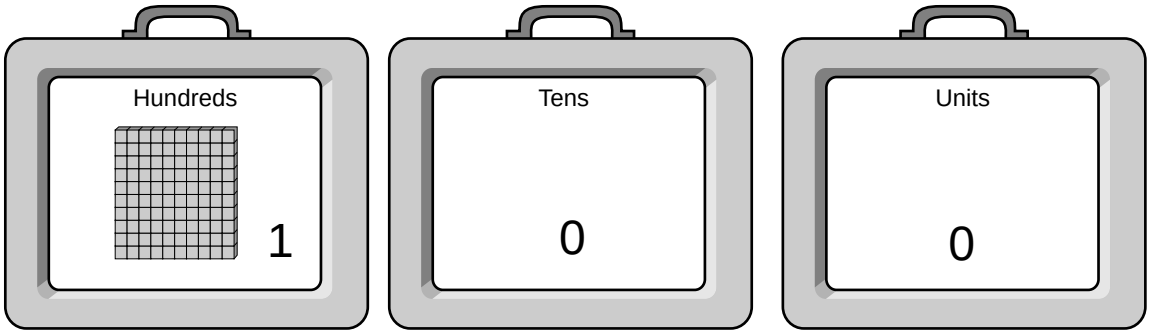
Ten units in the units' house. Join them to make a rod of ten. Keep the tens' rod in the house of tens.



Ten tens in the house of tens'. Join them to make a plate of hundred.



We make a new house for hundred. Keep it to the left of the tens' house.



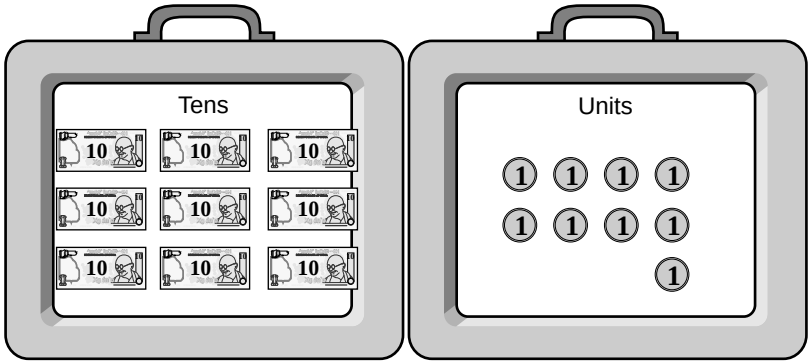
H	T	U
1	0	0

= 100

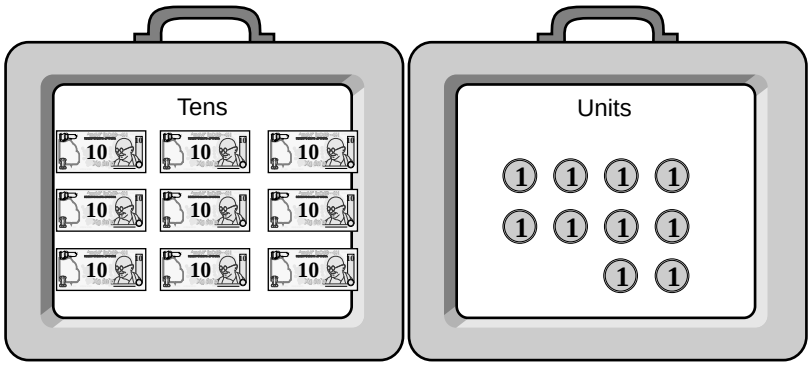
Make houses of Tens and Units with slates. Make and place 99 rupees.

Tens	Units
9	9

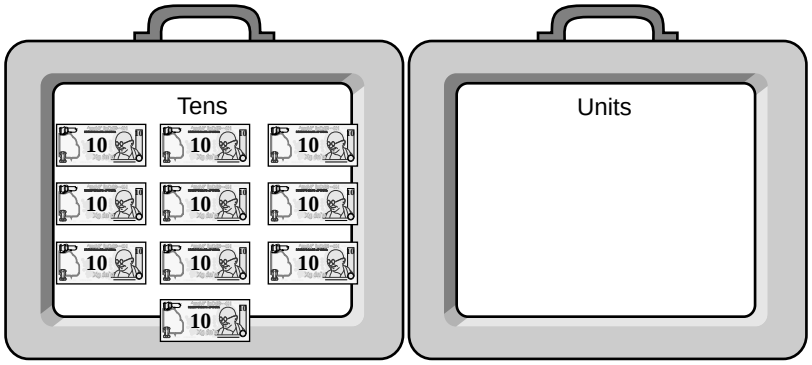
9 tens and 9 units.

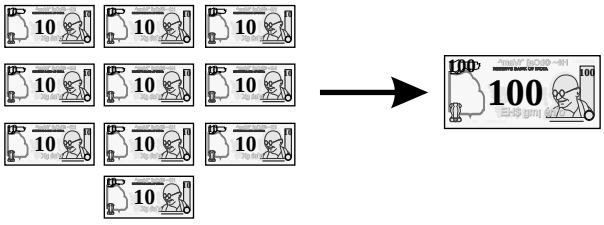


Add one rupee. Now we have 10 units in the units' house.

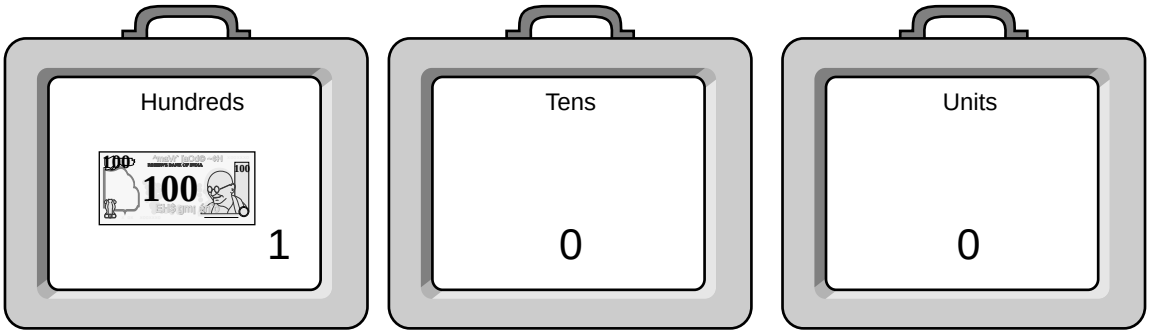


We change ten units into one 10 rupee note. Now we have 10 tens. We change 10 ten rupee notes into one hundred rupee note.





We make a new house for hundreds and keep the hundred rupee note in it.

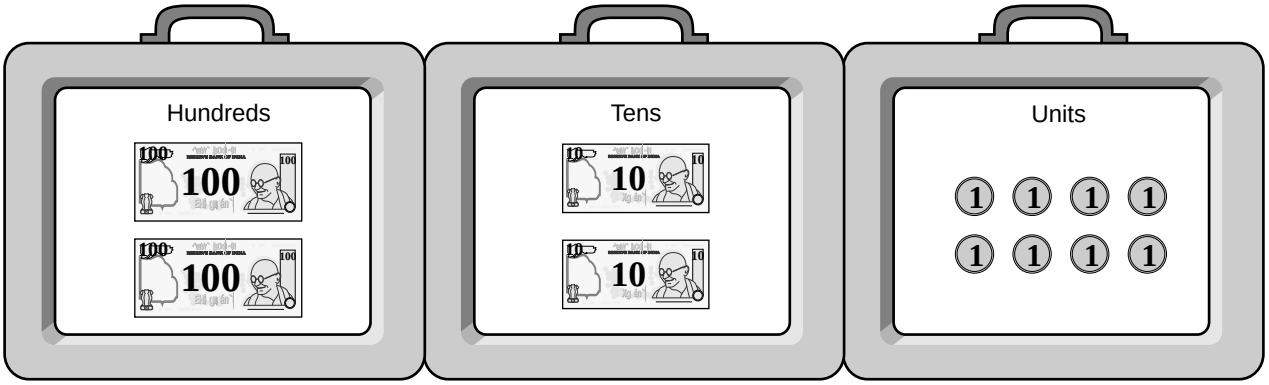


H	T	U
1	0	0

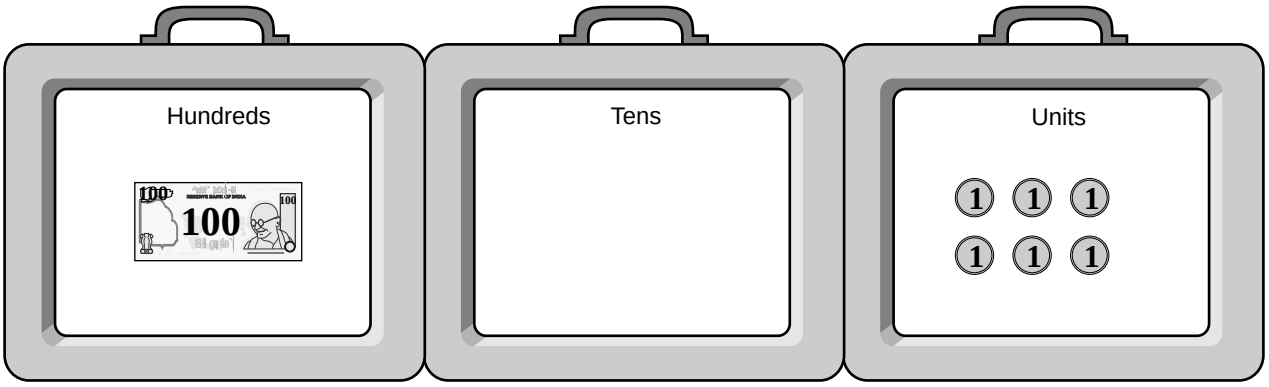
= 100

Activity : Make houses of hundreds, tens and units with slates. Make and place twenty numbers which the teacher tells. Write the numbers on slates.

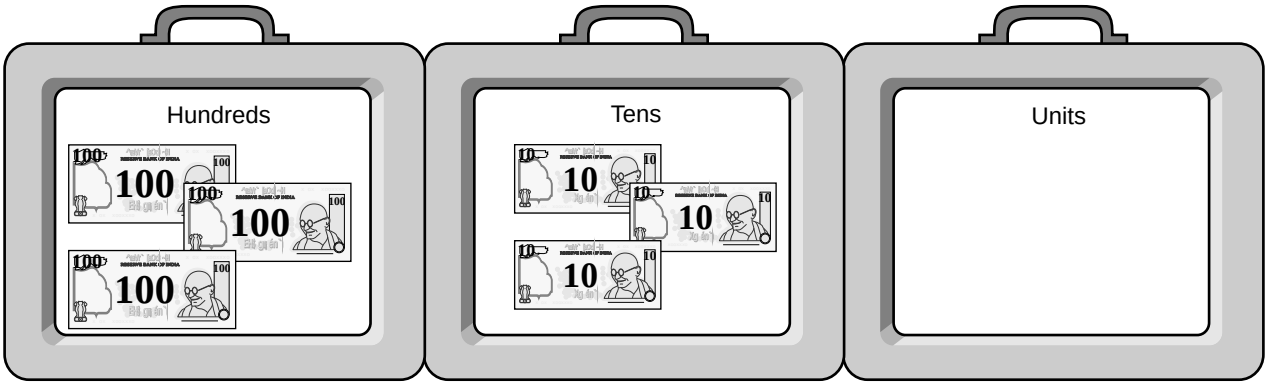
How many?



H	T	U



H	T	U



H	T	U

Make houses with slates. Make and place the number given with one, ten and hundred rupee notes. Write the numeral in each slate house. Write the numbers here also.

2 hundred-rupee notes,
5 ten-rupee notes,
3 one-rupee notes

H	T	U
2	5	3

4 hundred-rupee notes,
2 ten rupee notes,
6 one rupee notes

H	T	U

2 ten-rupee notes,
8 one-rupee notes

H	T	U

1 hundred-rupee note,
5 one-rupee note

H	T	U

3 hundred-rupee notes,
3 one-rupee notes

H	T	U

3 hundred-rupee notes
3 ten-rupee notes

H	T	U

7 hundred-rupee notes
7 ten-rupee notes
7 one-rupee notes

H	T	U

8 hundred-rupee notes

H	T	U

Three hundred and twenty four

H	T	U
3	2	4

Six hundred and fifty five

H	T	U

One hundred and eighty seven

H	T	U

Two hundred and eighty

H	T	U

Five hundred and seventy five

H	T	U

Three hundred

H	T	U

Seventy

H	T	U

Nine hundred and nine

H	T	U

Five hundred and forty two

H	T	U

Eight hundred and sixty eight

H	T	U

Make houses with slates. Make and place the number given using one, ten and hundred rupee notes. Write the names of the numbers made.

H	T	U
3	2	1

Three Hundred and Twenty One

H	T	U
4	5	6

H	T	U
2	0	0

H	T	U
7	0	5

H	T	U
8	9	0

367 Three Hundred and Sixty Seven

405 _____

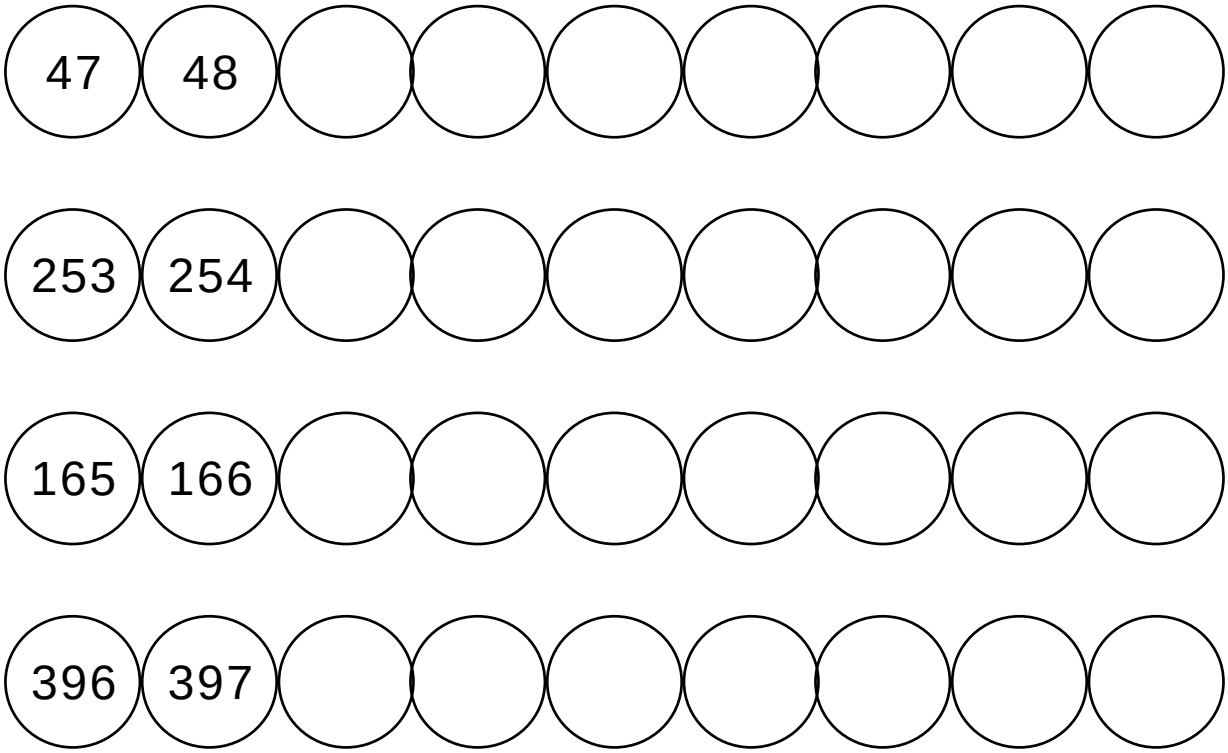
876 _____

909 _____

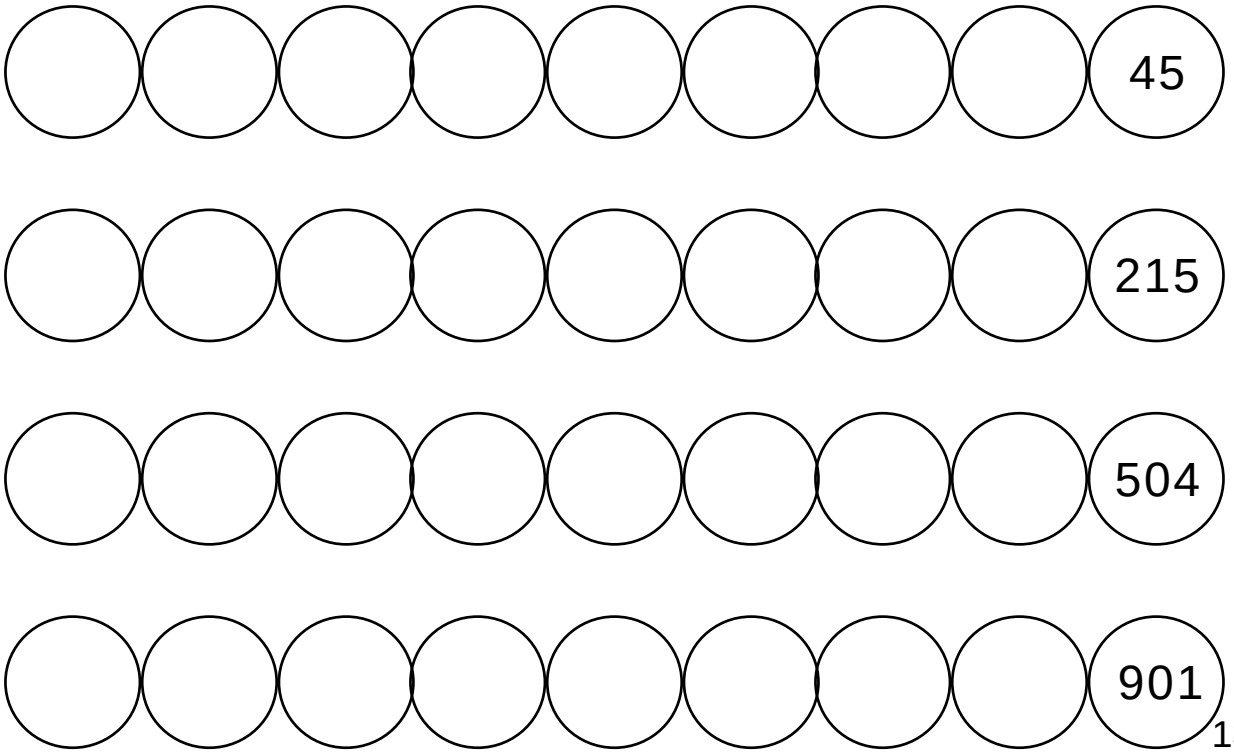
999 _____

440 _____

Make houses with slates. Make and place the number given using one, ten and hundred rupee notes. Add one repeatedly to make the next number. Write the numbers. When necessary convert the units into a ten or tens into a hundred.

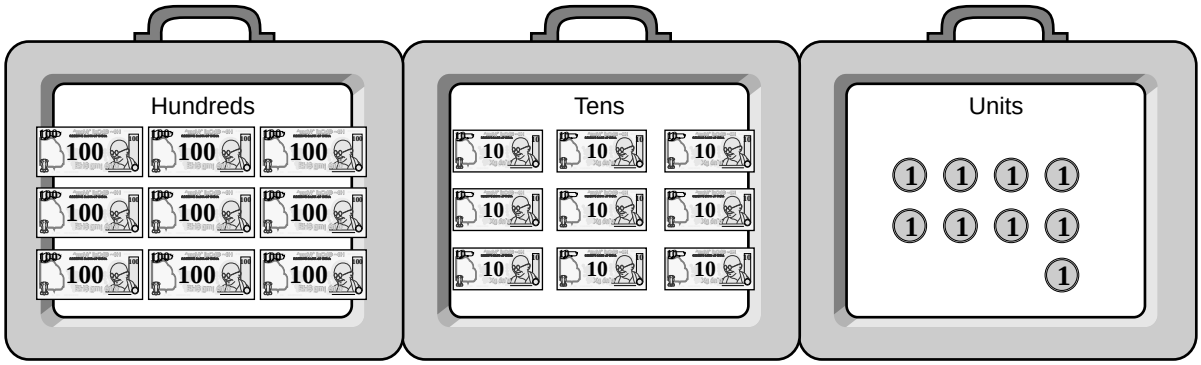


Make the number. Reduce one by one to write the numbers in the blank spaces. When necessary exchange a hundred with tens or a ten with units.



Write the missing numbers in the blank spaces. If needed use currency notes.

113	114	115			
					150
227	228				
400					
		710			
329					
		600			
	700				
					993



Write the number above

H	T	U

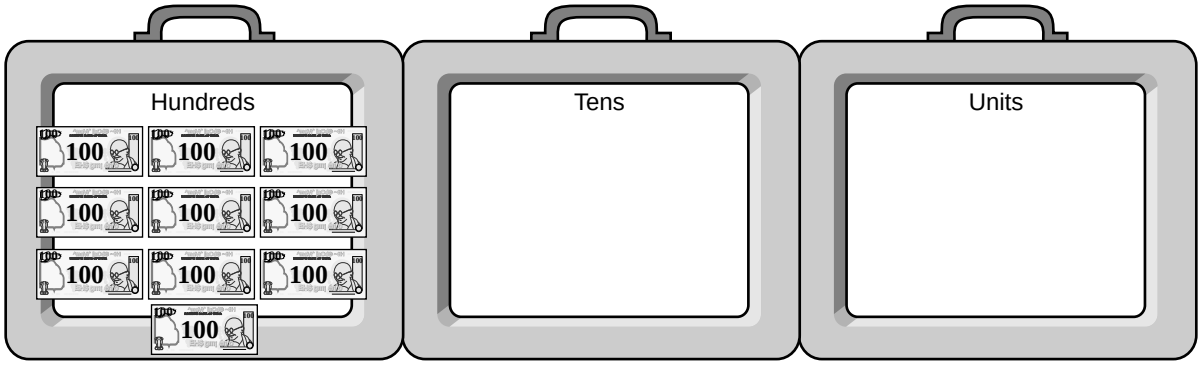
Add one more.

We have ten units.

Make a ten and keep it in the house of tens.

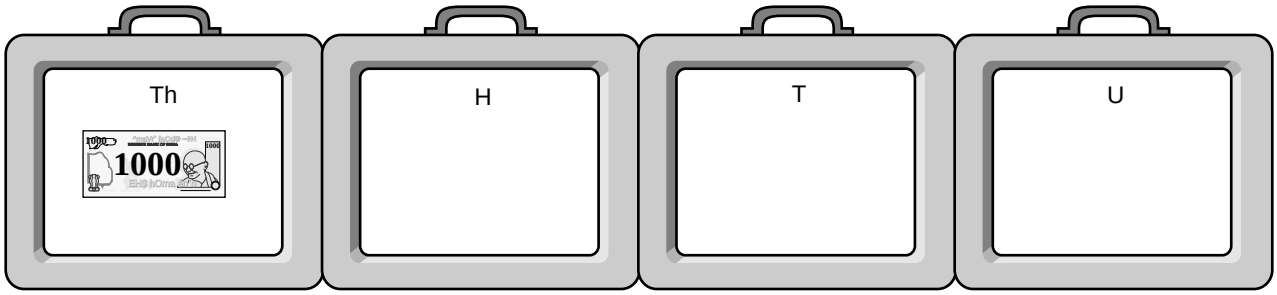
The units house is empty.

Ten tens make a hundred. Keep the hundred rupee note in the house of hundreds.



Now we have ten hundreds in the house of hundreds. Exchange ten hundreds with a thousand note.

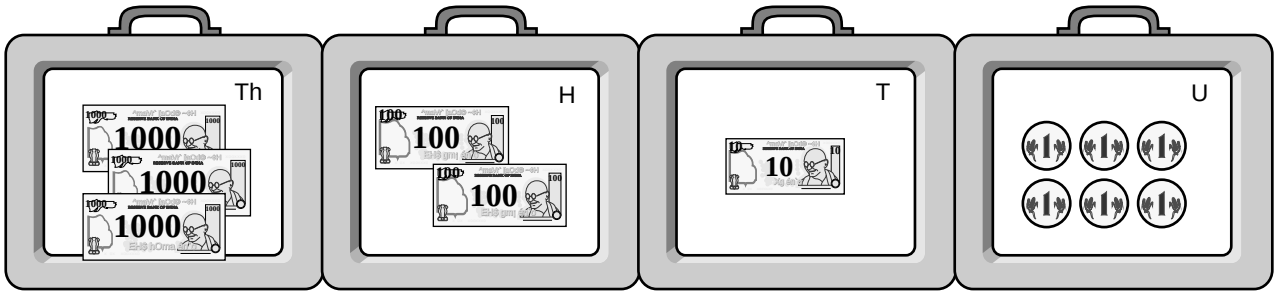
Make a house of thousands and keep it in the left of the hundreds' house.



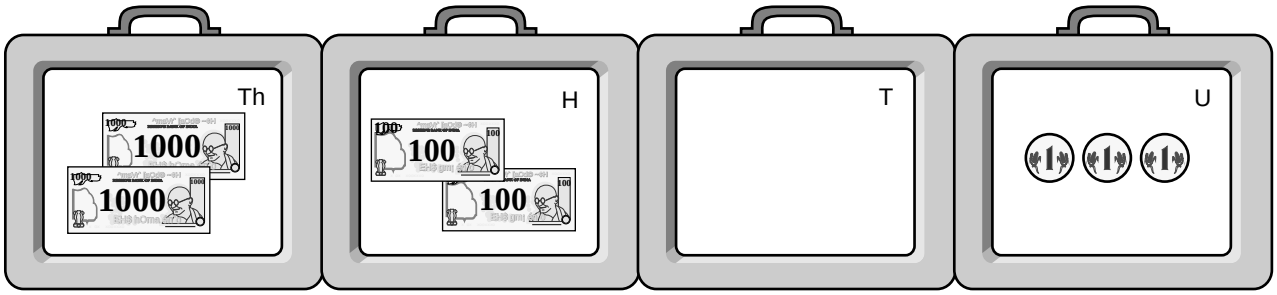
Write the number :

Th	H	T	U

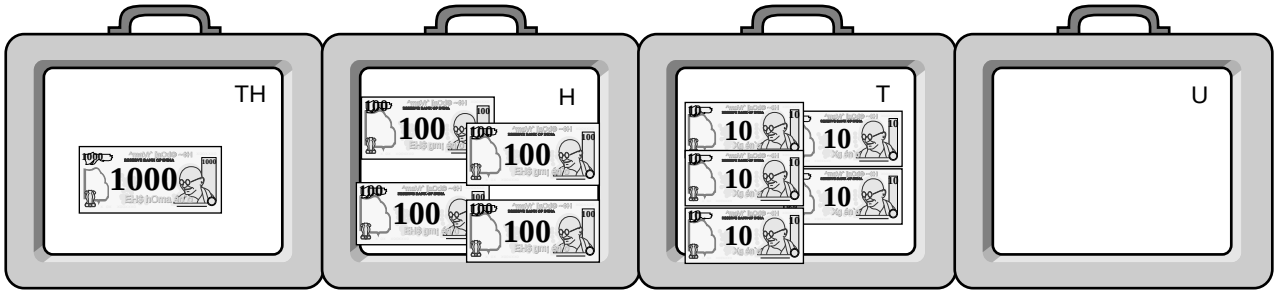
How many rupees? Write the number. Write the name of the number in words.



Th	H	T	U

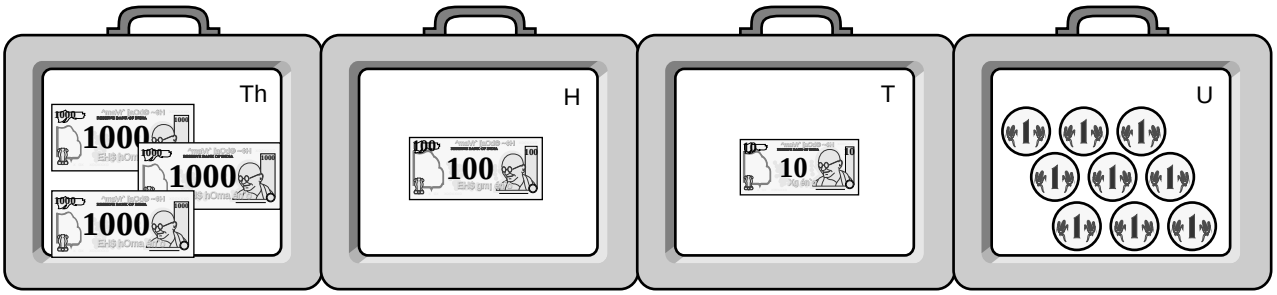


Th	H	T	U

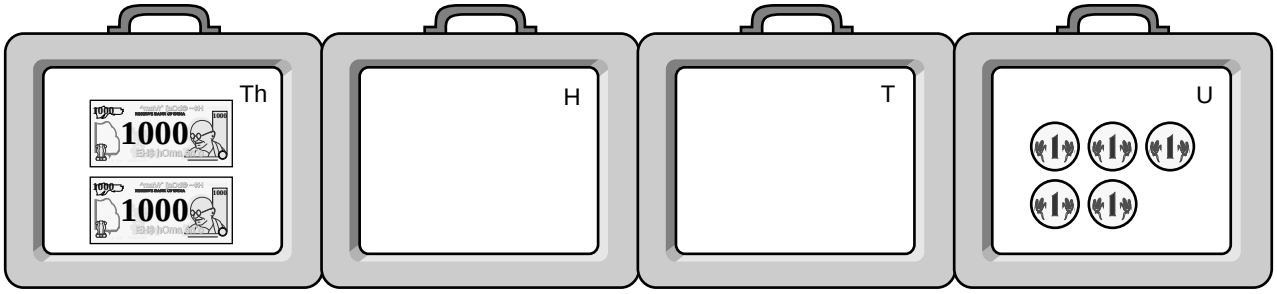


Th	H	T	U

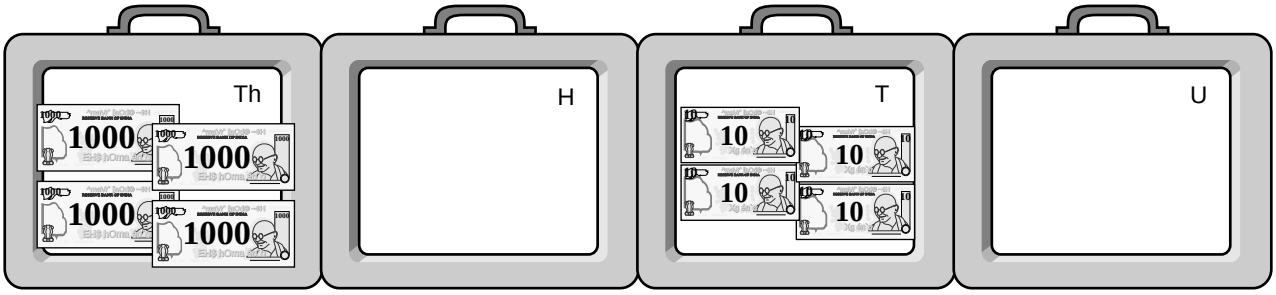
How many rupees. Write the number. Also write the number in words.



Th	H	T	U

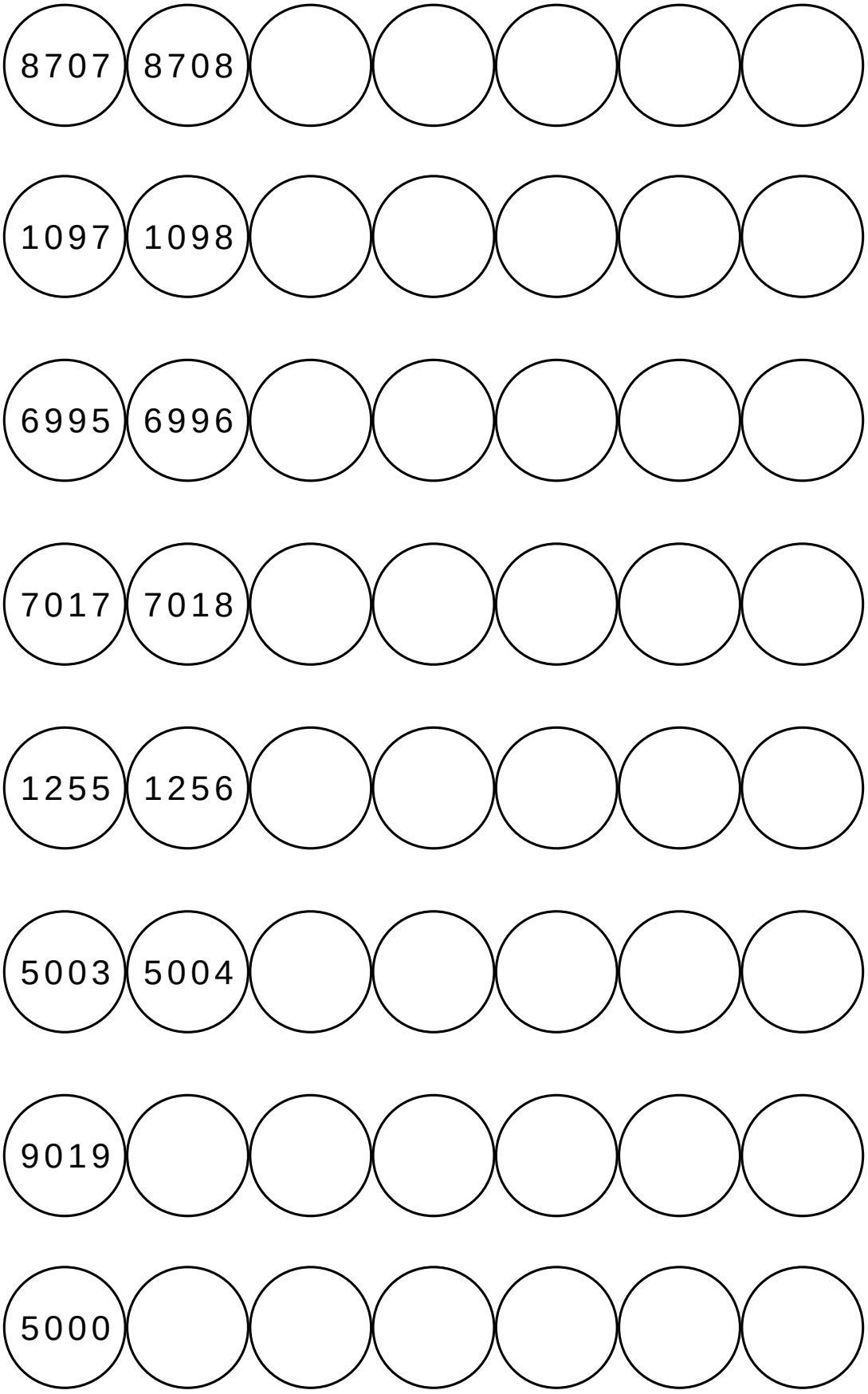


Th	H	T	U



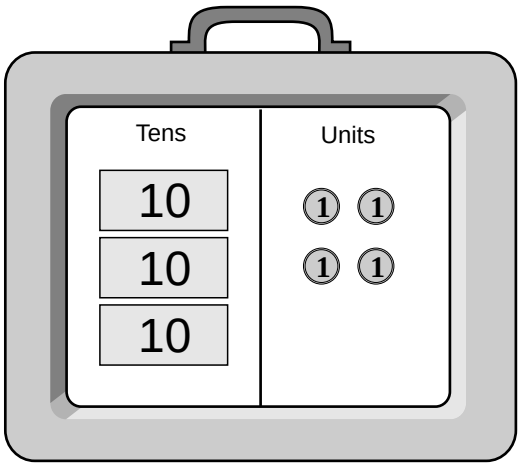
Th	H	T	U

Using notes make the numbers in sequence and write them.

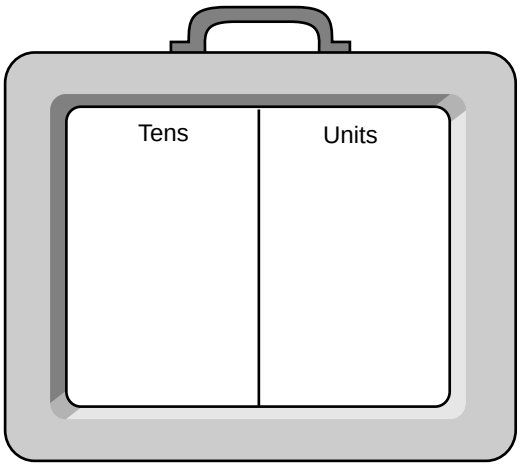


Draw the pictures of the tight form and the loose form.
Write the numerals for both forms.

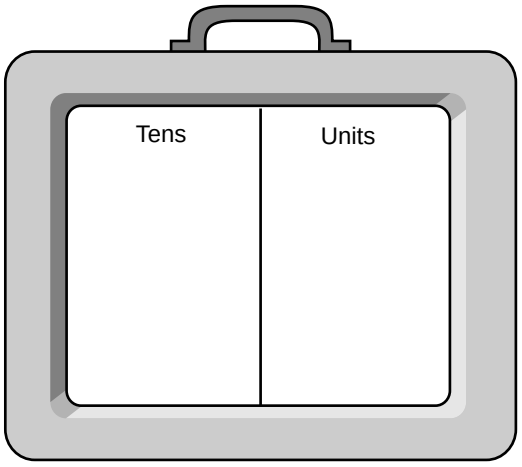
34



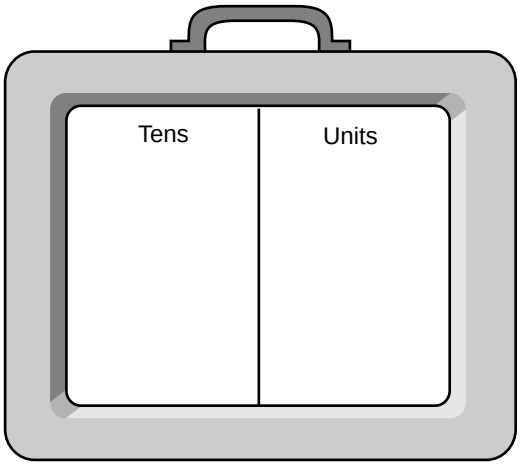
Tens	Units
3	4



Tens	Units



Tens	Units



Tens	Units

The numbers are given in loose form. Take the notes as shown. How much money is it? Write it in tight form.

Loose form				Tight form		
H	T	U	→	H	T	U
2	1	15				
H	T	U	→	H	T	U
3	20	1				
H	T	U	→	H	T	U
4	13	25				

Make the given number with notes.
Exchange the notes into loose form as instructed. Write the loose form.

Tight form				Loose form		
H	T	U	Exchange One Hundred for Tens →	H	T	U
3	4	5				
H	T	U	Exchange a Ten for Units →	H	T	U
2	6	6				
H	T	U	Exchange a Hundred for Tens. Then exchange a ten for Units →	H	T	U
5	0	0				
H	T	U	Exchange a Hundred for Units →	H	T	U
5	0	0				

The numbers are given in loose form. Take the notes as shown. How much money is it? Write in tight form.

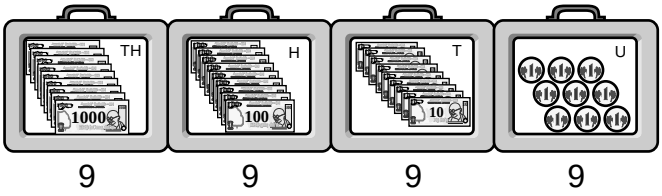
Loose form					Tight form			
Th	H	T	U	→	Th	H	T	U
4	2	3	12		4	2	4	2
Th	H	T	U	→	Th	H	T	U
1	0	10	3					
Th	H	T	U	→	Th	H	T	U
2	23	3	5					

Make the given number with notes. Exchange the notes into loose form as instructed. Write the loose form.

Tight form					Loose form			
Th	H	T	U	Exchange a thousand for hundreds →	Th	H	T	U
2	0	0	0		1	10	0	0
Th	H	T	U	Exchange a thousand for hundreds and a hundred for tens →	Th	H	T	U
2	0	0	0					
Th	H	T	U	Exchange a thousand for hundreds and a hundred for tens and a ten for units →	Th	H	T	U
2	0	0	0					
Th	H	T	U	Exchange a thousand for units →	Th	H	T	U
2	0	0	0					

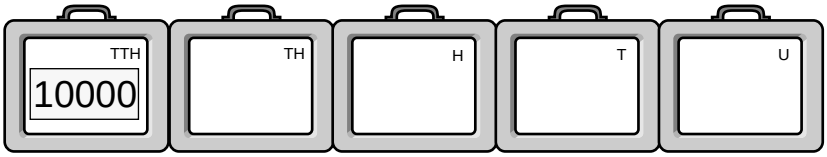
Use Slates as Houses and Currency Notes

Take 9999 rupees.



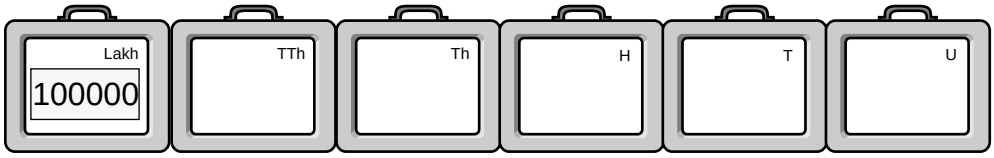
Add one rupee.

Exchange ten ones for a ten. Keep it in the house of tens. Exchange ten tens for a hundred. Keep it in the house of hundreds. Exchange ten hundreds for a thousand. Keep it in the house of thousands. Exchange ten thousands for a 'Ten Thousand'. Make a new house for 'Ten Thousand'. Make notes of Rs. 10000 for this activity.



Use notes which are 10,000 or less and make a number. Write it here.

Take 99,999. Add one. Exchange as above. Make a house for 'Lakhs'.



Use currency notes upto 1,00,000. Make four numbers and write them here.

Take 9,99,999. Add one. Make the exchanges as necessary. Make a new house for ' Ten Lakhs' to the left of the house of Lakhs.

Use notes upto 10,00,000. Make four numbers and write them here.

Take 99,99,999. Add one. Make the exchanges as necessary. Make a new house of 'One Crore' and keep it to the left of the house of Ten Lakhs.

Use notes upto 10,00,000 and play the game 'Kaun Banega Crorepati'

Use slates to make houses upto Ten Crores. Make the given number and read their names.

100000000	10000000	1000000	100000	10000	1000	100	10	1
Ten Crore	Crore	Ten Lakh	Lakh	Ten Thousand	Thousand	Huundred	Ten	One
2	7	3	8	4	5	6	1	9
Twenty Seven Crore		Thirty Eight Lakh		Forty Five Thousand		Six Hunred	Nineteen	
2	2	1	0	7	2	3	4	4
1	0	0	0	6	0	2	0	4
2	6	3	3	2	2	8	0	0

Use currency notes (or rods and cubes) and do the additions.
Write the answer.

	Tens	Units
+		7
		5
		①2
	1	2

	Tens	Units
+		8
		5
		①3

	Tens	Units
+		7
		3
		①0

	Tens	Units
+		4
		7

	Tens	Units
+		6
		4

	Tens	Units
+		6
		7

	Tens	Units
+		6
		5
	1	1

	Tens	Units
+		8
		6

	Tens	Units
+		9
		4

	Tens	Units
+		8
		7

	Tens	Units
+		0
		9

	Tens	Units
+		8
		8

Use currency notes (or rods and cubes) and do the subtractions.
Write the answer.

	Tens	Units
	0	15
−	~~1~~	~~5~~ 8
		7

	Tens	Units
−	1	2 9

	Tens	Units
−	1	0 5

	Tens	Units
−	1	8 9

	Tens	Units
−	1	7 0

	Tens	Units
−	1	3 3

	Tens	Units
−	1	7 9

	Tens	Units
−	1	8 8

	Tens	Units
−	1	4 7

	Tens	Units
−	1	5 6

	Tens	Units
−	1	6 7

	Tens	Units
−	1	7 8

Read the sum. Try and do the addition mentally.
If needed use currency notes and do the addition. Write the answer.

	Tens	Units
	3	2
+	1	3
	4	5

	Tens	Units
	2	2
+	2	7

	Tens	Units
	4	5
+	3	3

	Tens	Units
	4	4
+	4	4

	Tens	Units
	1	0
+	5	0

	Tens	Units
	6	3
+	2	3

	Tens	Units
		7
+	5	2

	Tens	Units
	6	8
+		1

	Tens	Units
	4	0
+	4	9

	Tens	Units
		4
+	8	0

	Tens	Units
	5	5
+	4	4

	Tens	Units
	6	3
+	3	6

Read the sum. Try and do the addition mentally.
If needed use currency notes and do the addition. Write the answer.

	Tens	Units
	3	4
+		7
	3	11
	4	1

	Tens	Units
	2	3
+		7
	2	10
	3	0

	Tens	Units
	1	7
+		5

	Tens	Units
	2	6
+		6

	Tens	Units
	3	1
+		9

	Tens	Units
	2	5
+		8

	Tens	Units
		5
+	4	5

	Tens	Units
	8	0
+		8

	Tens	Units
	8	9
+		1

	Tens	Units
		4
+	2	8

	Tens	Units
		7
+		6

	Tens	Units
	5	5
+		5

Read the sum. Try and do the addition mentally.
If needed use currency notes and do the addition. Write the answer.

	Tens	Units
	3	4
+	1	7
	4	11
	5	1

	Tens	Units
	4	2
+	4	9
	8	11
	9	1

	Tens	Units
	6	7
+	1	7

	Tens	Units
	3	6
+	3	6

	Tens	Units
	1	9
+	7	1

	Tens	Units
	2	5
+	1	8

	Tens	Units
	3	5
+	4	5

	Tens	Units
	1	2
+	8	0

	Tens	Units
	7	0
+	2	0

	Tens	Units
	2	4
+	2	8

	Tens	Units
	1	7
+		6

	Tens	Units
	6	9
+	1	5

Read the sum. Try and do the addition mentally and Write the answer.
If needed use currency notes.

	H	T	U
+	2	2	4
	1	2	7
		1	
	3	5	1

	H	T	U
+	4	0	1
	3	3	9

	H	T	U
+	6	4	7
	1	8	5

	H	T	U
+	3	2	8
	2	9	4

	H	T	U
+	6	5	7
	1	4	6

	H	T	U
+	4	3	7
	1	7	2

	Th	H	T	U
+	4	4	0	9
	3	8	7	4

	Th	H	T	U
+	1	2	4	5
	7	7	5	5

Read the subtraction problem. Try and do the subtraction mentally.
If needed use currency notes and do the subtraction. Write the answer.

	Tens	Units
	3	5
−	1	2
	2	3

	Tens	Units
	2	7
−	2	2

	Tens	Units
	4	5
−	3	3

	Tens	Units
	4	4
−	4	4

	Tens	Units
	5	0
−	1	0

	Tens	Units
	6	3
−	2	3

	Tens	Units
	5	7
−		2

	Tens	Units
	6	8
−		1

	Tens	Units
	4	9
−	4	0

	Tens	Units
	8	4
−		0

	Tens	Units
	5	5
−	4	4

	Tens	Units
	6	6
−	3	3

Read the subtraction problem. Try and do the subtraction mentally.
If needed use currency notes and do the subtraction. Write the answer.

	Tens	Units
	1	10
−	~~2~~	~~0~~ 5
	1	5

	Tens	Units
−	6	2 9

	Tens	Units
−	4	0 8

	Tens	Units
−	3	0 9

	Tens	Units
−	5	7 8

	Tens	Units
−	6	3 6

	Tens	Units
−	7	7 2

	Tens	Units
−	4	4 8

	Tens	Units
−	5	0 1

	Tens	Units
−	2	5 5

	Tens	Units
−	9	2 9

	Tens	Units
−	5	2 8

Read the subtraction problem. Try and do the subtraction mentally. If needed use currency notes and do the subtraction. Write the answer.

	Tens	Units
	1	10
−	~~2~~ 1	~~0~~ 5
	0	5

	Tens	Units
−	6 1	2 9

	Tens	Units
−	4 1	0 8

	Tens	Units
−	1	0 9

	Tens	Units
−	5	7 8

	Tens	Units
−	6 3	3 6

	Tens	Units
−	7 3	7 2

	Tens	Units
−	4 1	4 8

	Tens	Units
−	5 3	0 1

	Tens	Units
−	2 2	5 5

	Tens	Units
−	9 2	2 9

	Tens	Units
−	5 4	2 8

Read the subtraction problem. Try and do the subtraction mentally.
Write the answer. If needed use currency notes.

	H	T	U
		5	12
−	7	~~6~~	~~2~~
	5	4	3

	H	T	U
−	9	5	7
	2	1	8

	H	T	U
−	2	5	0
	1	4	2

	H	T	U
−	3	8	5
	1	9	3

	H	T	U
−	7	6	8
	6	8	7

	H	T	U
−	6	5	6
	3	9	6

	H	T	U
−	4	1	2
	2	3	4

	H	T	U
−	2	7	5
	1	8	6

	H	T	U
−	8	5	1
	3	7	4

Read the subtraction problem. Try and do the subtraction mentally.
Write the answer. If needed use currency notes.

	Th	H	T	U
	3	17	10	
−	~~4~~ 3	~~8~~ 8	~~0~~ 7	9 4
	0	9	3	5

	Th	H	T	U
−	7 1	2 7	3 6	5 5

	Th	H	T	U
−	4	0	0 3	0 4

	Th	H	T	U
−	5 1	0 0	0 5	0 0

	Th	H	T	U
−	9 8	0 0	0 0	0 4

	Th	H	T	U
−	8 1	0 7	0 6	0 5

In each problem, decide whether to add or to subtract.
Write the addition or subtraction. Discuss each problem in the whole class.

1. There are ‘A’ mangoes in one basket. There are ‘B’ mangoes in the other basket. How many mangoes in all? (A + B)

2. There were ‘A’ sacks in a shop. ‘B’ sacks were sold. How many sacks remain?

3. One team has scored ‘A’ runs. The other team scored ‘B’ runs. How many runs has the first team to score to win?

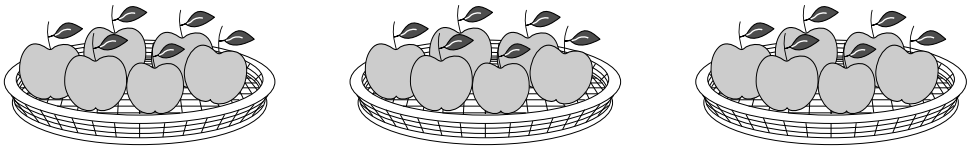
4. Mother earns ‘A’ rupees per month. Father’s salary is ‘B’ rupees. Sister’s salary is ‘C’ rupees. What is the total monthly income of the family?

5. I earned ‘A’ rupees from selling potatoes. I earned ‘B’ rupees by selling onions. I bought items worth ‘C’ rupees. How much money remains with me?

6. I bought items worth ‘A’ rupees from the shop. But I had only ‘B’ rupees. What is the balance amount I have to pay the shopkeeper?

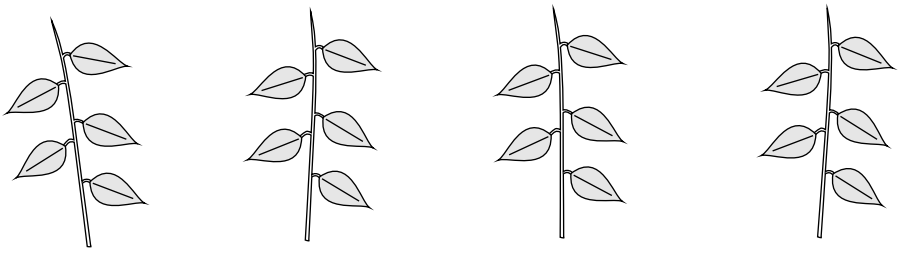
7. Asma has ‘A’ number of marbles. On the first day she lost ‘B’ marbles. On the second day she won ‘C’ marbles. How many marbles does she have?

8. Shamin planted ‘A’ number of plants. Riya planted ‘B’ plants. Alfaaz planted ‘C’ plants. ‘T’ number of Shamin’s plants survived. ‘S’ number of Riya’s plants survived. All the plants of Alfaaz survived. How many plants did not survive?



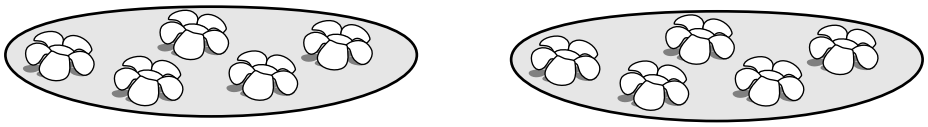
6 + 6 + 6 = ☐

Six apples taken three times = 6 x 3 = ☐

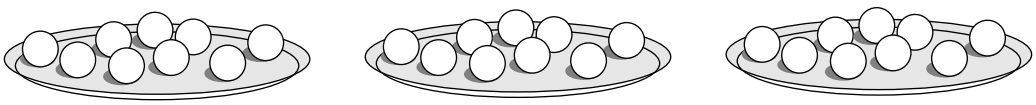


5 + 5 + 5 + 5 = ☐

Five leaves taken four times = 5 x 4 = ☐

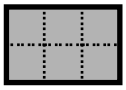


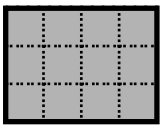
☐ x ☐ = ☐

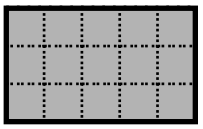


☐ x ☐ = ☐

Use 1 cm unit cubes. Make the rectangles shown on your slate.
Write the multiplications.







	T	U
x		3
		2
		6

	T	U
x		

	T	U
x		

Look at the given multiplications. Draw the rectangle and write the answer.

	T	U
x		6
		3
	1	8

	T	U
x		5
		7

	T	U
x		4
		5

Use unit cubes. Make the rectangle for each multiplication. Write the answer.

	T	U
x		3
		3

	T	U
x		4
		1

	T	U
x		4
		0

Construct the tables of 1 to 10 by keeping unit cubes or small stones on the grid. Write the tables.

1	2	3	4	5	6	7	8	9	10
2	4	6							
3	6								
4	8								
5	10								
6	12								
7	14								
8	16								
9	18								
10	20								

Fill in the blank squares of the following tables.

6		18			36				60

8			32				64		

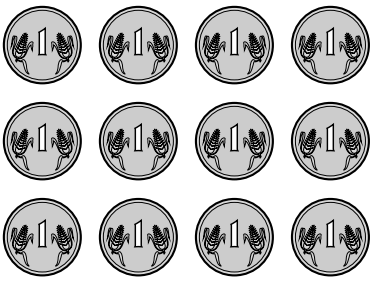
	14								70

	T	U
		4
×		2

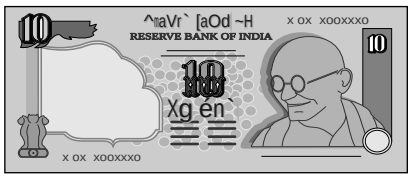
4 taken 2 times

	T	U
		4
×		3

4 taken 3 times



Twelve one-rupee coins. Exchange 10 coins for one ten rupee note.So we have one 10 rupee note in the house of tens, and 2 coins in the house of units. Therefore write 1 in the house of tens and 2 in the house of units.



Use notes and coins and do the following multiplications.

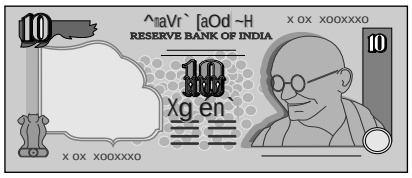
	T	U
		5
×		4

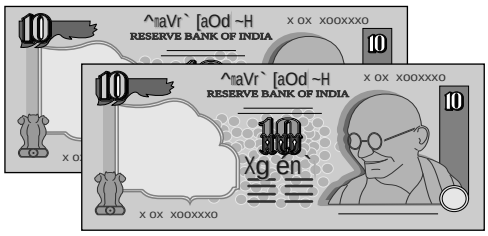
	T	U
		8
×		8

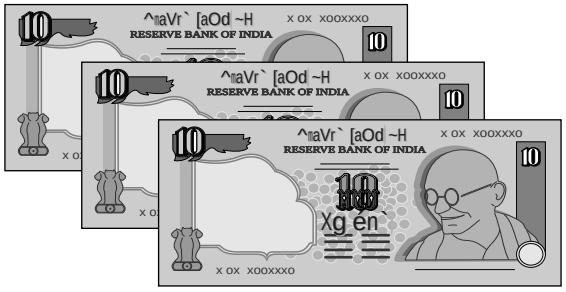
	T	U
		5
×		0

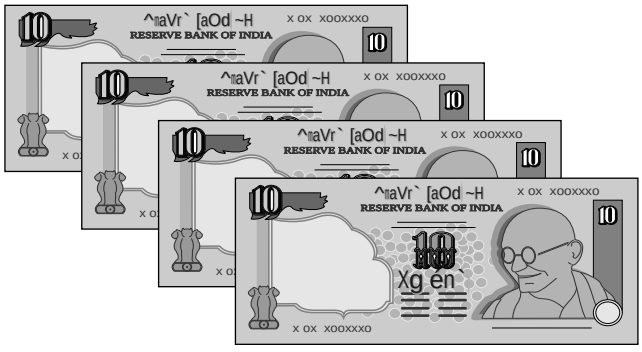
	T	U
		1
×		9

Multiplication table for Ten

10 x 1  =

10 x 2  =

10 x 3  =

10 x 4  =

10 x 5	10 x 6	10 x 7	10 x 8	10 x 9	10 x 10	10 x 0

Use notes to do the following problems.

	T	U
	1	0
×		4

10 rupees taken

4 times.

Write the answer.

	T	U
	4	0
×		2

40 rupees taken

4 times.

Write the answer.

	T	U
	3	0
×		3

30 rupees taken

3 times.

Write the answer.

	T	U
	2	0
×		4

20 rupees taken

4 times.

Write the answer.

Look at all the above problems and answers. Do you see a rule?
Use the rule to write the answers in the following problems.

1) 10 x 6 = ☐

2) 20 x 3 = ☐

3) 30 x 2 = ☐

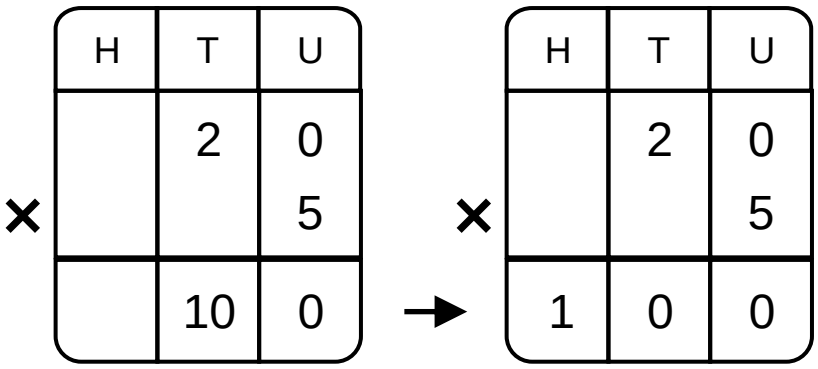
4) 10 x 9 = ☐

5) 70 x 1 = ☐

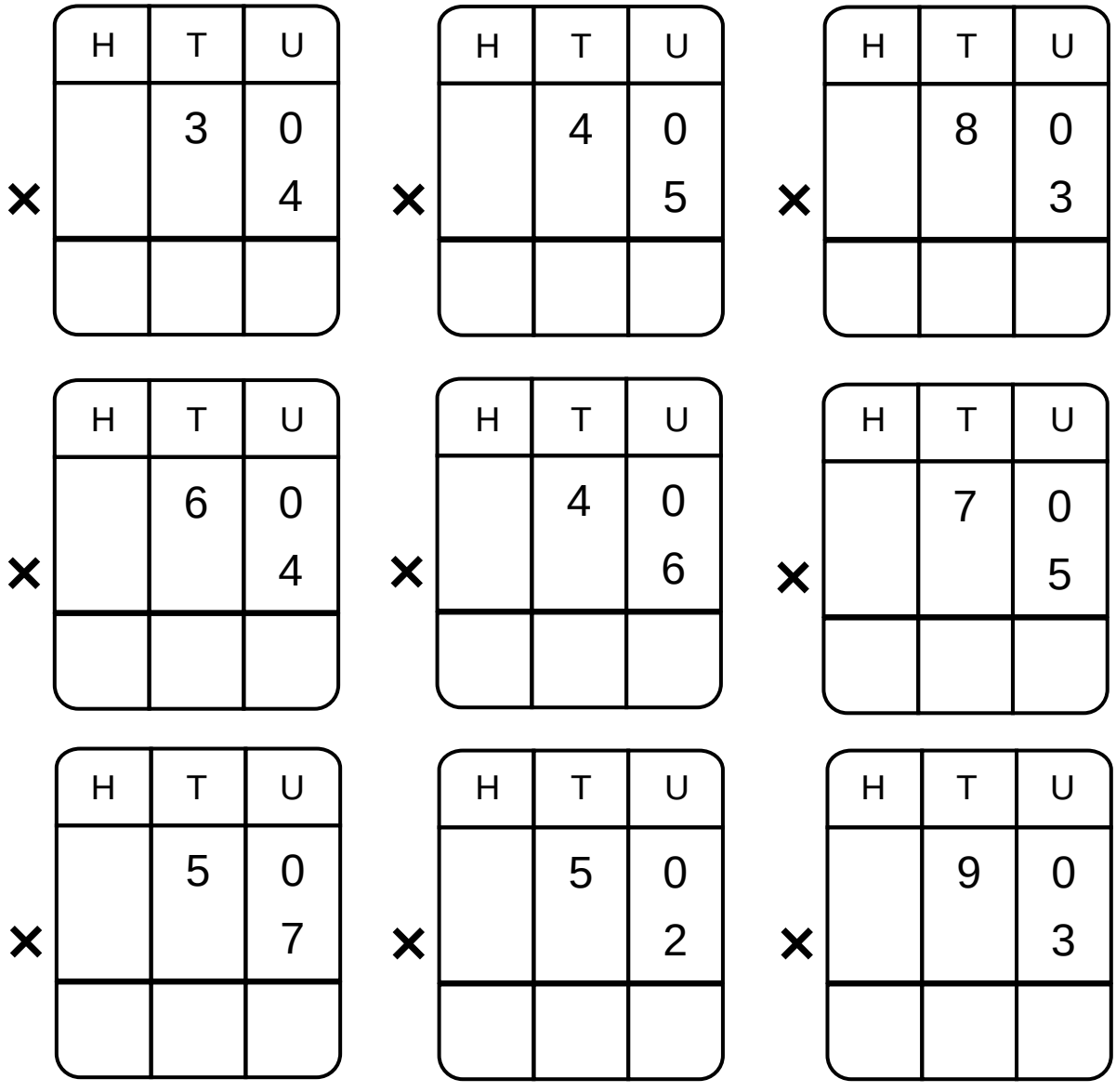
6) 80 x 0 = ☐

Use notes to do the following problems.

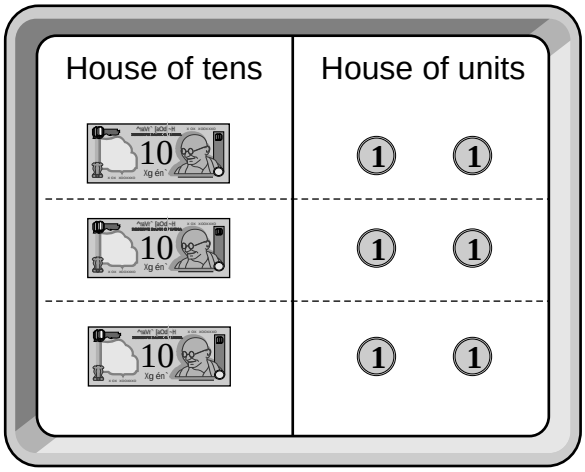
20 rupees taken 5 times. What do you get? How will you write the answer?



Zero units taken five times is zero. Two tens taken five times is 10 tens. 10 Tens is 1 Hundred. We place the 1 Hundred in the house of hundred and there are zero tens and zero units.



Two digit numbers taken 1 digit times.
12 rupees taken 3 times. Keep the notes in the correct houses.



	T	U
	1	2
×		3

First we consider the units. Two units taken 3 times is 6 (Three twos are 6). We write 6 in the units' house.

One ten taken 3 times gives 3 tens. We write 3 in the tens'house.

Use notes and coins to do the following multiplications.

	T	U
	1	2
×		4

	T	U
	1	4
×		2

	T	U
	1	3
×		3

	T	U
	2	3
×		2

Do the following problems mentally by using tables.

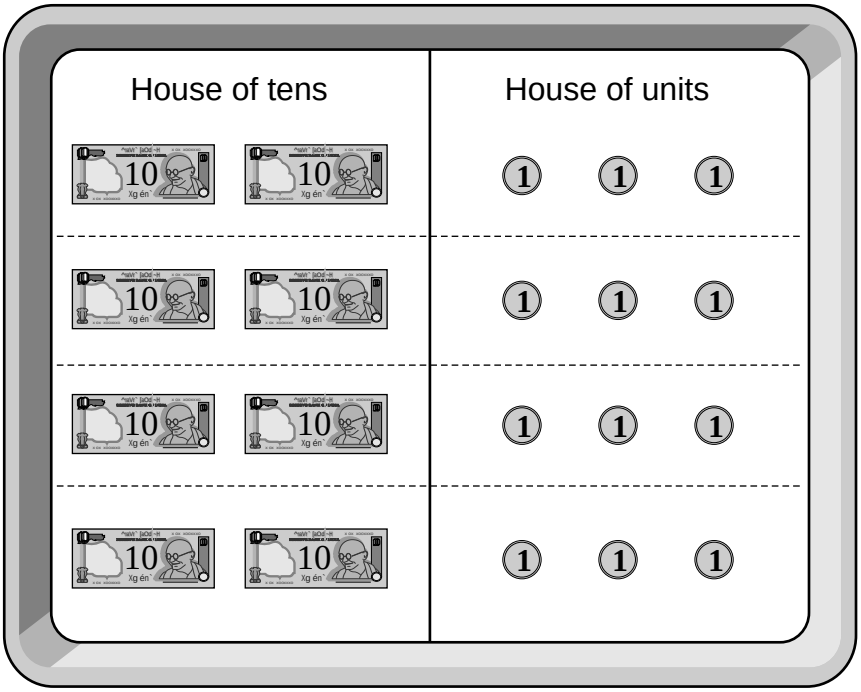
	T	U
	3	3
×		2

	T	U
	2	1
×		4

	T	U
	3	3
×		3

	T	U
	2	2
×		4

Use notes and coins for the multiplication. 23 rupees taken 4 times.
20 rupees taken 4 times and 3 rupees taken 4 times. Place the notes and coins in the correct houses.



	T	U
	2	3
×		4
	1	
	9	2

2 Tens and 3 units taken 4 times :

First let us count the units. We get 12 units. Exchange the 10 units for a Ten rupee note. We get 1 Ten and 2 units. We write 2 units in the house of units and we write carry over 1 in the house of tens.
2 tens taken 4 times gives 8 tens, plus the 1 ten which was carried, making 9 tens. We write 9 in the house of tens and 2 in the house of units.

Make and place notes and coins in the correct houses and do the following multiplications.

	T	U
	1	2
×		5

	T	U
	1	4
×		3

	T	U
	2	3
×		4

	T	U
	2	5
×		2

Use tables to do the following multiplications.
If you require use notes and coins to do the problem.

	H	T	U
×		2	2 5

	H	T	U
×		4	8 2

	H	T	U
×		6	9 9

	H	T	U
×	1	4	8 5

	H	T	U
×	2	0	4 4

	H	T	U
×	4	5	0 2

	H	T	U
×	2	8	9 3

	H	T	U
×	3	9	9 2

	H	T	U
×	1	7	5 4

Keep the ‘carry’ in mind and do the multiplications.

	Th	H	T	U
	2	4	5	8
x				3
	7	3	7	4

	Th	H	T	U
	1	2	3	4
x				5

	Th	H	T	U
	2	0	8	0
x				4

	Th	H	T	U
	3	5	7	0
x				2

	Th	H	T	U
	1	2	0	9
x				7

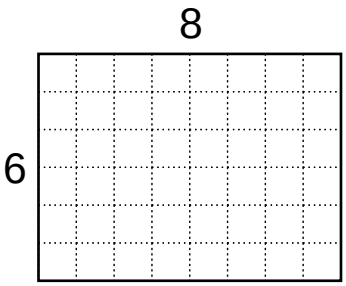
	Th	H	T	U
	1	0	8	9
x				9

	Th	H	T	U
	2	9	9	9
x				3

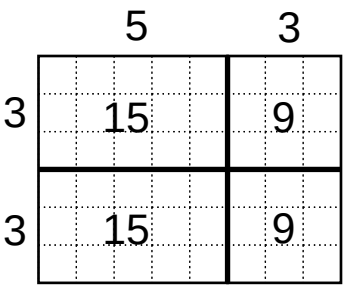
	Th	H	T	U
	2	0	0	0
x				4

8 x 6 :

Make a 8 x 6 rectangle in your grid sheet.



Cut the rectangle into 4 smaller rectangles by drawing one vertical and one horizontal line. The smaller rectangles need not be equal.



15
+ 9
+ 15
+ 9

Write the multiplication for each rectangle.Add the four parts. → 8 x 6 = 48

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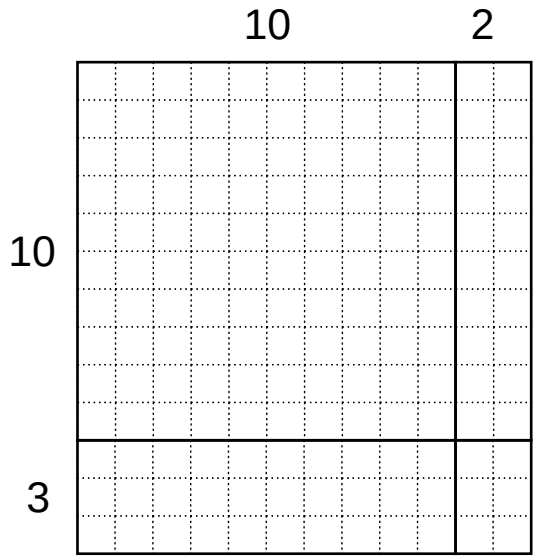
12 x 13 = Vertical line cuts 12 into 10 and 2. Horizontal line cuts 13 into 10 and 3. Write the four parts and add.



\+ \+ \+

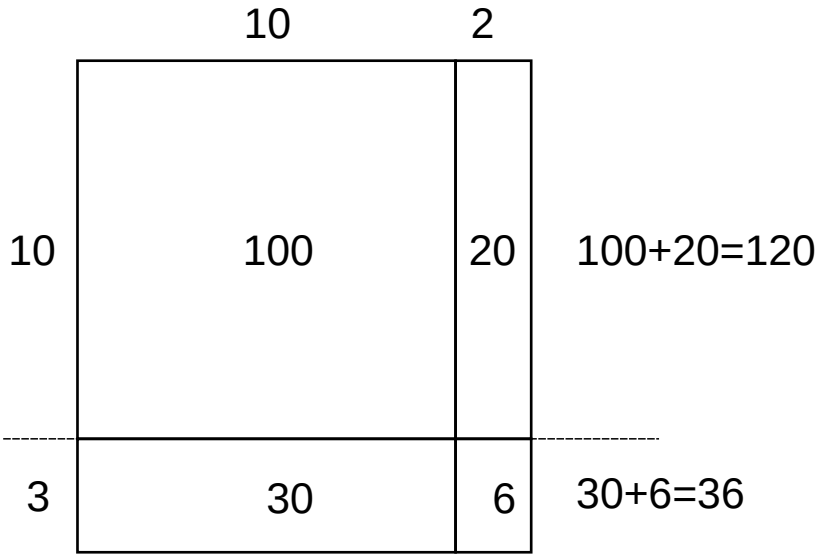
12 x 13 =

Divide the multiplication rectangle into four parts and add the four parts to solve the following problems.

1) 16 x 12
2) 13 x 15
3) 18 x 11
4) 23 x 11 (Vertical line between 20 and 3)
5) 22 x 13
6) 18 x 19
7) 25 x 12

From multiplication rectangles to the numerical procedure :

12 x 13 =



	H	T	U	
		1	2	12 (= 10 + 2), taken
×		1	3	13 times. (13 = 10 + 3)
		3	6	First we take 12 three times. We get 36.
+	1	2	0	Next we take 12 ten times. We get 120.
	1	5	6	Add 36 and 120.

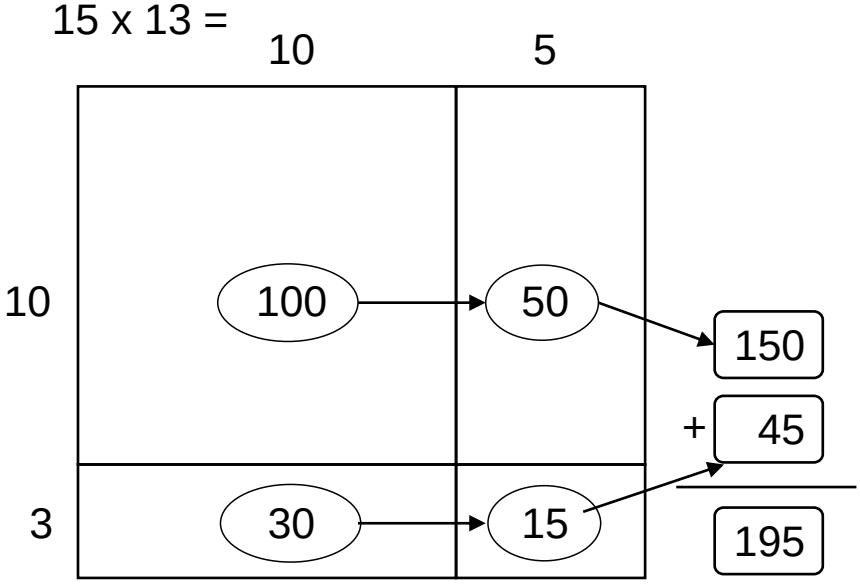
Look at the rectangle drawn above. There too we get 36 and 120 by adding two parts each.

With the help of your teacher do each of the sums in two ways, by drawing rectangles and by numerical procedure.

1) 13 x 16 2) 15 x 12 3) 19 x 11

Do the multiplication in both ways.

15 x 13 =



	H	T	U
		1	5
×		1	3
+			

---

14 x 15 =

	H	T	U
		1	4
×		1	5
+			

+ ☐
☐

---

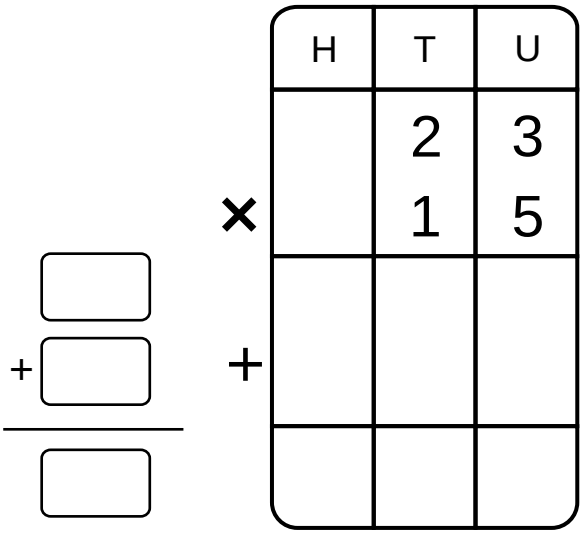
18 x 11 =

	H	T	U
		1	8
×		1	1
+			

+ ☐
☐

Do the multiplication in both ways.

23 x 15 =



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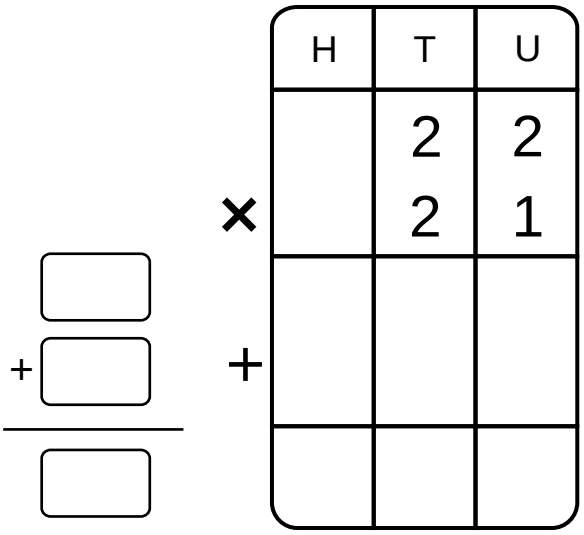
22 x 21 =

	20	2
20	20 x 20 = 400	2 x 20 = 40
1	20 x 1 = 20	2x1 = 2



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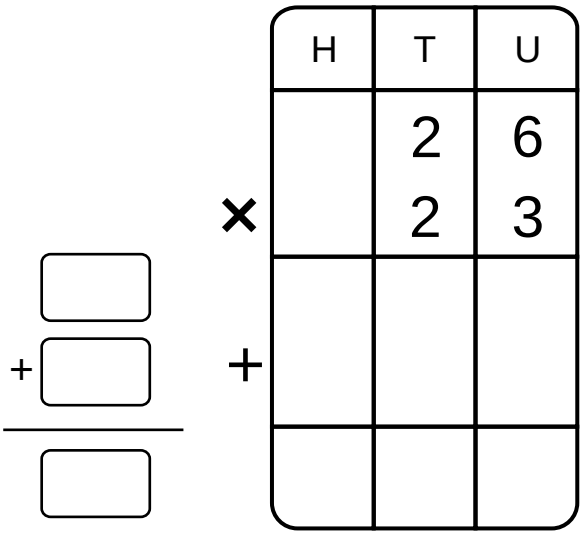
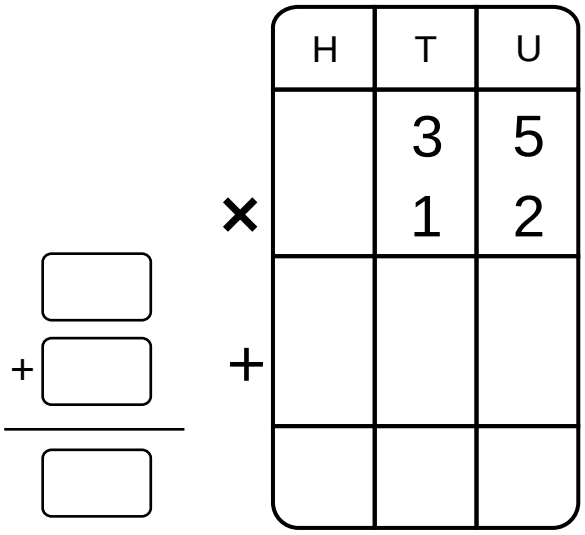
26 x 23 =



Do the multiplication in both ways.

35 x 12 =



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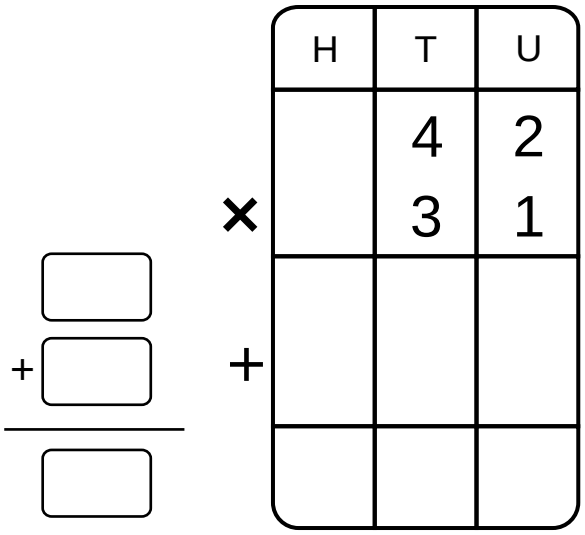
42 x 31 =



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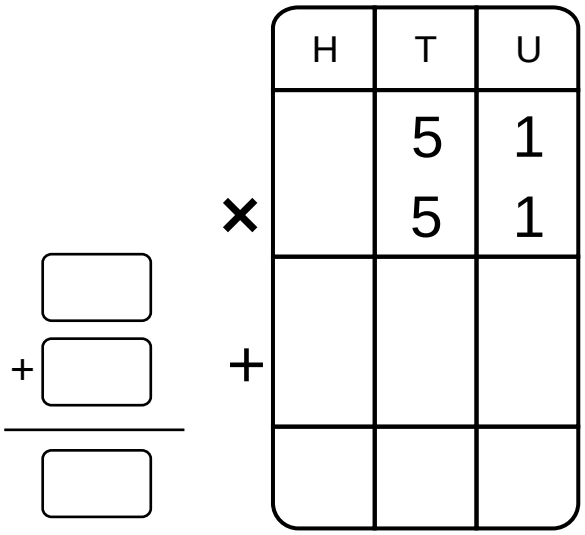
51 x 51 =



Do the multiplication in both ways.

134 x 25

	100	30	4
20	100 x 20 = 2000	30 x 20 = 600	4 x 20 = 80
5	100 x 5 = 500	30 x 5 = 150	4x5 = 20

	2680
+	670
	3350

	Th	H	T	U
		1	3	4
×			2	5
		6	7	0
+	2	6	8	0
	3	3	5	0

123 x 42

+	

	Th	H	T	U
		1	2	3
×			4	2
+				

Use any method.

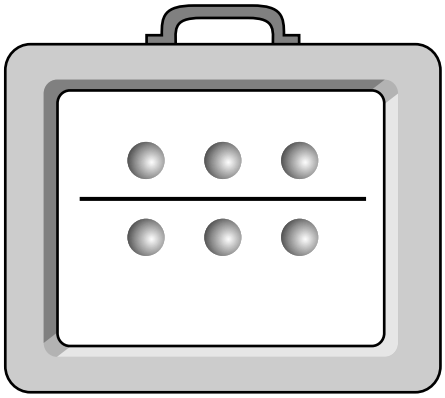
231 x 24

---

145 x 35

Make equal parts and write the division answer.

$6 \div 2$

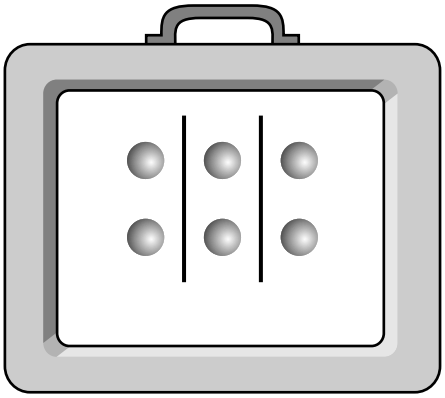


2 equal parts of 6

3 in each equal part

$6 \div 2 = 3$

$6 \div 3$

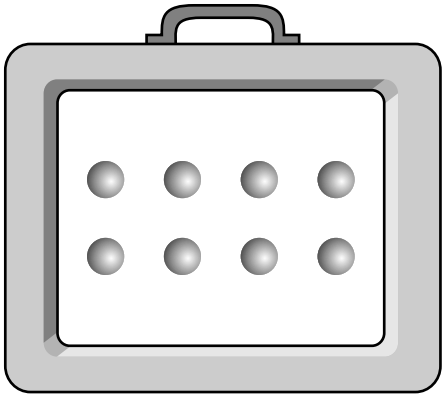


3 equal parts of 6

☐ in each equal part

$6 \div 3 = \square$

$8 \div 2$

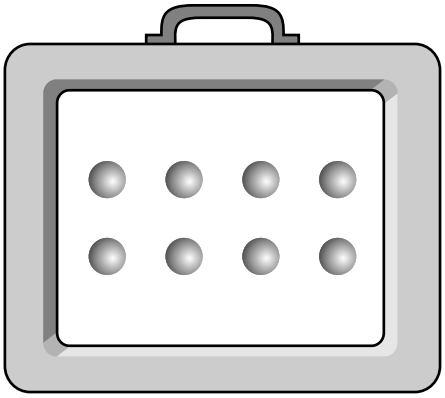


☐ equal parts of ☐

☐ in each equal part

$\square \div \square = \square$

$8 \div 4$

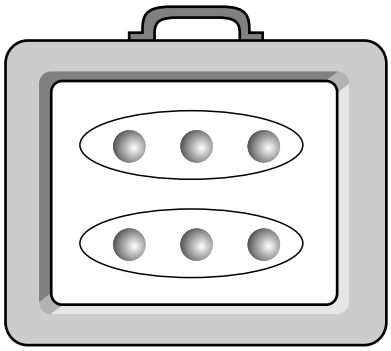


☐ equal parts of ☐

☐ in each equal part

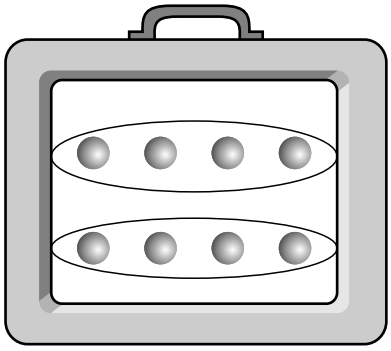
$\square \div \square = \square$

Look at the parts on the slate and write the multiplication and the division.



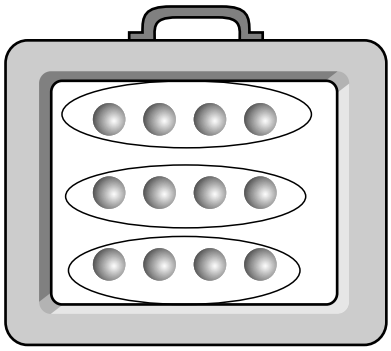
Multiplication 3 x 2 = 6

Division 6 ÷ 2 = 3



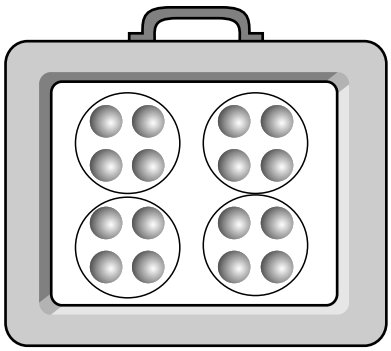
Multiplication ☐ x ☐ = ☐

Division ☐ ÷ ☐ = ☐



Multiplication ☐ x ☐ = ☐

☐ ÷ ☐ = ☐

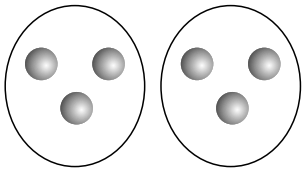
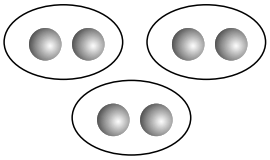
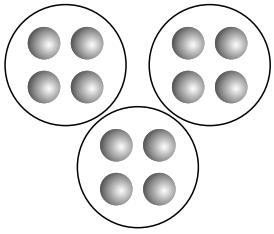
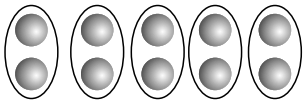


Multiplication ☐ x ☐ = ☐

Division ☐ ÷ ☐ = ☐

Two meanings of division

Understand the meaning and fill the blank boxes.

Division	Make equal parts. How many in each part?	Make equal portions. How many portions?	Answer
6 ÷ 2	 Two parts, 3 in each part.	 2 in each portion. 3 portions.	3
8 ÷ 4			
9 ÷ 3			
	 4 in each part		
		 5 portions	

Each child must get 5 rupees.
There are six children.
How many rupees are needed?

5 x 6 = 30 rupees

There are 30 rupees. Each child gets 5 rupees. How many children are there?

30 ÷ 5 = 6 children

---

4 beads in a necklace.
6 necklace.
How many beads in all?

☐ x ☐ = ☐ beads

There are total 24 beads.
4 beads in each necklace.
How many necklaces can be made?

☐ ÷ ☐ = ☐ necklaces

Rahul has 4 mangoes in each basket. He has 7 such baskets.
How many mangoes in all?

☐ x ☐ = ☐ mangoes

There are 28 mangoes.
4 mangoes fit into a basket.
How many baskets are needed?

☐ ÷ ☐ = ☐ baskets

Each chocolate costs 2 rupees.
What is the cost of 8 chocolates?

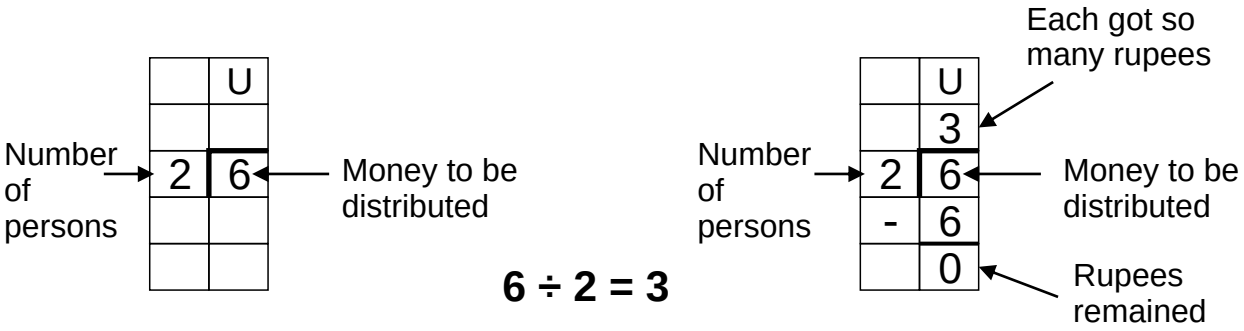
☐ x ☐ = ☐ rupees

Each chocolate costs 2 rupees.
How many chocolates can be bought with 16 rupees.

☐ ÷ ☐ = ☐ chocolates

Do the division with notes or rods and cubes. Write the division.

6 ÷ 2 → 6 rupees divided equally between two persons. How much did each get?



6 ÷ 2 = 3

	U
2	8

	U
4	8

	U
3	9

	U
1	7

	U
1	8

	U
	3
2	7
-	6
	1

	U
4	9

	U
3	8

	U
2	5

	U
5	8

	T	U
2	2	0

	T	U
2	4	0

	T	U
5	5	0

	T	U
4	4	0

	T	U
2	6	0

	T	U
3	6	0

	T	U
4	8	0

	T	U
9	9	0

Do the division with notes or rods and cubes. Write the division.

	T	U
	1	2
2	2	4
-	2	
	0	4
-		4
		0

	T	U
3	3	6

	T	U
3	6	3

	T	U
2	4	8

	T	U
3	6	6

	T	U
2	4	2

	T	U
4	8	4

	T	U
5	5	5

	T	U
	1	8
2	3	6
-	2	
	1	6
-	1	6
		0

	T	U
3	4	2

	T	U
5	6	5

	T	U
4	5	6

	T	U
6	7	2

	T	U
8	7	2

	T	U
9	8	1

	T	U
7	5	6

	T	U
7	6	3

	T	U
9	7	2

Do the division with notes or rods and cubes. Write the division.

	H	T	U
	1	2	3
2	2	4	6
-	2		
	0	4	
	-	4	
		0	6
		-	6
			0

	H	T	U
5	5	5	5

	H	T	U
3	6	3	6

	H	T	U
2	4	8	2

	H	T	U
2	4	0	0

	H	T	U
4	4	0	0

	H	T	U
3	6	0	0

	H	T	U
3	9	0	0

	H	T	U
2	2	4	0

	H	T	U
3	6	0	9

	H	T	U
3	3	6	0

	H	T	U
2	4	0	2

Do the division with notes or rods and cubes. Write the division.

	H	T	U
5	5	5	0

	H	T	U
2	3	2	0

	H	T	U
2	5	4	0

	H	T	U
5	6	5	0

	H	T	U
6	7	2	0

	H	T	U
7	8	4	0

	H	T	U
2	3	1	2

	H	T	U
3	4	1	4

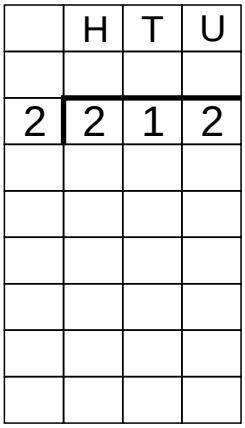
	H	T	U
5	6	1	5

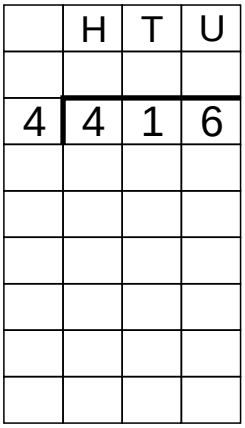
	H	T	U
6	7	1	6

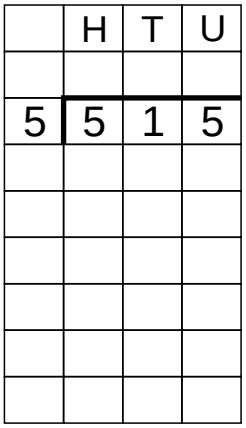
	H	T	U
7	8	2	6

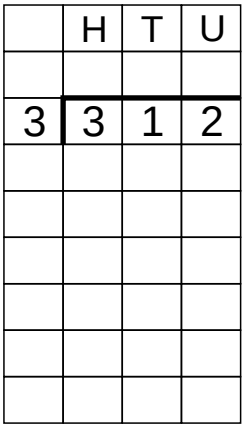
	H	T	U
4	9	7	3

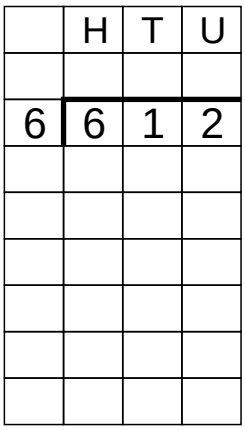
Do the division with notes or rods and cubes. Write the division.

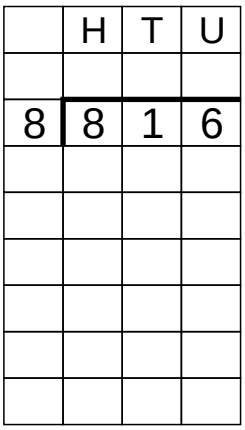


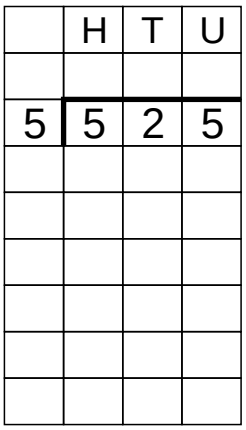


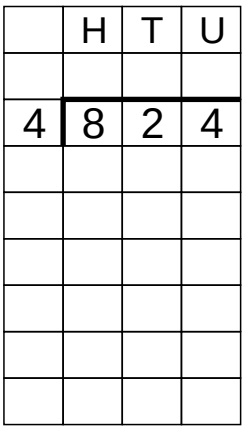


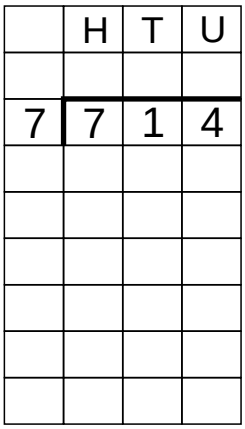


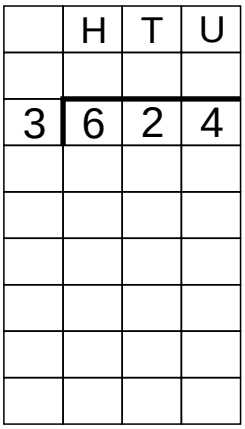


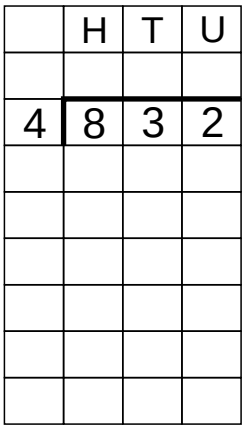


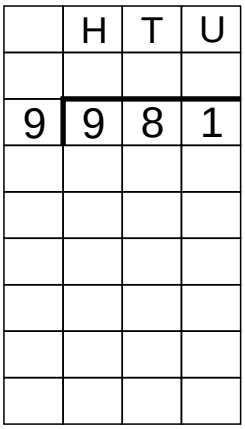


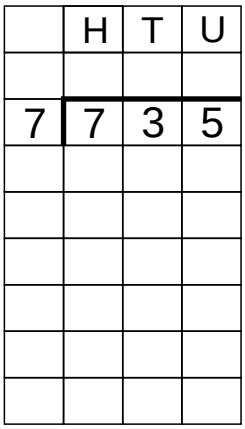


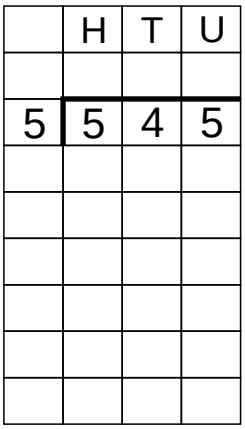


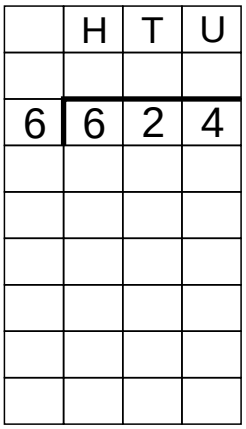


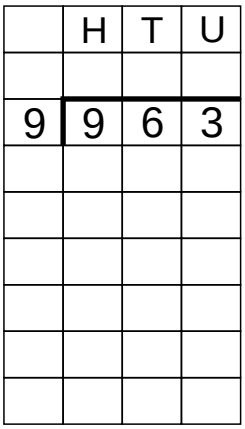




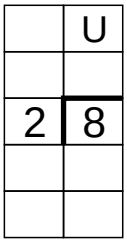


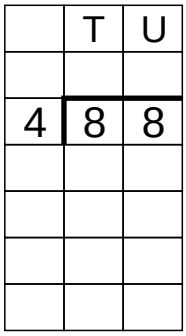


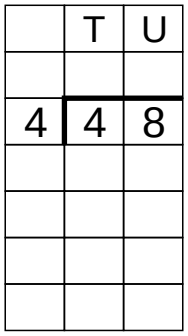


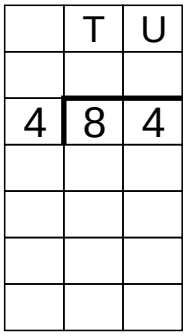


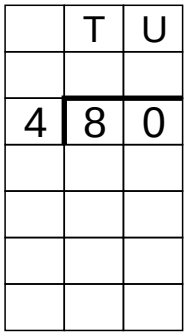
Do the divisions mentally and write. If needed use rods and cubes or notes.

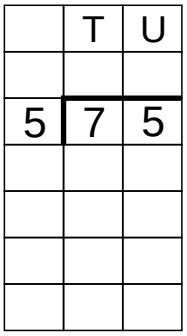


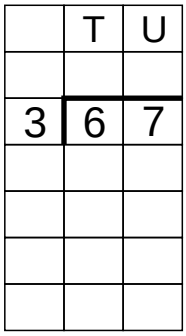


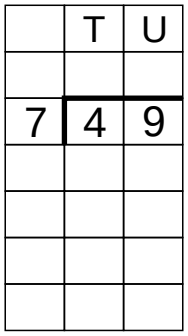


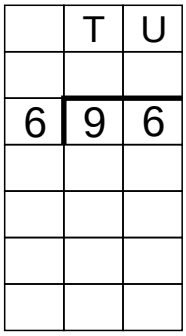


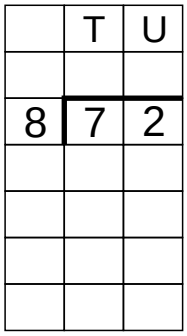


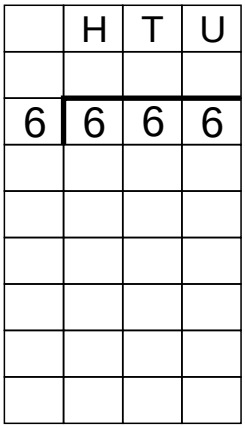


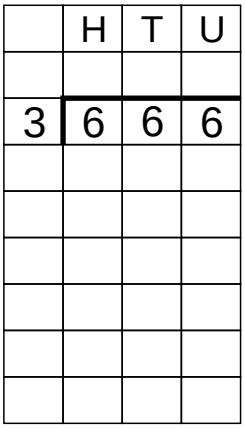


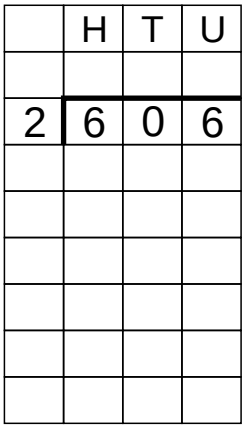


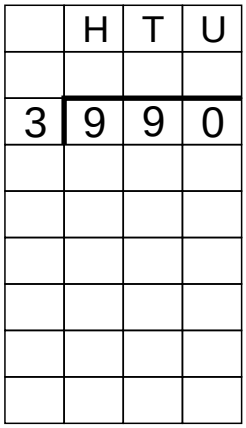


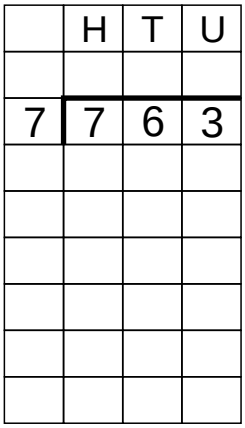


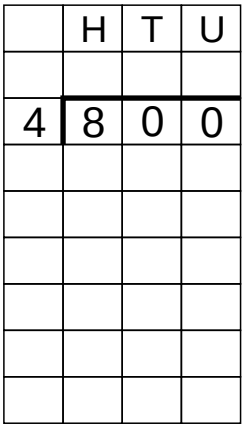


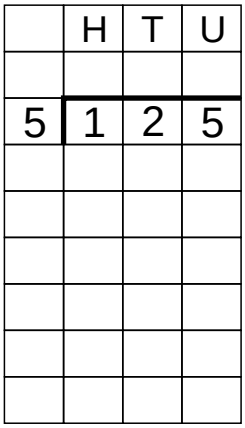


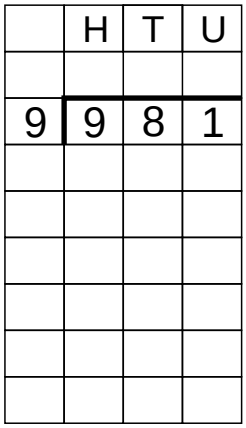












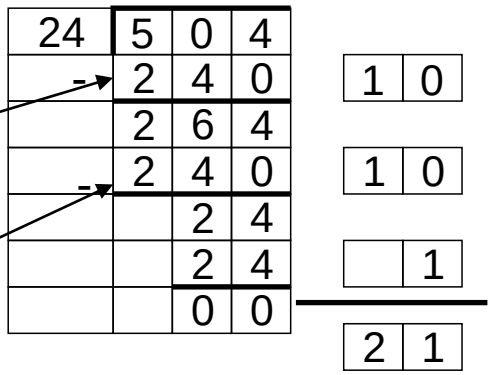
Write the answer.

5 x 10 =	5 x 100 =
5 x 20 =	5 x 200 =
8 x 10 =	8 x 100 =
8 x 20 =	8 x 200 =
10 x 10 =	10 x 100 =
26 x 10 =	26 x 100 =
45 x 10 =	45 x 100 =
72 x 10 =	72 x 100 =
345 x 10 =	345 x 100 =
100 x 1 =	200 x 0 =

Division by Making Portions

This method is useful for dividing by big numbers.

Example: 504 ÷ 24



504 rupees are to be divided among 24 persons.
First we give each 10 rupees.
240 rupees are distributed.
264 rupees remain.
Again we give each 10 rupees.
Again 240 rupees are distributed.
24 rupees remain.
Now we give each 1 rupee. 24 rupees are distributed. No rupees remain.
Each person got 10+10+1 = 24 rupees.
Therefore , 504 ÷ 24 = 21

Do the following divisions by giving 100 or 200 or 10 or 20 or 1 or 2 or 5 rupees each time like in the previous example.

36	7	9	2			

25	6	2	5			

32	7	0	6			

36	1	4	8	8			

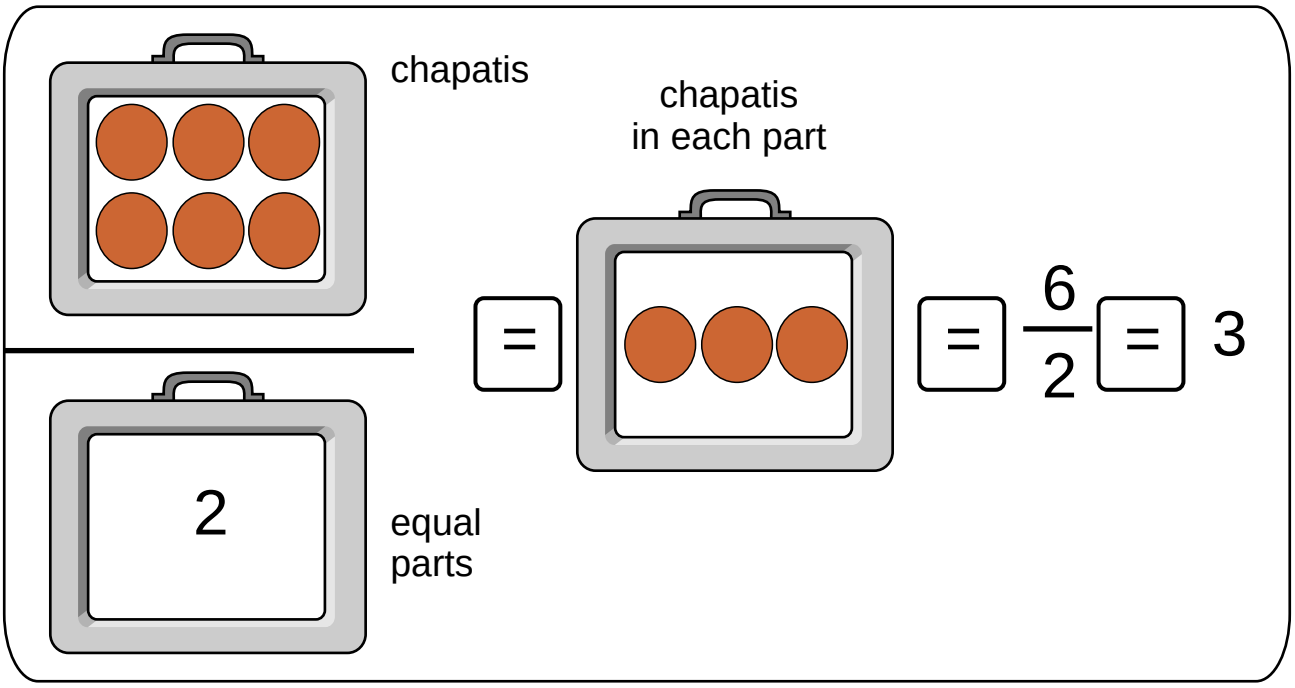
Activity : Make six paper chapatis. Divide 6 chapatis equally between 2 children.

How many did each receive?

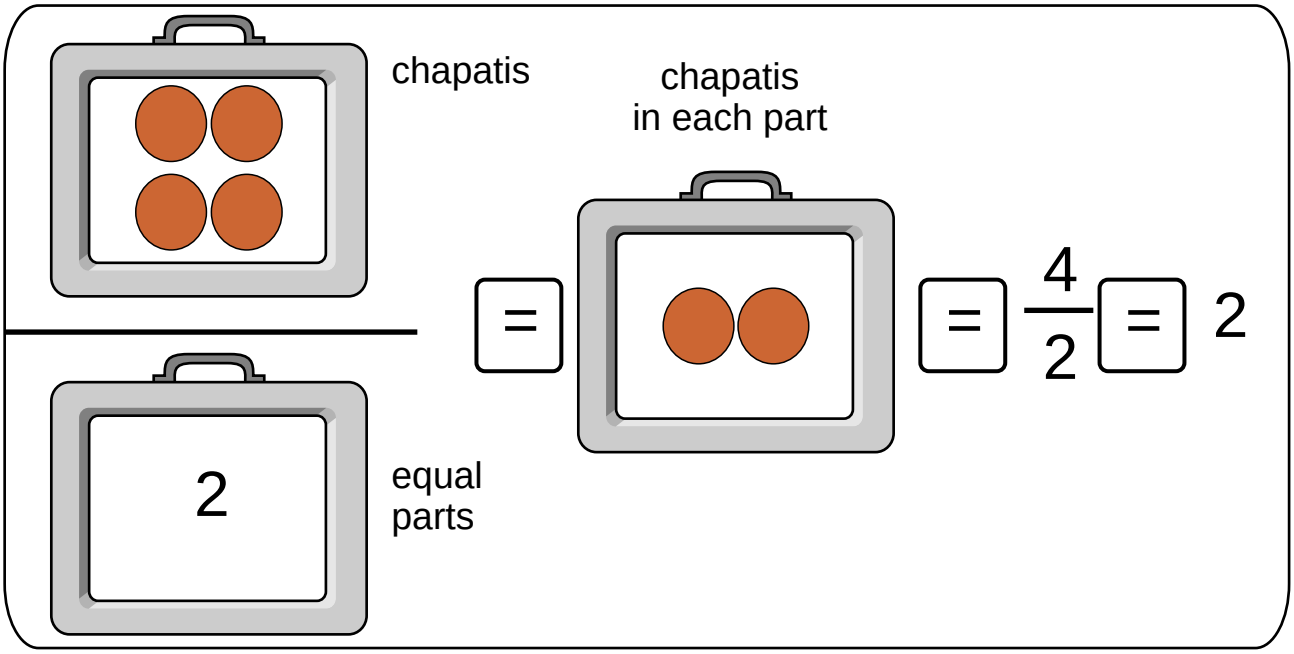
Make a picture of 6 chapatis and how many each received.

We make 2 equal parts of 6 and write this as : $(6 \div 2 = 3)$

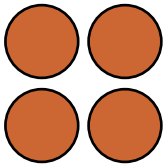
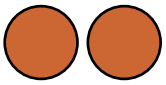
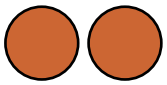
or $\frac{6}{2} = 3$ Six divided by two equals three.



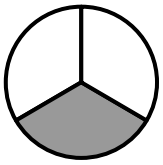
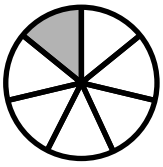
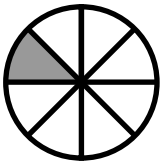
What is four divided by two? $\frac{4}{2}$



Draw the chapatis. Divide into equal parts. Write and draw the answer.

Division	How many to be divided?	How many equal parts?	How many in each part?
$\frac{4}{2}$		2	
$\frac{2}{2}$			
$\frac{1}{2}$			
$\frac{1}{4}$		4	

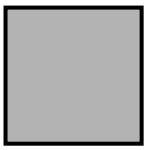
Draw the chapatis. Divide into equal parts. Write and draw the answer.

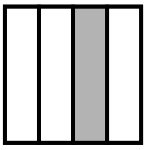
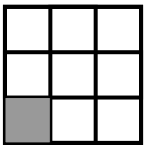
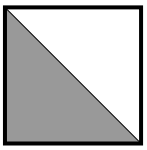
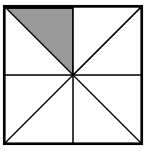
Number	Make equal parts	How many equal parts?	How many in each part?
$\frac{1}{3}$		3	
$\frac{1}{7}$			
$\frac{1}{8}$			

Take pages of the same size from old magazine. Each page is your one whole. Make the following fractions :

$\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{8}$ $\frac{1}{16}$

Write the value of the fraction for each piece. Arrange the pieces in order from small to big. Now make the following fractions and arrange the pieces from small to big. $\frac{1}{3}$ $\frac{1}{6}$ $\frac{1}{9}$ $\frac{1}{12}$

If this is one whole cake,  what fraction is the part coloured?

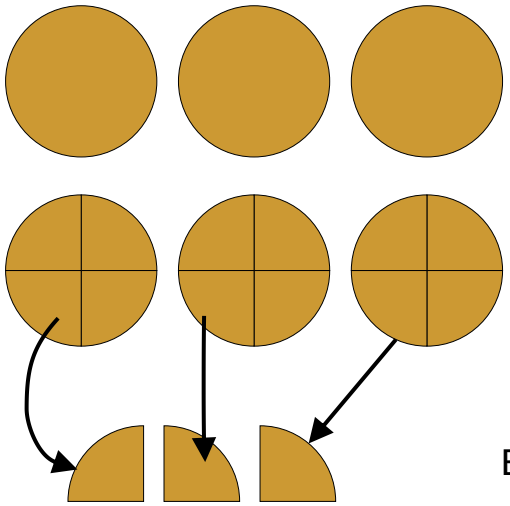
	How many equal parts?	Coloured part as a fraction
		
		
		
		
		

Look at the above pictures and write the fractions in increasing order.

$\frac{1}{2}$ $\frac{1}{9}$ $\frac{1}{8}$ $\frac{1}{3}$ $\frac{1}{4}$	

Understand the following :

$\frac{1}{4} \times 3 =$ 

$3 \div 4 \rightarrow$ 

3 chapatis to be divided equally among 4 persons.

Divide each chapati into four equal parts and give one piece to each.

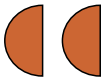
Each got 3 pieces of $\frac{1}{4}$

Therefore, $3 \div 4$ or $\frac{3}{4} = \frac{1}{4} \times 3$

Write as a fraction

$\frac{1}{2} \times 2$	→	$\frac{2}{2}$
$\frac{1}{3} \times 3$	→	
$\frac{1}{6} \times 5$	→	
$\frac{1}{5} \times 7$	→	
$\frac{1}{4} \times 2$	→	

 One chapati divided equally among two persons, each one got 

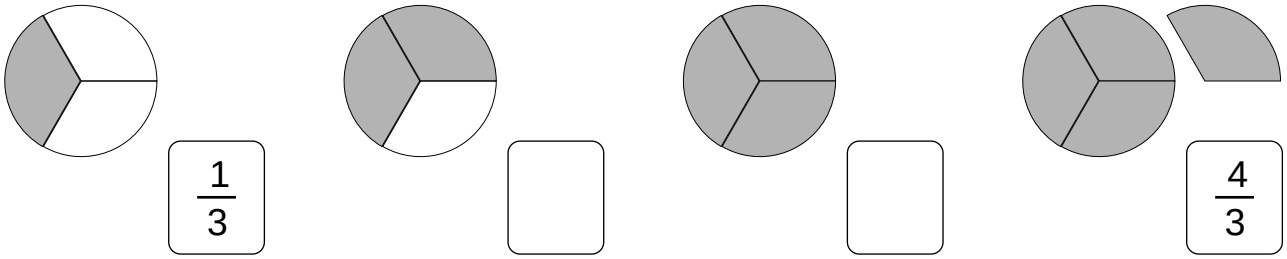
We write this as $\frac{1}{2}$. If we take two such pieces we get 

$$\frac{1}{2} + \frac{1}{2} = \frac{1}{2} \text{ taken 2 times } = \frac{1}{2} \times 2 = \frac{2}{2}$$

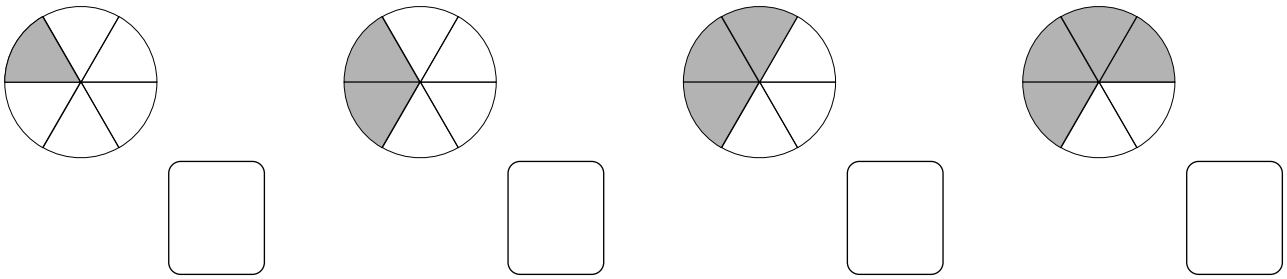
If we take 3 pieces of  we get 

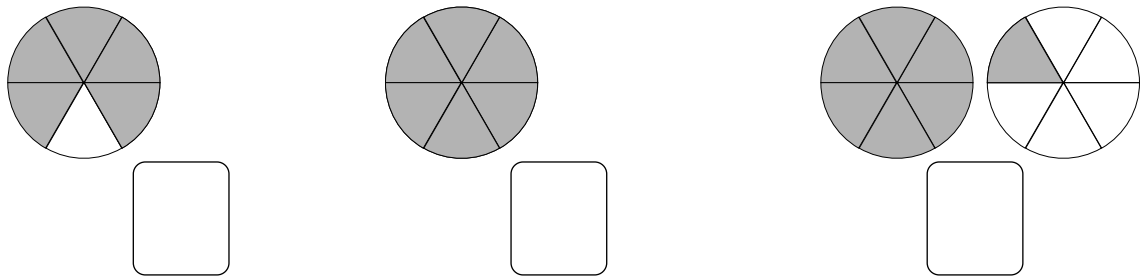
$$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{1}{2} \text{ taken 3 times } = \frac{1}{2} \times 3 = \frac{3}{2}$$

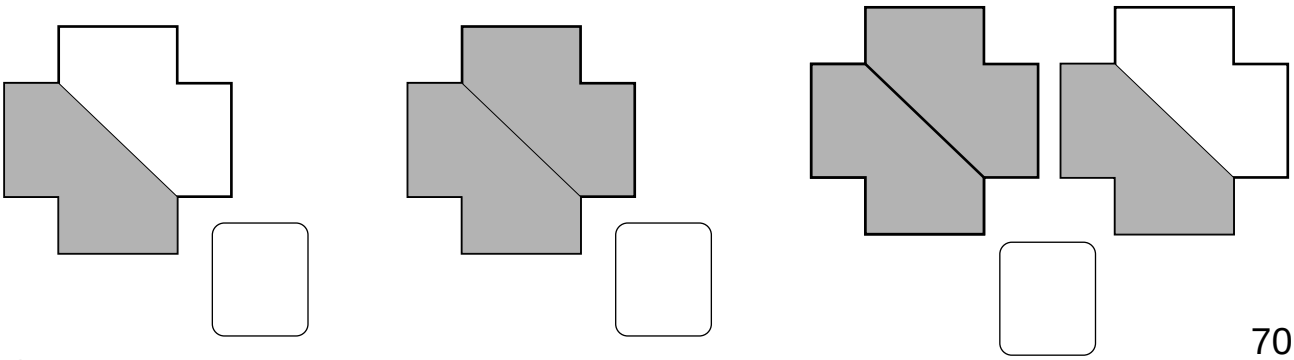
Write the fractions for the coloured portion.



$\frac{1}{3}$ $\frac{4}{3}$







Find the appropriate pieces from the fraction kit and use them to understand and fill the following table. While adding fractions all pieces must be the same size. These are the units of our counting.

As addition	Description	Unit of counting	How many	As multi-plication	Fraction
$\frac{1}{4} + \frac{1}{4} + \frac{1}{4}$	$\frac{1}{4}$, 3 times	$\frac{1}{4}$	3	$\frac{1}{4}$ x 3	$\frac{3}{4}$
	$\frac{1}{5}$, 4 times				
$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$					
				$\frac{1}{6}$ x 2	
					$\frac{5}{7}$
					$\frac{7}{5}$
$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$					
	$\frac{1}{5}$, 4 times				
$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$					
				$\frac{1}{10}$ x 2	
					$\frac{3}{4}$
					$\frac{6}{3}$

Math has many languages

The language of hands and fingers
The language of words
The language of sounds
The language of pictures
The language of things
The language of shapes
The language of patterns
The language of numbers

Math does not have only one language. Therefore it cannot be learnt only through paper, pen or blackboard nor can it be memorized/ learnt by rote.

Universal Active Math method aims at introducing all the languages of math. We will use objects for the language of things, and then for the language of pictures and the language of numbers we will use Math Bridge Course workbook.

Navnirmiti Learning Foundation