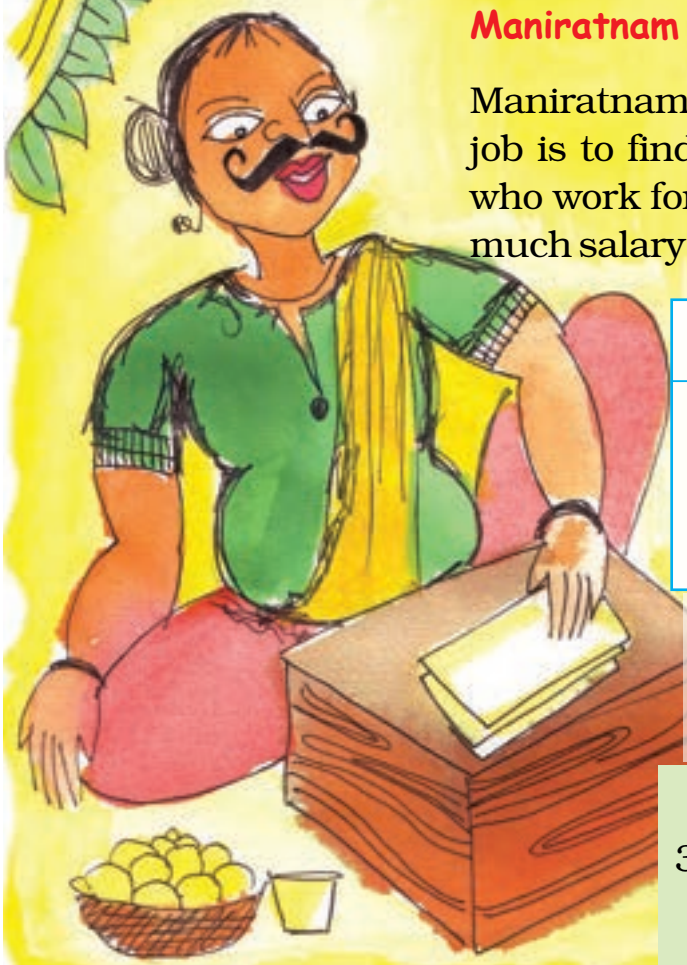
13 Ways to Multiply and Divide

Maniratnam – The Cashier



Maniratnam is the cashier of king Jayan. His job is to find out the salary of all the people who work for the king. This chart shows how much salary each person gets in a day.

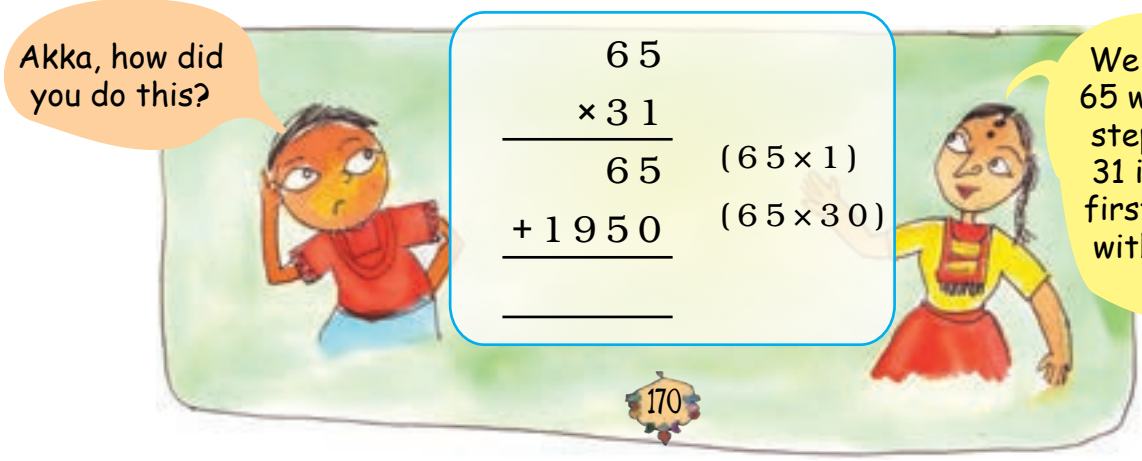
Person	*Salary in a day*
Minister	₹ 195
Horse rider	₹ 76
Cook	₹ 65

Maniratnam wanted to calculate the salary of the cook for the month of January. He wrote —

	60	5
30	60 × 30 **1800**	5 × 30 **150**
1	60 × 1 **60**	5 × 1 **5**

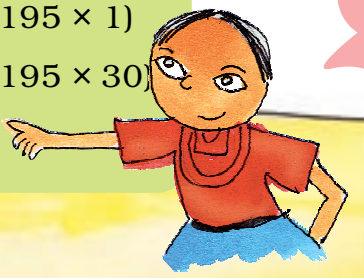
Rupees 1800 + 150 + 60 + 5 = ₹ _____

Maniratnam's daughter Bela has learnt another method to multiply. She wrote like this and showed it to Bhanu, her brother.



Now Bhanu tried to find the salary of a minister for the month of January. He wanted to multiply 195 × 31.

```
  1 9 5
  × 3 1
  -----
  1 9 5     (195 × 1)
+ ___ 0     (195 × 30)
  -----
  -----
```





To multiply by 30 I first write a zero here. Then I only have to multiply by 3.

Practice time

1) Use Bela's method to multiply these numbers.

a) 32 × 46

b) 67 × 18

```
  3 2
  × 4 6
  -----
  1 9 2     (32 × 6)
+ ____      (32 × 40)
  -----
  -----
```

```
  6 7
  × 1 8
  -----
  ___       (67 × 8)
+ 6 7 0     (67 × __)
  -----
  -----
```

2) Do these in your notebook using Bela's method.

a) 47 × 19

b) 188 × 91

c) 63 × 57

d) 225 × 22

e) 360 × 12

f) 163 × 42



Shantaram a Special Cook



❊ Shantaram is a special cook who comes only on party days. Last year he was called for only 28 days. For each day he has to be paid ₹ 165. Find out how much money he will get in all.

❊ If he is called for all days of the year, how much salary will he get?

```
   1 6 5
 × 3 6 5
 -------
   - - -      (165×5)
 - - - -      (165×60)
+4 9 5 0 0    (165×300)
 -------
```

❊ Now find the salaries of the minister and horse rider for 1 year.

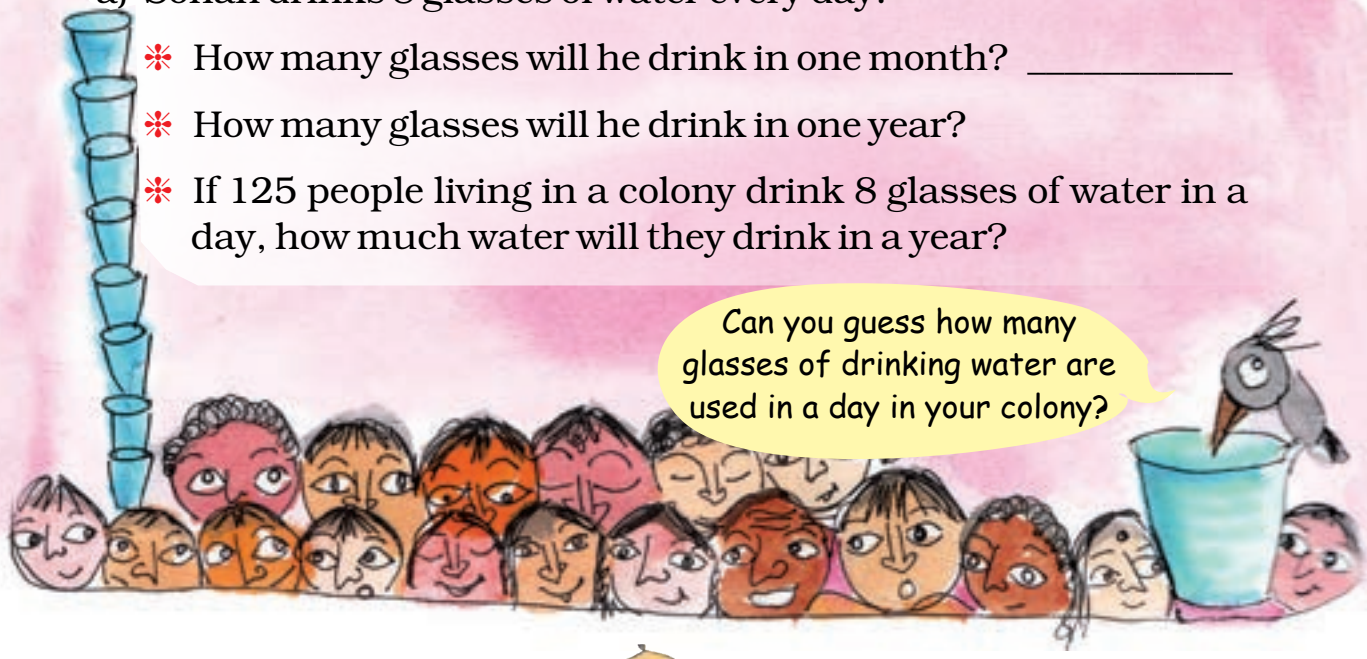
Years and Years

a) Sohan drinks 8 glasses of water every day.

❊ How many glasses will he drink in one month? _____

❊ How many glasses will he drink in one year?

❊ If 125 people living in a colony drink 8 glasses of water in a day, how much water will they drink in a year?



b) If Soha's heart beats 72 times in one minute, how many times does it beat in one hour?



- Now find out how many times it beats in one day.
- Count your own heart beats to find out how many times your heart beats in one week.



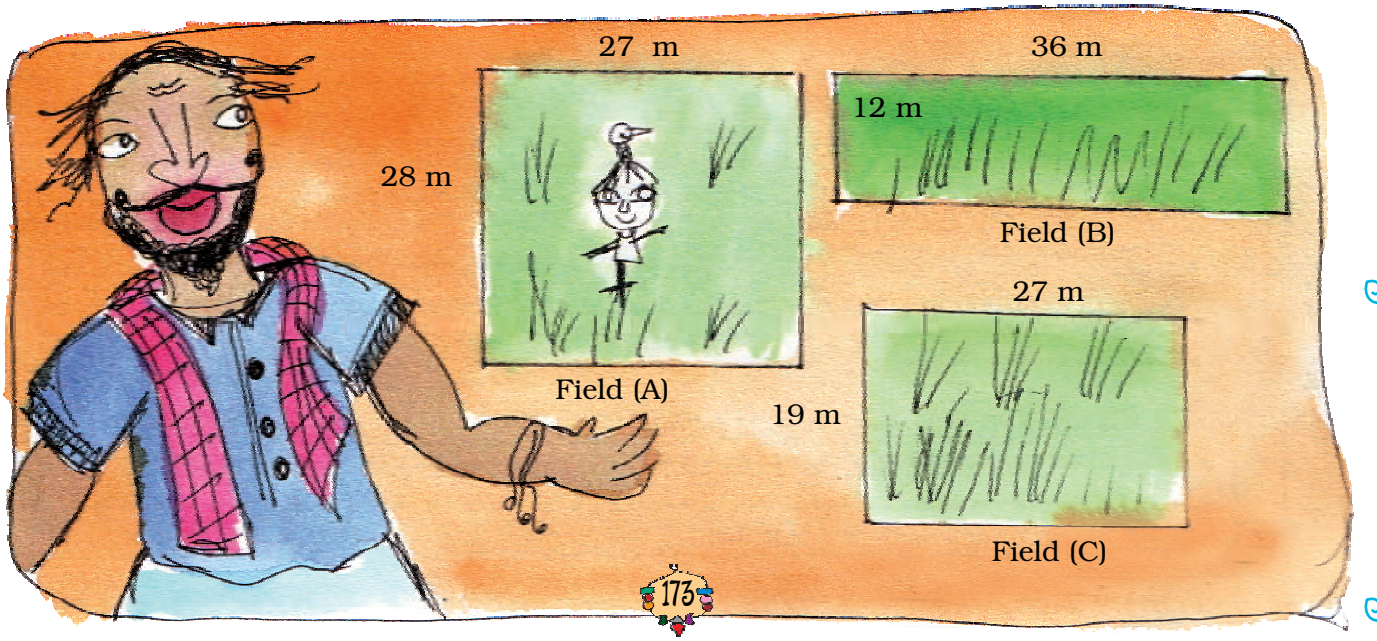
c) A baby elephant drinks around 12 L of milk every day. How much milk will it drink in two years?

d) A baby blue whale drinks around 200 L of milk in one day. Just imagine how much milk that is! Find out in how many days your family would use 200 L milk. How much milk would the baby blue whale drink in eight months?



Karunya — The Landlord

Karunya bought three fields.



❊ Find the area of all the three fields.

Field (A) _____ square metre.

Field (B) _____ square metre.

Field (C) _____ square metre.



He bought field (A) at the rate of ₹ 95 for a square metre, field (B) at ₹ 110 for a square metre and field (C) at ₹ 120 for a square metre.

❊ Find the cost of all three fields.

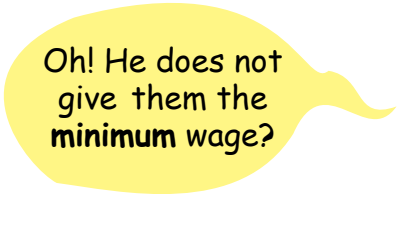


Thulasi and her husband work on Karunya's farm. The Government has said that farm workers should be paid at least ₹ 71 for one day's work. But he pays ₹ 55 to Thulasi and ₹ 58 to her husband.

If Thulasi works for 49 days, how much money does she get? ____

If her husband works for 42 days, how much money does he get? _____

Find the money they earn together _____





I saw this in the newspaper. Governments of different states have said that farmworkers should not be paid less than this salary for a day's work.

State	*Salary for one day*
Haryana	₹ 135
Rajasthan	₹ 73
Madhya Pradesh	₹ 97
Orissa	₹ 75

The table shows the amounts fixed by four states.

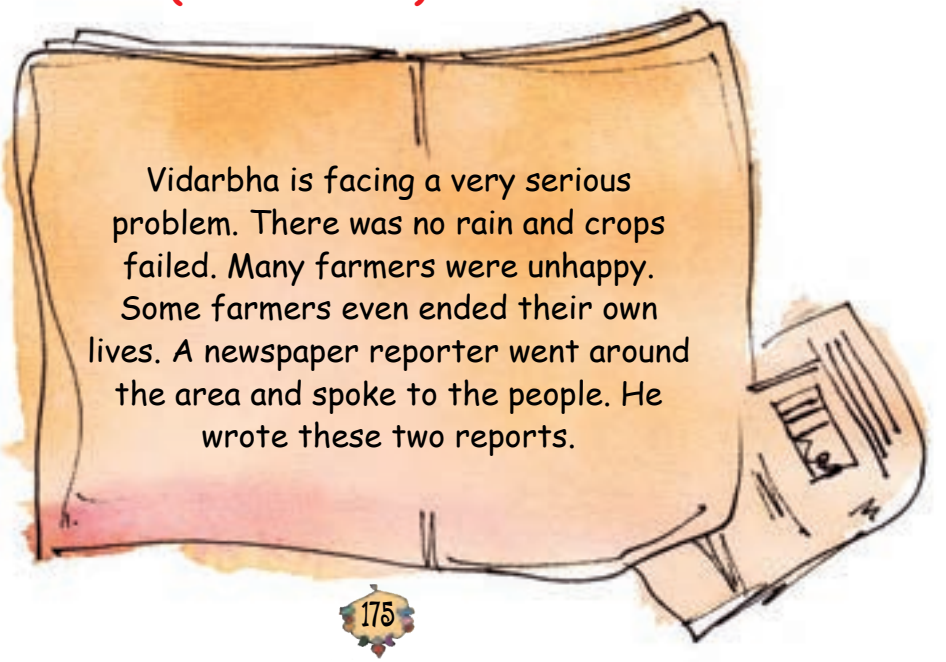
a) For farm work which state has fixed the highest amount? Which state has fixed the lowest?

b) Bhairon Singh is a worker in Rajasthan. If he works for 8 weeks on the farm, how much will he earn?

c) Neelam is a worker in Haryana. If she works for 2½ months on the farm, how much will she earn?

d) How much more will a farm worker in Madhya Pradesh get than a worker in Orissa after working for 9 weeks?

Farmers in Vidarbha (Maharashtra)



Satish's story

Satish is a 13 year old boy. His father had taken a loan for farming. But the crops failed. Now Satish's mother has to pay ₹ 5000 every month for the loan.



Satish started working — he looked after 17 goats of the village.

He earns ₹ 1 everyday for one goat.

- How much will he earn in one month?
- Does he earn enough to help pay the loan every month?
- How much will he earn in one year?

Kamla Bai's story

To help farmers the State Government gave cows. Kamla Bai Gudhe also got a cow. The cost of the cow was ₹ 17,500. She had to pay ₹ 5,500 and the government spent the rest of the money.

- How much did the government spend on the cow?



- If 9 people from her village got cows, how much did the government spend in all?

But Kamla Bai was not happy. She had to spend ₹ 85 everyday on the cow. She made some money by selling the milk. But still she wanted to sell the cow.

- If Kamla Bai spends ₹ 85 a day, find out how much she will spend in one month.
- The cow gives 8 litre of milk everyday. How much will it give in one month?

Find out — how much do you pay for 1 litre of milk?



❊ If the milk is sold at ₹ 9 per litre, how much money will Kamla Bai make in one month?

_____

So the money spent on keeping the cow was ₹ _____

Money earned by selling the milk ₹ _____

Which is more — money spent on the cow or money earned from it? How much?

❊ Explain why she wanted to sell the cow.



Practice time

a) Sukhi works on a farm. He is paid ₹ 98 for one day. If he works for 52 days, how much will he earn?



b) Hariya took a loan to build his house. He has to pay back ₹ 2,750 every month for two years. How much will he pay back in 2 years?



c) Ratiram is a milk seller in the city. He sells 13 litres of milk everyday at ₹ 23 per litre. How much does he earn?



d) A farmer sells 1 litre of milk for ₹ 11. In one month he sells 210 litres of milk. How much does he earn in a month?



e) A company sells 1 litre of packed water for ₹ 12. A shopkeeper buys 240 litres of packed water. How much does he pay?



Oh God! Water costs more than milk!! In the city people buy water for ₹ 12 per litre!

Fun with multiplication

A) Look for the pattern and take this forward.

$(0 \times 9) + 1 = 1$

$(1 \times 9) + 2 = 11$

$(12 \times 9) + 3 = 111$

$(123 \times 9) + 4 =$ _____

$(1234 \times 9) + 5 =$ _____

$(12345 \times 9) + 6 =$ _____



B) Each letter **a, b, c** here stands for a number.

$$\begin{array}{r} aaa \\ \times aaa \\ \hline aaa \\ aaa0 \\ aaa00 \\ \hline abcba \end{array}$$

Take a = 1, then find what the numbers b and c will be.



C) Tricks with your age.

Write your age_____

Multiply it by 7 _____

Again multiply the answer by 13 _____

Multiply again that answer by 11 _____

Now look at your last answer. Can you find your age in that answer? How many times does your age show in the answer?

Now try this trick with other people.

D) Going round and round!



142857 × 1	142857 × 2	142857 × 3	142857 × 4	142857 × 5

Do you find a pattern in all these answers? Discuss this with your friends.

Division

Dolma took a loan from a friend to buy a moped for ₹ 9,588. She has to pay it back in equal amounts every month for six months.



* How much will she have to pay every month? She asked her children to calculate.

Her daughter did it this way.

500 + 500 + 500 + 90 + 8

```
6 | 9588
  -3000
  ----
  6588
  -3000
  ----
  3588
  -3000
  ----
   588
  -540
  ----
    48
   -48
  ----
     ×
```

Her son started this way. Now you complete it.

```
      1000 +
6 | 9588
  -6000
  ----
```

Will both of them get the same answer? Discuss.

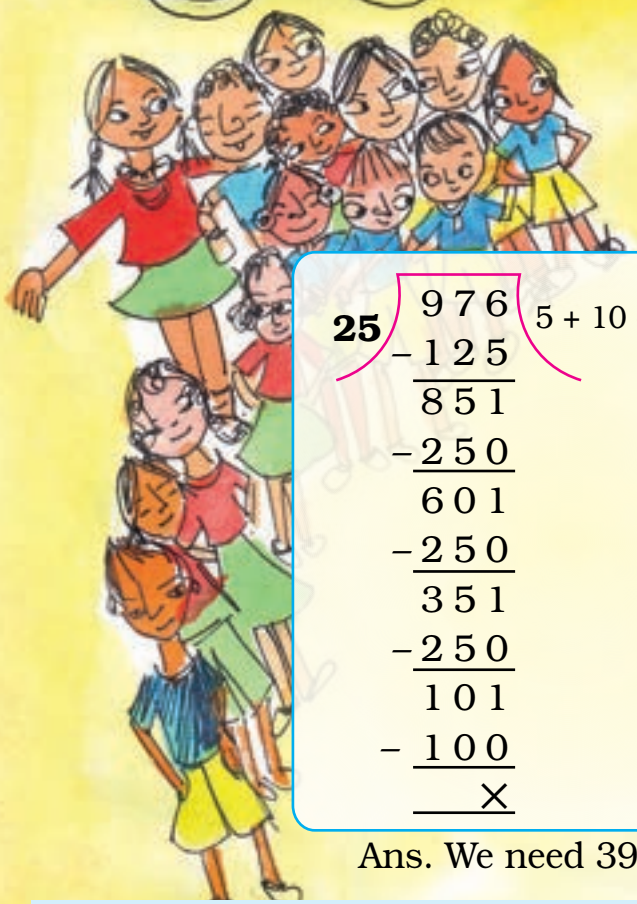
Practice time

Try to solve these using as few steps as you can.

a) $4228 \div 4$ b) $770 \div 22$ c) $9872 \div 8$

d) $672 \div 21$ e) $772 \div 7$ f) $639 \div 13$





How Many Times?

976 children are going on a picnic. They will be taken in mini buses. If 25 children can go in one bus, how many buses do they need?

❊ Two children have solved it. Check if they have made a mistake — correct it. Discuss.

25 | 976 — 5 + 10 + 10 + 10 + 4

−125
851
−250
601
−250
351
−250
101
− 100
×

Ans. We need 39 buses.

25 | 976 — 20 + 10 + 9 + 1

−500
476
−250
226
−215
11

Ans. We need 40 buses.

Giving children the opportunity to find and discuss the errors in these examples will help their own understanding about the different steps for division. In A) a very common error has been given in which children either forget or do not understand the remainder. In B) there is a simple error of multiplication but there is also a more interesting question of whether the child has shown one extra bus for one remaining child.

How Much Petrol?



Isha has ₹ 1000 with her. She wants to buy petrol. One litre of petrol costs ₹ 47. How many litres can she buy?

Money with Isha = ₹ 1000

Cost of 1litre = ₹ 47

Litres of petrol she can buy = ₹ 1000 ÷ ₹ 47 = ?

Isha can buy _____ litres of petrol.

Find out

If Isha comes to your city, how much petrol can she buy with the same money?

Children's Day

Children are happy today. They are celebrating Children's Day. Each child will be given 4 coloured pencils from school. The school has got 969 pencils. To find out how many children can get pencils the teacher asks them to divide.



Iru's Way

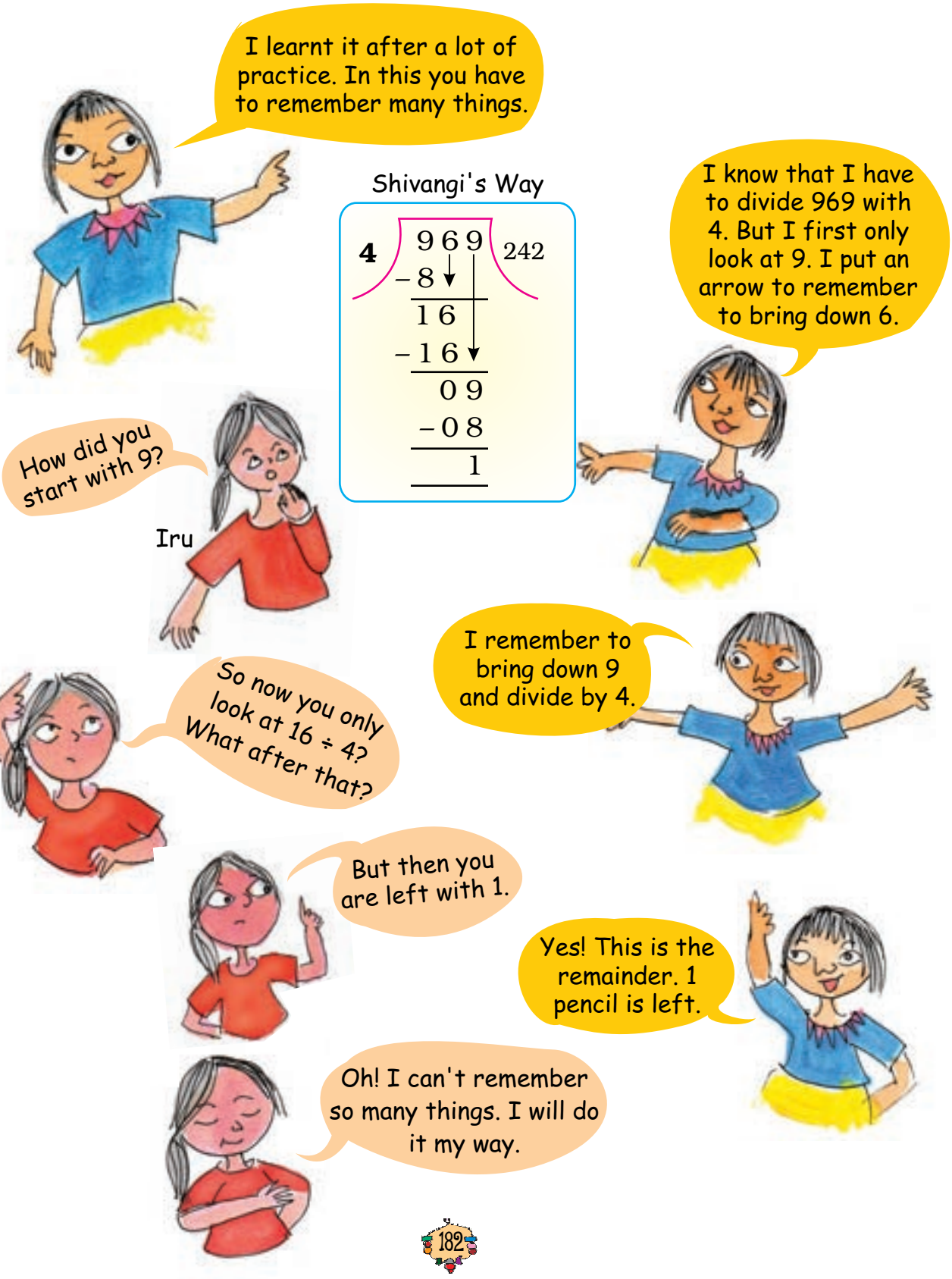
$$\begin{array}{r|l} 4 & 969 \\ -400 & \overline{} \end{array} \quad 100 +$$

Sreeni's Way

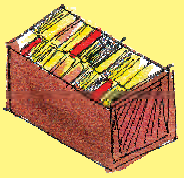
$$\begin{array}{r|l} 4 & 969 \\ - & \overline{} \end{array} \quad 200 +$$

Complete Iru's and Sreeni's way of division. What is the answer you get?

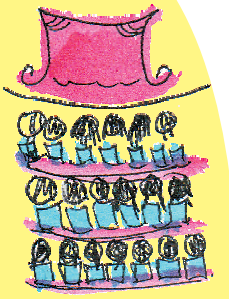
Shivangi did it by a shortcut way.



Practice Time



* 576 books are to be packed in boxes. If one box has 24 books, how many boxes are needed?



* 836 people are watching a movie in a hall. If the hall has 44 rows, how many people can sit in 1 row?

* A gardener bought 458 apple trees. He wants to plant 15 trees in each row. How many rows can he plant?

  How many trees would be left over?





Brain Teaser

* Shyamli bought a battery. She read on it 'Life: 2000 hours'. She uses it throughout the day and the night. How many days will the battery run?

More with Multiplication and Division



* A tank is full of 300 L of water. How much water will be filled in 25 tanks? If 15 buckets can be filled with one tank of water, how many buckets in all can be filled with the water in 25 tanks?



* There are 28 *laddoos* in 1 kg. How many *laddoos* will be there in 12 kg? If 16 *laddoos* can be packed in 1 box, how many boxes are needed to pack all these *laddoos*?

* There are 26 rooms in a school. Each room has 4 plants. If each plant needs 2 cups of water, how much water do we need for all the plants?



Make the Best Story Problem



Each line gives a story. You have to choose the question which makes the best story problem. The first one is already marked.

1) A shopkeeper has 50 boxes. There are 48 fruits in one box.

Tick the one question which matches with the given problem.

a) How much will the shopkeeper pay in all? ☐

b) How many fruits are there in all? ✔

c) How many more boxes will he need? ☐

Explain why (a) and (c) are not good choices.



2) 352 children from a school went on a camping trip. Each tent had a group of 4 children.

a) How many children did each tent have? ☐

b) How many tents do they need? ☐

c) How many children in all are in the school? ☐

3) A shopkeeper has 204 eggs. He puts them in egg trays. Each tray has 12 eggs.

a) How many more eggs will he need? ☐

b) How many fresh eggs does he sell? ☐

c) How many egg trays does he need? ☐



Such exercises will help children understand the strategies to make questions related to the concepts of division and multiplication.

4) The cost of one book is ₹ 47. Sonu buys 23 books.

a) How much money does she have?

b) How much money does she pay for the books?

c) What is the cost of 47 books?





Cross Check for Harisharan

Harisharan wanted to divide ₹ 2,456 amongst his 4 sons. He asked his eldest son to tell him how much money each one will get.



Papa, each of us will get 2456 ÷ 4 = ₹ 624.

When Harisharan started giving ₹ 624 to each son, he was left with less money for the youngest one.



It seems you have made some mistake in the calculations. Let me check.

Harisharan multiplied 624 with 4.

He got = ₹ 2,496.



Hum! This shows you have done the division wrong.



The son did the division again 2456 ÷ 4 = 614.

Before telling his father he checked on his own.

614 × 4 = 2456. Now, it is correct. Each one will get ₹ 614.

Practice Time

1) Do these divisions. Check your results by multiplication.

a) 438 ÷ 9

b) 3480 ÷ 12

c) 450 ÷ 7

d) 900 ÷ 10

e) 678 ÷ 6

f) 2475 ÷ 11



2) Solve the given sums and colour the answers in the grid given below. See what you find.

21 × 16	15 × 7	93 × 2	17 × 5	10 × 10	
26 × 26	77 × 10	50 × 10	11 × 11	59 × 7	31 × 19
85 × 30	64 × 42	3200 ÷ 40	19 × 3	248 ÷ 8	
432 ÷ 18	729 ÷ 9	825 ÷ 5	221 ÷ 13	576 ÷ 12	
288 ÷ 4	869 ÷ 11	847 ÷ 7	981 ÷ 3	475 ÷ 19	





545	110	434	642	709	623	919	341	12	168
984	16	561	608	236	413	529	62	259	905
709	907	367	632	336	121	492	178	431	25
166	806	584	186	100	589	72	717	248	676
624	82	105	24	165	17	85	770	327	500
247	997	485	2688	81	80	48	901	126	121
742	427	756	531	79	2550	347	1001	314	57
945	1000	687	854	1200	31	124	3126	918	53
109	799	845	1999	864	955	123	1234	678	56
549	459	614	1864	834	559	900	1111	268	171