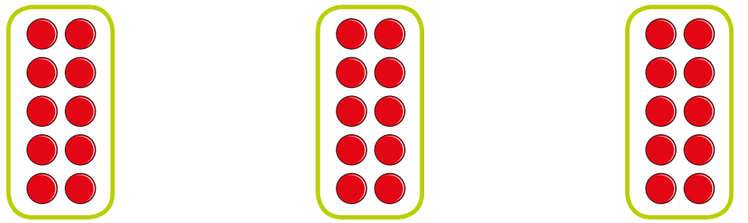
Multiply 3 numbers

1 Tommy is making arrays using counters.

a) Complete the multiplications.



$2 \times 5 =$ 10 $2 \times 5 =$ 10 $2 \times 5 =$ 10

b) Use your answer to part a) to complete the multiplication.

$3 \times 2 \times 5 =$ 6 $\times 5 =$ 30

2 Use counters or cubes to complete the calculations.

a) $2 \times 4 \times 5 =$ 40

b) $3 \times 5 \times 4 =$ 60

c) $2 \times 5 \times 8 =$ 80

Is there a quick way to complete each calculation?

Talk about it with a partner.

3 Complete the multiplications.

a) $3 \times 4 \times 5 =$ 60

b) $2 \times 3 \times 8 =$ 48

c) $2 \times 4 \times 7 =$ 56

d) $3 \times 5 \times 4 =$ 60

e) $3 \times 6 \times 10 =$ 180

f) $2 \times 5 \times 12 =$ 120

4 Is each statement true or false?

Tick your answers.

	True	False
$7 \times 8 = 7 \times 4 \times 2$	✓	
$12 \times 4 = 2 \times 4 \times 6$	✓	
$3 \times 2 \times 8 = 5 \times 8$		✓
$2 \times 7 \times 4 = 4 \times 7 \times 2$	✓	

Compare answers with a partner.

5 Here are some digit cards. 3 5 6

a) Use the digit cards to create a multiplication and work out the answer.

3 × 5 × 6 = 90

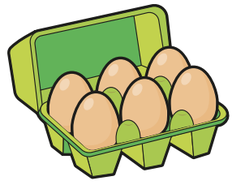
b) How many different multiplications can you create?

What do you notice about all of your answers?

6 Eggs are put in boxes in arrays of 2 × 3

Dani buys 12 boxes.

How many eggs does she buy altogether?



72

Dani buys 5 more boxes.

How many eggs does she have now?

102

7 **a)** Write 30 as the product of 3 numbers.

2 × 3 × 5 = 30

b) How many different ways can you write the multiplication?

E.g. 1 × 6 × 5 = 30

3 × 1 × 10 = 30

8 Kim rolls three 6-sided dice.

The product of her numbers is 60

a) What numbers could she have rolled?

E.g. 2, 5, 6

b) How many different ways could Kim have made 60?
Talk about it with a partner.

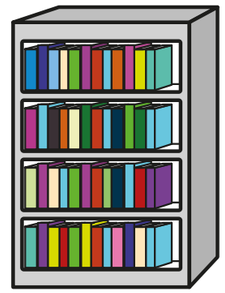
c) Roll three dice and find the product of the numbers you roll.

9 In the library there are 5 bookcases.

Each bookcase has 4 shelves.

On each shelf there are 12 books.

How many books are there in the library?



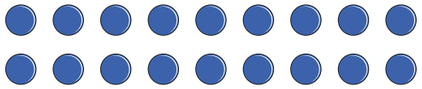
240

Factor pairs

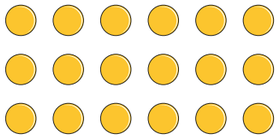
1 Alex is making arrays using counters.

a) What calculation is represented in each array?

□ × □ = 18



□ × □ = 18



□ × □ = 18

b) Use your answers from part a) to help you write all the factors of 18

_____

2 Use counters to make arrays and find the factor pairs for each number.

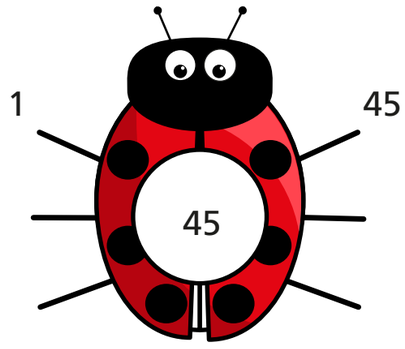
a) 12 _____

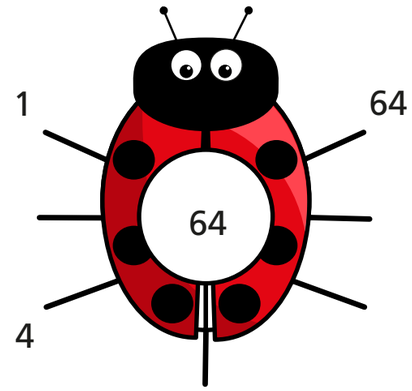
b) 15 _____

c) 24 _____

Which of the numbers has the most factor pairs? _____

3 Complete the factor bugs for 45 and 64





4 Find all the factor pairs for the number 72

The factor pairs of 72 are _____

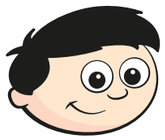
_____

5 Are these statements true or false?

	True	False
8 and 2 are both factors of 10	☐	☑
5 and 50 are both factors of 50	☑	☐
25 has only three factors.	☑	☐
All the factors of 15 are odd.	☑	☐

Talk about your answers with a partner.

6



The bigger the number the more factor pairs it has.

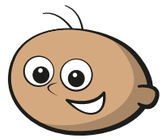
Use examples to show that Dexter is wrong.

E.g. 4 has 3 factors (1, 2, 4)

and 5 only has 2 (1, 5)

7 Tommy is finding factors of 12 and 18

12 and 18 have the same number of factor pairs.



a) Is Tommy correct? Yes

Explain your answer.

They both have 3 factor pairs and so 6 factors.

b) Find two other numbers with the same number of factor pairs.

E.g. 32 and 50

8 Class 4B is having a sports day.

There are 36 children in the class.

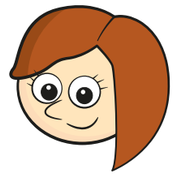
The children need to be in equal groups.

What group sizes are possible?

E.g. 36 groups of 1, 18 groups of 2 etc.

9 Rosie is investigating factor pairs.

6 is a perfect number because when you add its factors together, apart from itself, they equal 6



What is the next perfect number after 6?

28

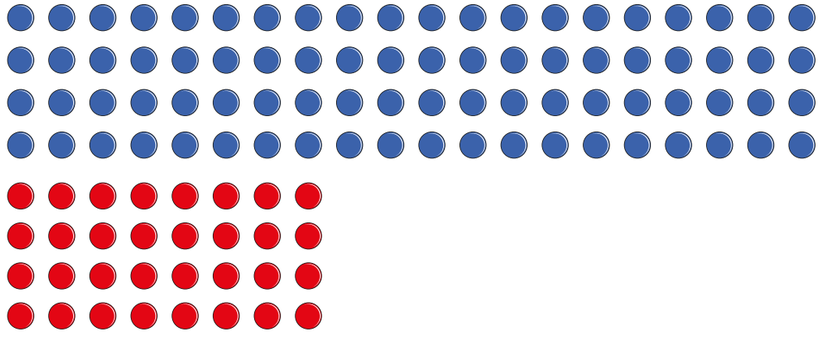
Efficient multiplication

1 Class 4 are multiplying 28 × 4 mentally.

They are trying two different methods.

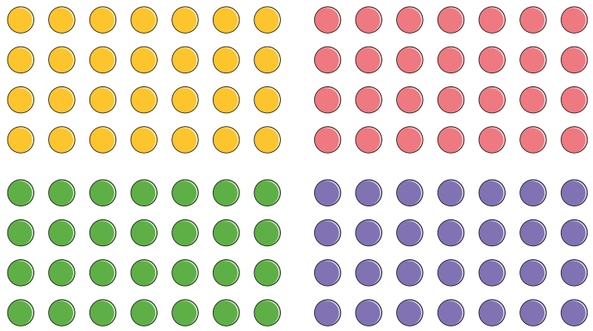
a) Complete their calculations.

Method 1



20 × 4 + 8 × 4 = 80 + 32 = 112

Method 2



4 × 28 = 112

b) Which method do you find easier?

Talk about it with a partner.

c) What other methods could you use to work out 28 × 4?

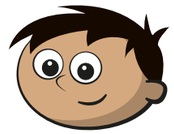
E.g. (4 × 30) − (4 × 2)

2 Mo, Amir and Annie worked out 35 × 6 in 3 different ways.

Mo

I multiplied 30 by 6 and then added 5 more lots of 6

I multiplied 35 by 2, then multiplied that answer by 3



Amir

Annie

I multiplied 5 by 6, then multiplied that answer by 7

a) Work out the answer using each method to show that they are all correct.

Mo

30 × 6 = 180

5 × 6 = 30

180 + 30 = 210

Amir

35 × 2 = 70

70 × 3 = 210

Annie

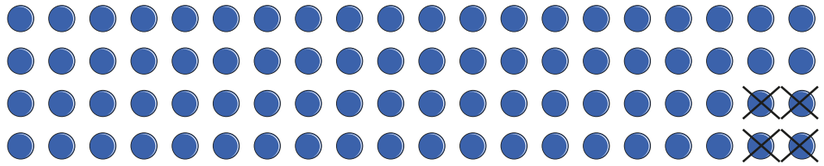
5 × 6 = 30

30 × 7 = 210

b) Who has used the most efficient method?

Talk about it with a partner.

3 Scott is working out 21 × 4



20 × 4 = 80
80 − 4 = 76
21 × 4 = 76

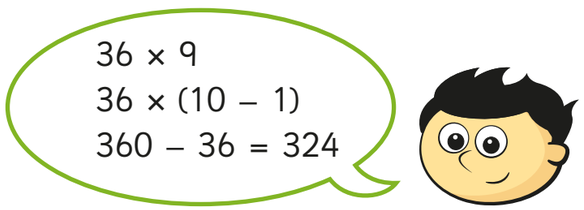
a) What mistake has Scott made?

He has taken 4 he should have added it.

b) What is the correct answer?

84

4 Jack works out 36 × 9



Adapt Jack's method to work out 36 × 99

36 × 99 = 3,564

5 Esther has found a quick way to multiply 84 by 5

84 × 5
84 × 10 = 840
(then divide by 2) which is 420

Use Esther's method to complete the calculations.

43 × 5 = 215

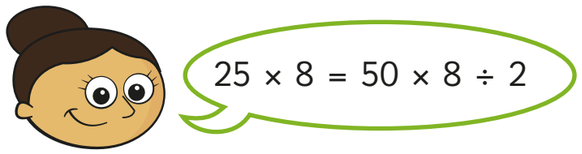
74 × 5 = 370

62 × 5 = 310

6 Tommy and Dora are both working out 25 × 8

a) Use Tommy's method to work out the answer.

200



b) Use Dora's method to work out the answer.

200

c) Whose method do you prefer? Why?

Various answers.

d) Do you know another method?

Written methods

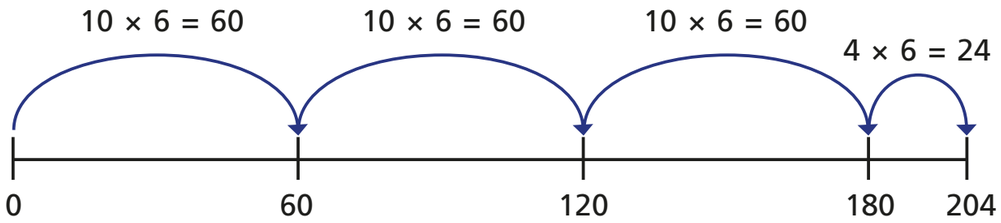
1 Dora uses base 10 to work out 34 × 3

Tens	Ones
	
	
	

Use base 10 to work out 3 × 28 and 3 × 36

3 × 28 = ☐ 3 × 36 = ☐

2 Class 4 are using number lines to solve 6 × 34



a) Talk about Class 4's method with a partner.

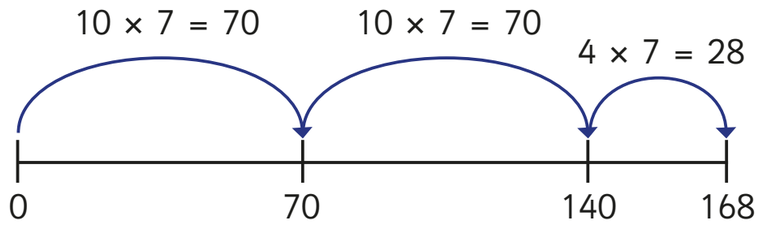
b) Use a number line to complete the multiplications.

5 × 32 = ☐

7 × 32 = ☐

4 × 56 = ☐

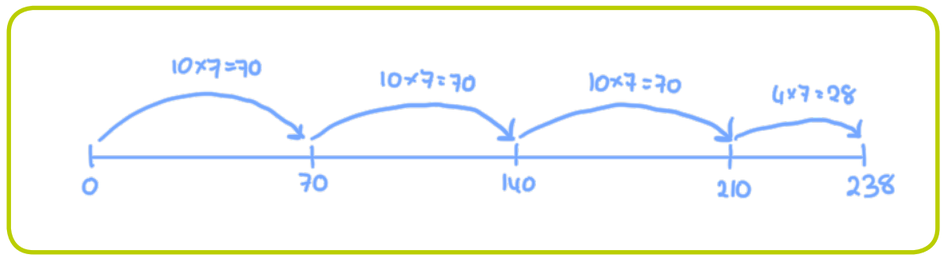
3 Mo uses a number line to work out 7 × 34



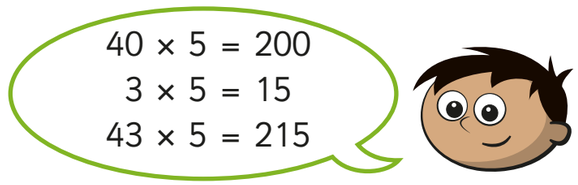
What mistake has Mo made?

Talk about it with a partner.

What should the number line look like? Draw it here.



4 Amir is working out 43 × 5



a) Talk about Amir's method with a partner.

b) Use Amir's method to complete the multiplications.

32 × 6 = 192

7 × 31 = 217

8 × 42 = 336

5 A farmer is calculating the number of sheep on her farm.

She has 6 fields.

Each field has 35 sheep.

Use a written method to work out how many sheep there are altogether.

210

6 Here are 6 multiplications.

A	B	C	D	E	F
4 × 59	3 × 33	5 × 36	9 × 32	7 × 21	6 × 25

Which of the multiplications would you calculate mentally?

Various answers

Which of the multiplications would you use a written method for?

Various answers

Talk about your choices with a partner.

Complete the multiplications. Show your working where necessary.

4 × 59 = 236

3 × 33 = 99

5 × 36 = 180

9 × 32 = 288

7 × 21 = 147

6 × 25 = 150

Multiply 2-digits by 1-digit (1)

1 Ron, Eva and Mo each have 23 marbles.

Tens	Ones
10 10	
10 10	
10 10	

How many marbles are there in total?

3 × 3 ones = 9

3 × 2 tens = 60

9 + 60 = 69

3 × 23 = 69

There are 69 marbles in total.

2 Use the place value chart to work out 2 × 24

Complete the multiplication sentences.

Tens	Ones
10 10	1 1 1 1
10 10	1 1 1 1

2 × 4 = 8

2 × 20 = 40

2 × 24 = 48

3 Annie works out 43 × 2 = 86

Tens	Ones
10 10 10 10	1 1 1
10 10 10 10	1 1 1

	T	O
	4	3
×		2
	8	6

Talk about Annie's methods with a partner.

What is the same? What is different?

4 Complete the multiplications.

a)

	T	O
	2	4
×		2
	4	8

b)

	T	O
	4	4
×		2
	8	8

c) 31 × 3

		T	O	
		3	1	
	×		3	
		9	3	

d) 42 × 2

		T	O	
		4	2	
	×		2	
		8	4	

Compare answers with a partner.

5 Jack is trying to work out 34 × 2 using the column method.

I'm not sure what to do.

			2	
	×	3	4	

Show how Jack could improve his column method and work out the answer.

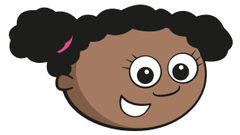
		3	4	
	×		2	
		6	8	

6 One toaster costs £32

How much do 3 toasters cost?

£96

7 Whitney has multiplied a 2-digit number by a 1-digit number.



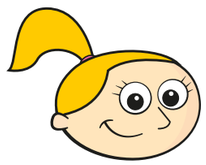
I had to do 30 + 9 = 39 to get my answer.

What numbers is Whitney multiplying?

Fill in the missing digits.

		1	3	
	×		3	
		3	9	

8 Filip used the column method to work out 41 × 2



I can work this multiplication out in my head.

		4	1	
	×		2	

a) How do you think Eva will work this out in her head?

b) Tick the multiplications that you can work out in your head. Various answers.

4 × 22	3 × 23	3 × 33
12 × 4	3 × 32	4 × 20