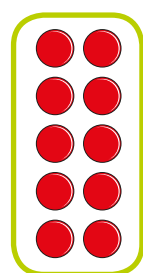


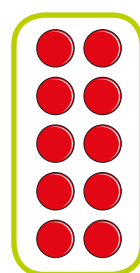
Multiply 3 numbers

1 Tommy is making arrays using counters.

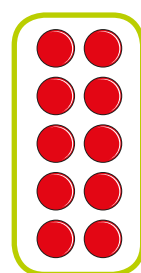
a) Complete the multiplications.



$$2 \times 5 = \square$$



$$2 \times 5 = \square$$



$$2 \times 5 = \square$$

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

$$3 \times 2 \times 5 = \square \times 5 = \square$$

2 Use counters or cubes to complete the calculations.

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

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

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

Is there a quick way to complete each calculation?

Talk about it with a partner.



3 Complete the multiplications.

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

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

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

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

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

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

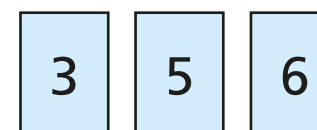
4 Is each statement true or false?

Tick your answers.

| | True | False |
|---|--------------------------|--------------------------|
| $7 \times 8 = 7 \times 4 \times 2$ | <input type="checkbox"/> | <input type="checkbox"/> |
| $12 \times 4 = 2 \times 4 \times 6$ | <input type="checkbox"/> | <input type="checkbox"/> |
| $3 \times 2 \times 8 = 5 \times 8$ | <input type="checkbox"/> | <input type="checkbox"/> |
| $2 \times 7 \times 4 = 4 \times 7 \times 2$ | <input type="checkbox"/> | <input type="checkbox"/> |

Compare answers with a partner.

5 Here are some digit cards.



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

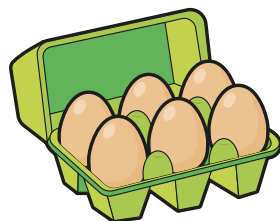
$$\square \times \square \times \square = \square$$

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?



Dani buys 5 more boxes.
 How many eggs does she have now?

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

$$\square \times \square \times \square = 30$$

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



- 8 Kim rolls three 6-sided dice.
 The product of her numbers is 60
 a) What numbers could she have rolled?

- 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?

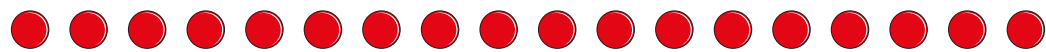




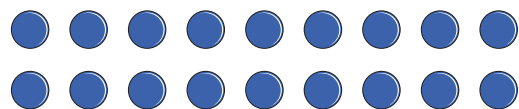
Factor pairs

1 Alex is making arrays using counters.

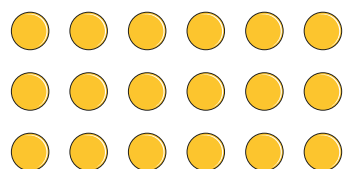
a) What calculation is represented in each array?



$$\square \times \square = 18$$



$$\square \times \square = 18$$



$$\square \times \square = 18$$

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.

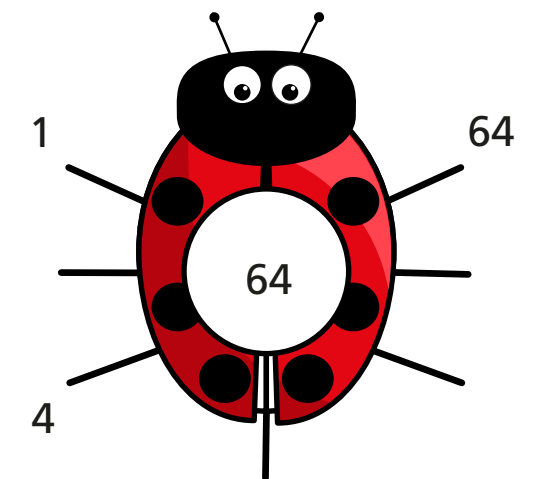
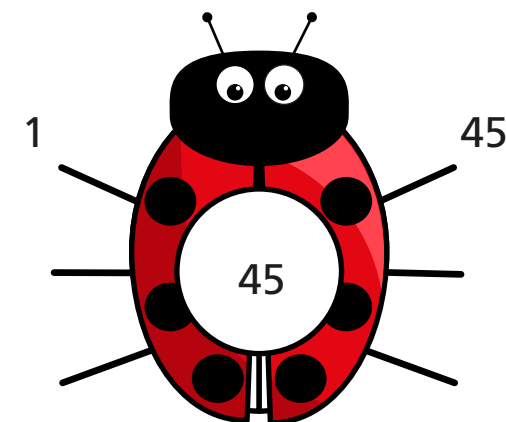
a) 12 _____

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

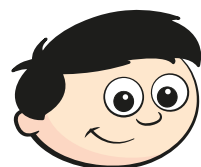
The factor pairs of 72 are _____

5 Are these statements true or false?

| | True | False |
|---------------------------------|--------------------------|--------------------------|
| 8 and 2 are both factors of 10 | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 and 50 are both factors of 50 | <input type="checkbox"/> | <input type="checkbox"/> |
| 25 has only three factors. | <input type="checkbox"/> | <input type="checkbox"/> |
| All the factors of 15 are odd. | <input type="checkbox"/> | <input type="checkbox"/> |

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.

7 Tommy is finding factors of 12 and 18

12 and 18
have the same number
of factor pairs.



a) Is Tommy correct? _____

Explain your answer.



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

8

Class 4B is having a sports day.

There are 36 children in the class.

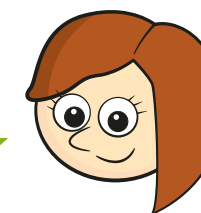
The children need to be in equal groups.

What group sizes are possible?

9

Rosie is investigating factor pairs.

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



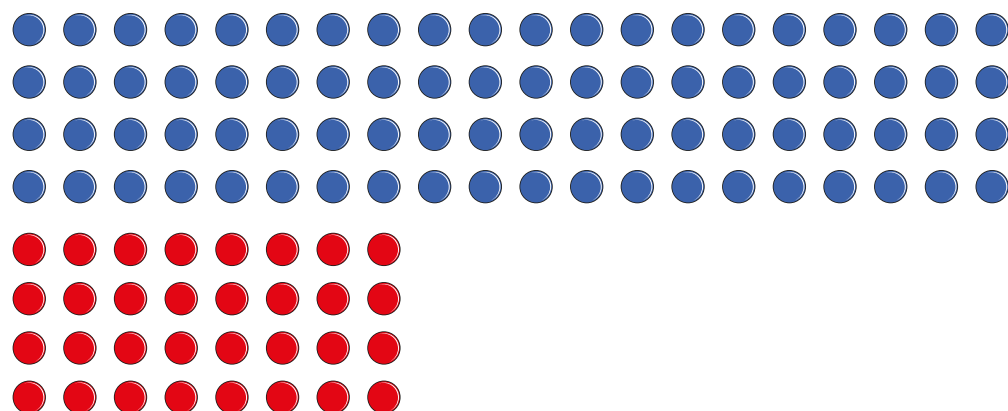
What is the next perfect number after 6?

Efficient multiplication

- 1 Class 4 are multiplying 28×4 mentally.
They are trying two different methods.

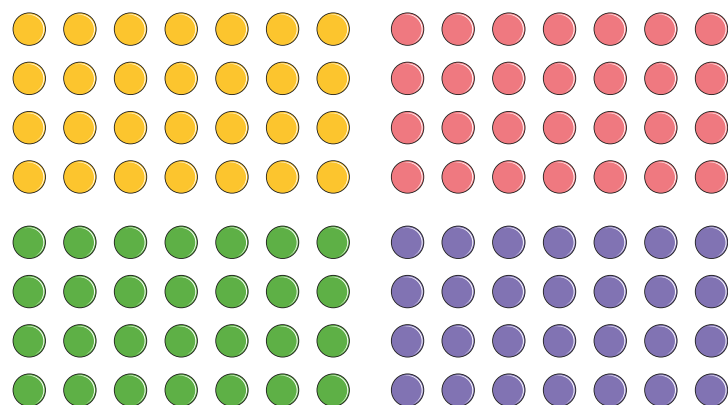
a) Complete their calculations.

Method 1



$$20 \times 4 + 8 \times 4 = \boxed{} + \boxed{} = \boxed{}$$

Method 2



$$4 \times \boxed{} = \boxed{}$$

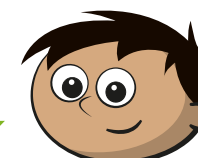
- b) Which method do you find easier?
Talk about it with a partner.
- c) What other methods could you use to work out 28×4 ?

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



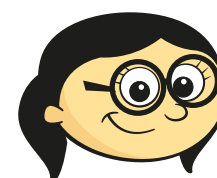
Mo

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



Amir

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



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.

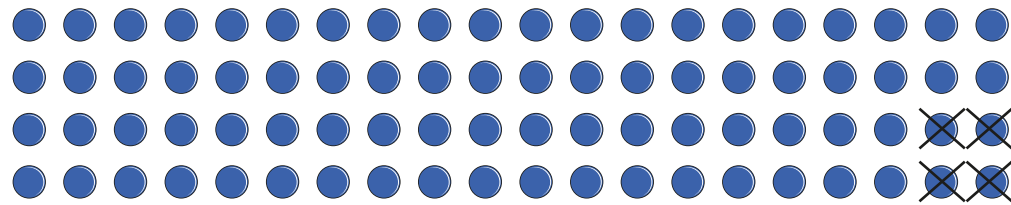
Mo

Amir

Annie

- b) Who has used the most efficient method?
Talk about it with a partner.

- 3 Scott is working out 21×4



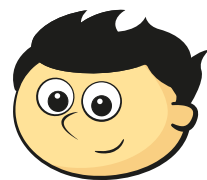
$$\begin{aligned} 20 \times 4 &= 80 \\ 80 - 4 &= 76 \\ 21 \times 4 &= 76 \end{aligned}$$

- a) What mistake has Scott made?

- b) What is the correct answer?

- 4 Jack works out 36×9

$$\begin{aligned} 36 \times 9 \\ 36 \times (10 - 1) \\ 360 - 36 &= 324 \end{aligned}$$



Adapt Jack's method to work out 36×99

$$36 \times 99 = \boxed{}$$

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

$$\begin{aligned} 84 \times 5 \\ 84 \times 10 &= 840 \\ \text{(then divide by 2) which is } 420 \end{aligned}$$

Use Esther's method to complete the calculations.

$$43 \times 5 = \boxed{}$$

$$74 \times 5 = \boxed{}$$

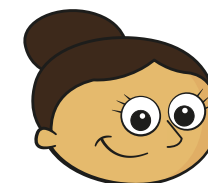
$$62 \times 5 = \boxed{}$$

- 6 Tommy and Dora are both working out 25×8

$$25 \times 8 = 25 \times 10 - 25 \times 2$$



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



$$25 \times 8 = 50 \times 8 \div 2$$

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







- c) Whose method do you prefer? Why?

- d) Do you know another method?

Written methods



1 Dora uses base 10 to work out 34×3

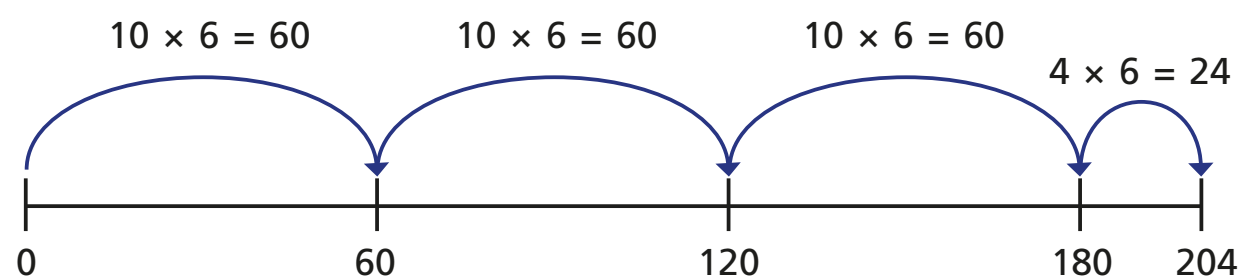
| Tens | Ones |
|---|--|
|  |  |
|  |  |
|  |  |

Use base 10 to work out 3×28 and 3×36

$$3 \times 28 = \boxed{} \quad 3 \times 36 = \boxed{}$$



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.

$$5 \times 32 = \boxed{}$$



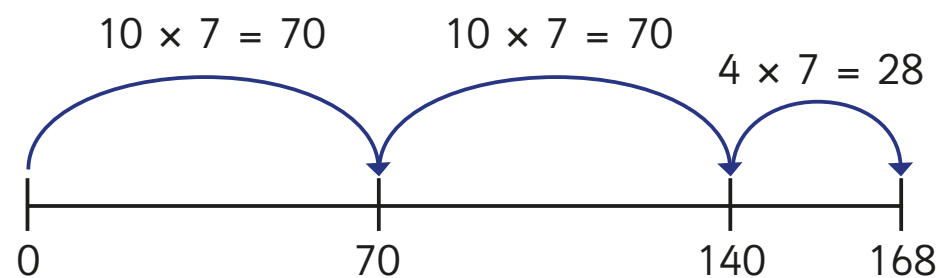
$$7 \times 32 = \boxed{}$$



$$4 \times 56 = \boxed{}$$



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



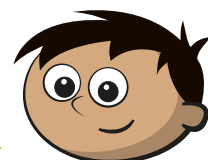
What mistake has Mo made?

Talk about it with a partner.

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

- 4 Amir is working out 43×5

$$\begin{aligned} 40 \times 5 &= 200 \\ 3 \times 5 &= 15 \\ 43 \times 5 &= 215 \end{aligned}$$



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

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

$32 \times 6 = \boxed{}$

$7 \times 31 = \boxed{}$

$8 \times 42 = \boxed{}$

- 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.

- 6 Here are 6 multiplications.

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

Which of the multiplications would you calculate mentally?

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

Talk about your choices with a partner.

Complete the multiplications. Show your working where necessary.

$4 \times 59 = \boxed{}$

$9 \times 32 = \boxed{}$

$3 \times 33 = \boxed{}$

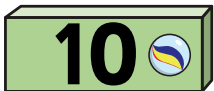







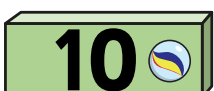



$7 \times 21 = \boxed{}$

$5 \times 36 = \boxed{}$

$6 \times 25 = \boxed{}$

Multiply 2-digits by 1-digit (1)

- 1 Ron, Eva and Mo each have 23 marbles.

| Tens | Ones |
|---|--|
|   |    |
|   |    |
|   |    |

How many marbles are there in total?

$$3 \times 3 \text{ ones} = \square$$

$$3 \times 2 \text{ tens} = \square$$













$$\square + \square = \square$$

$$3 \times 23 = \square$$

There are \square marbles in total.



- 2 Use the place value chart to work out 2×24
Complete the multiplication sentences.















| Tens | Ones |
|---|---|
|   |     |
|   |     |

$$2 \times 4 = \square$$

$$2 \times 20 = \square$$

$$2 \times 24 = \square$$

- 3 Annie works out $43 \times 2 = 86$

| Tens | Ones |
|---|---|
|     |    |
|     |    |

| | | | | |
|--|---|---|---|--|
| | | | | |
| | | T | O | |
| | | 4 | 3 | |
| | x | | 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 | |
| | x | | 2 | |
| | | | | |
| | | | | |

b)

| | | | | |
|--|---|---|---|--|
| | | | | |
| | | T | O | |
| | | 4 | 4 | |
| | x | | 2 | |
| | | | | |
| | | | | |



c) 31×3

| | | | | |
|--|--|--|--|--|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

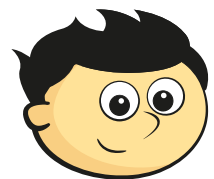
d) 42×2

| | | | | |
|--|--|--|--|--|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

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 | |
| | \times | 3 | 4 | |
| | | | | |
| | | | | |

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

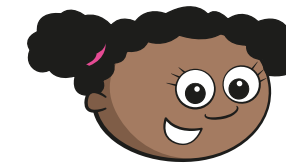
| | | | | |
|--|--|--|--|--|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

- 6 One toaster costs £32
How much do 3 toasters cost?



| |
|--|
| |
|--|

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



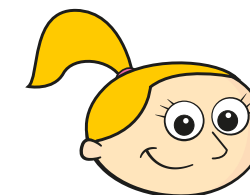
I had to do $30 + 9 = 39$ to get my answer.

What numbers is Whitney multiplying?

Fill in the missing digits.

| | | | | |
|--|----------|---|---|--|
| | | | | |
| | | | | |
| | \times | | | |
| | | 3 | 9 | |
| | | | | |

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



I can work this multiplication out in my head.

| | | | | |
|--|----------|---|---|--|
| | | | | |
| | | 4 | 1 | |
| | \times | | 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.

4×22

3×23

3×33

12×4

3×32

4×20

