



MATHEMATICS



N.S. Yr. 3 P.51

Understanding remainders in division

Equipment

Paper, pencil, ruler
Counters, number line

MathSphere

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Concepts

In year 3 the idea of a remainder when carrying out a division sum is introduced. At first this should be done with practical apparatus – dividing counters etc up into groups and seeing how many are left over.

Later this can be done mentally, mainly using 2, 5 and 10 times tables.

Word problems are also introduced, especially making a sensible decision whether to round up or down.

Example of rounding up:

A box holds 10 candles. How many boxes are needed for 34 candles?

Many children, even at key stage 2 forget that one extra box is needed for the remaining 4 candles. In this case the remainder is important to the answer.

Example of rounding down:

I have 34p.

Bars of chocolate cost 10 p each.

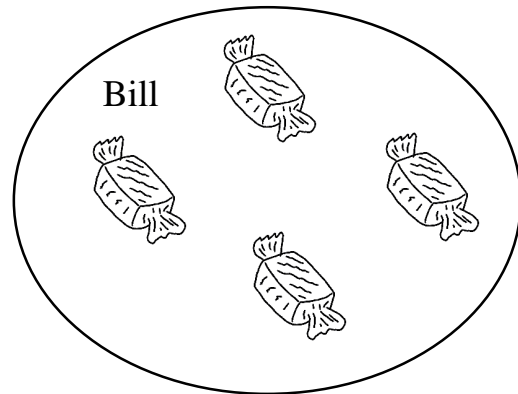
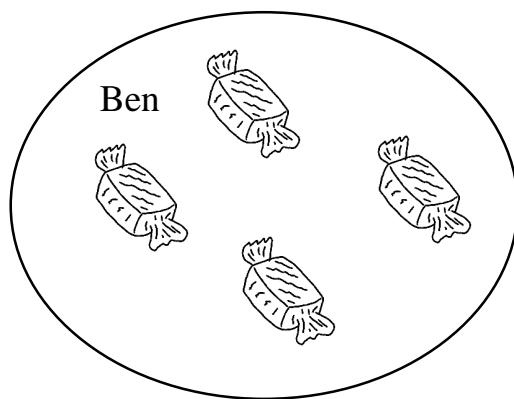
How many bars can I buy?

In this case the remainder is not important. Some children may think that they can buy part of a bar with the 4p remainder!

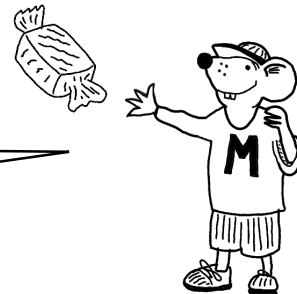
Remainders when sharing



Share 9 sweets between Ben and Bill



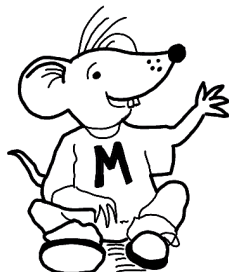
There's one sweet left!
Perhaps I could eat it.
We call this a **remainder**.



Share 9 sweets between Ben and Bill is 4 sweets and 1 sweet left over, or

$$9 \div 2 = 4 \text{ remainder } 1$$

9 divided by 2 equals 4 remainder 1

Division with remainders

Try these division sums.
They all have remainders,
so make sure you write
this down as well.

1. $10 \div 3 =$ remainder

2. $12 \div 5 =$ remainder

3. $11 \div 2 =$ remainder

4. $14 \div 4 =$ remainder

5. $17 \div 3 =$ remainder

6. $13 \div 10 =$ remainder

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Division with remainders

Try these division sums.
They all have remainders,
so make sure you write
this down as well.

1. $11 \div 3 =$

remainder

2. $13 \div 5 =$

remainder

3. $15 \div 2 =$

remainder

4. $17 \div 4 =$

remainder

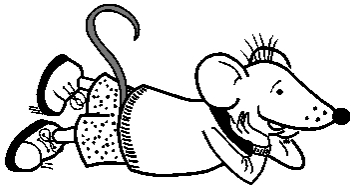
5. $13 \div 3 =$

remainder

6. $25 \div 10 =$

remainder

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Division with remainders

It gets a bit much writing remainder all the time. Maths people are very lazy and they would much rather just write r.

Try these:

1. $17 \div 2 =$

r

2. $14 \div 3 =$

r

3. $26 \div 5 =$

r

4. $13 \div 4 =$

r

5. $17 \div 5 =$

r

6. $17 \div 3 =$

r

7. $19 \div 2 =$

r

8. $23 \div 10 =$

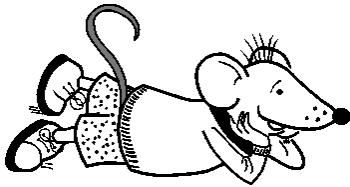
r

9. $21 \div 5 =$

r

10. $11 \div 4 =$

r

Division with remainders

It gets a bit much writing remainder all the time. Maths people are very lazy and they would much rather just write r.

Try these:

1. $13 \div 2 =$

r

2. $16 \div 3 =$

r

3. $29 \div 5 =$

r

4. $21 \div 4 =$

r

5. $49 \div 5 =$

r

6. $36 \div 10 =$

r

7. $23 \div 3 =$

r

8. $17 \div 10 =$

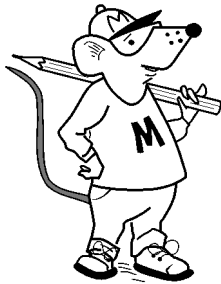
r

9. $37 \div 5 =$

r

10. $22 \div 4 =$

r

Division with remainders

Here are some word problems.
I'll give you a clue – they are all division sums, and they all have a remainder!
Only write the remainder down.

1. How much is left when you share 14 between 4 ?

2. How much is left when you share 16 between 5 ?

3. How much is left when you divide 20 between 3 ?

4. How much is left when you divide 23 between 5 ?

5. What is the remainder if you divide 9 by 2 ?

6. What is the remainder if you divide 18 by 4 ?

7. How many are left when 17 sweets
are shared between 4 boys?

8. How many are left when 19 chews
are shared between 5 girls?

Division with remainders

Just the remainders need to be written down for these division sums!

1. How much is left when you share 17 between 4 ?

2. How much is left when you share 28 between 5 ?

3. How much is left when you divide 11 between 3 ?

4. How much is left when you divide 17 between 5 ?

5. What is the remainder if you divide 19 by 2 ?

6. What is the remainder if you divide 15 by 4 ?

7. How many are left when 14 sweets are shared between 3 girls?

8. How many are left when 21 chews are shared between 4 boys?

More remainders

Why did the teacher wear sunglasses?

Because his class were so bright!

Example: $24 = 10 \times 2 + \boxed{4}$

Try to work these answers out:

1. $35 = 10 \times 3 + \boxed{}$

2. $17 = 5 \times 3 + \boxed{}$

3. $19 = 9 \times 2 + \boxed{}$

4. $37 = 5 \times 7 + \boxed{}$

5. $54 = 10 \times 5 + \boxed{}$

6. $17 = 2 \times 8 + \boxed{}$

7. $38 = 7 \times 5 + \boxed{}$

8. $11 = 2 \times 5 + \boxed{}$

9. $20 = 6 \times 3 + \boxed{}$

10. $22 = 5 \times 4 + \boxed{}$

11. $42 = 10 \times 4 + \boxed{}$

12. $18 = 5 \times 3 + \boxed{}$

More remainders

Teacher: what came after the bronze age and the stone age?
Pupil: the sausage!

Example: $36 = 10 \times 3 + \boxed{6}$

Try to work these answers out:

1. $33 = 10 \times 3 + \boxed{}$ 2. $16 = 5 \times 3 + \boxed{}$

3. $47 = 9 \times 5 + \boxed{}$ 4. $12 = 5 \times 2 + \boxed{}$

5. $66 = 10 \times 6 + \boxed{}$ 6. $20 = 6 \times 3 + \boxed{}$

7. $43 = 8 \times 5 + \boxed{}$ 8. $19 = 2 \times 9 + \boxed{}$

9. $19 = 6 \times 3 + \boxed{}$ 10. $28 = 5 \times 5 + \boxed{}$

11. $67 = 10 \times 6 + \boxed{}$ 12. $23 = 5 \times 4 + \boxed{}$

Division involving rounding

1. How many 5 cm pieces of string can I cut out of a piece of string 27 cm long?

2. I have 15p.
How many 2p sweets can I buy?

3. Tickets for a film cost £5 each.
How many tickets can I buy if I have £22 ?

4. Chocolate eggs are put in boxes of 4.
How many boxes would I need for 9 eggs?

5. There are 33 children in the class.
A table seats 5 children.
How many tables are needed?

6. Tennis balls are packed in boxes of 5.
How many boxes are needed to hold 17 tennis balls?

7. A CD case holds 10 CDs.
How many cases do I need for 64 CDs?

8. Cake trays hold 5 cakes.
I made 26 cakes.
How many cake trays can I fill up?

Division involving rounding

1. How many 5 cm pieces of rope can I cut out of a piece of string 18 cm long?
2. I have 13p.
How many 2p lollies can I buy?
3. Tickets for the cinema cost £5 each.
How many tickets can I buy if I have £18 ?
4. Chocolate eggs are put in boxes of 4.
How many boxes would I need for 11 eggs?
5. There are 33 children in the class.
A table seats 10 children.
How many tables are needed?
6. Tennis balls are packed in boxes of 5.
How many boxes are needed to hold 26 tennis balls?
7. A CD case holds 10 CDs.
How many cases do I need for 55 CDs?
8. Cake trays hold 5 cakes.
I made 22 cakes.
How many cake trays can I fill up?

Answers**Page 4**

1. 3 rem 1 2. 2 rem 2 3. 5 rem 1 4. 3 rem 2 5. 5 rem 2 6. 1 rem 3

Page 5

1. 3 rem 2 2. 2 rem 3 3. 7 rem 1 4. 4 rem 1 5. 4 rem 1 6. 2 rem 5

Page 6

1. 8 r 1 2. 4 r 2 3. 5 r 1 4. 3 r 1 5. 3 r 2 6. 5 r 2 7. 9 r 1 8. 2 r 3 9. 4 r 1 10. 2 r 3

Page 7

1. 6 r 1 2. 5 r 1 3. 5 r 4 4. 5 r 1 5. 9 r 4 6. 3 r 6 7. 7 r 2 8. 1 r 7 9. 7 r 2 10. 5 r 2

Page 8

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

Page 9

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

Page 10

1. 5 2. 2 3. 1 4. 2 5. 4 6. 1 7. 3 8. 1 9. 2 10. 2 11. 2 12. 3

Page 11

1. 3 2. 1 3. 2 4. 2 5. 6 6. 2 7. 3 8. 1 9. 1 10. 3 11. 7 12. 3

Page 12

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

Page 12

1. 3 2. 6 3. 3 4. 3 5. 4 6. 6 7. 6 8. 54