Can I solve problems involving division and give remainders appropriately?

When we are solving problems using division, we need to think about how to give any remainders. This will depend on the context of the question (what the question is about). For example, if the question is about money, you will need to give any remainders as decimal numbers (always with 2 digits after the decimal point). If however, the question is whole objects like people or buses, you cannot give your answer as a decimal – have you ever seen 3.45 children??

Look at this question as an example:

A scout troop are planning a camping trip. 246 scouts are going to be sleeping in tents which each hold 8 scouts. How many tents will be needed in total?

This is really a one-step problem: what is 246 ÷ 8?

Can you have 0.75 of a tent?! No! Of course you can’t – it doesn’t make sense to give your answer as a decimal remainder. Much better here to give the reminder as a whole number.

246 ÷ 8 = 30 r6

This means that 30 tents will be full (8 scouts in each) BUT there will be 6 scouts left over. Will they need to sleep outside under the stars?! NO! We just simply need another tent. Therefore, the answer to the question is: 31 tents will be needed in total

Look at this question as an example:

Maple Class were planning a trip to the zoo. 28 children and 4 adults were attending. The school decided to hire minibuses to take the class to the zoo. Each minibus could transport 9 passengers. How many minibuses would the school need to hire?

There are several steps needed to answer this question:

1. You need to know how many people were travelling *altogether* (addition): 28 + 4 = 32
2. You need to work out how many groups of 9 you can make from 32 (division): 32 ÷ 9

We could use our times tables facts to help us with this: 9 x 3 = 27 so 32 ÷ 9 = 3 r5

1. Now we have a problem – what will happen to the remainder 5 children? Will they be left behind? No! Of course not! This shows that we need an extra minibus.
2. Then we give our answer *separately* from our working out, remembering to include any units: 4 minibuses.

Now it’s your turn – choose your level of challenge and think about how you should give any remainders.

3 0 7 5

4

6

0 0

2

8

2 4 6

Marvellous

1. Lola has 28 stickers. She shares them equally between her 5 friends. How many stickers will each of her friends get? How many stickers will Lola have left over?
2. Mrs Bailey has 43 beanbags. She shares them out between 8 children. How many bean bags does each child have? How many bean bags will be left over?
3. There are 43 biscuits in a box in the staff room. Seven teachers have 5 biscuits each but Mr Jones and Mrs James only have 4 each. Explain how this happened.
4. There are 29 children in the hall. Mr Bean asks them to get into four equal teams. Is there a problem with this? Explain your answer.
5. There are 188 children going on a school trip. They are going in groups of 6, with one adult per group. One group will have less than 6 children in it, but still needs one adult. How many people will be going on the trip altogether?

Magnificent

1. A bag needs 6 sweets to be full. There are 1345 sweets altogether. How many full bags can be made? How many sweets will be left over?
2. 2026 people attend the theatre. There are 9 seats in a row. How many full rows are there? How many more people are needed to fill another row?
3. If a regular pentagon has a perimeter of 112cm, what would the length of each side of the pentagon be?
4. A school has raised £478 for charity. They decide to split the amount equally between 5 different charities. How much will each charity receive?
5. A coach is travelling from London to Rome. The distance is 1931km. The driver wants to split the journey equally over four days. How far should he travel each day?

Mind-blowing

1. A school needs 2847 paper cups for the school performance. The cups come in packs of 11. How many packs do they need?
2. It’s the conker championship! If the shoelace attached to the conker is made from 15cm of lace, how many shoelaces can be made from 5937cm of lace?
3. Eggs are sold in boxes of 12. If a store has 4893 eggs, how many *full* boxes can be made?
4. Abel’s reading 10 books that have a combined total of 4375 pages. If he reads 11 pages every night, how many days will it take him to read all 10 books?
5. Ezra has a bottle of medicine. It holds 1.34litres. He uses half of it. How many spoonfuls of medicine are left if each spoon holds 15ml?

**Answers**

Fluent in Five: 1) 13 2) 9 3) 31 4) 7702 5) 6300

Marvellous: 1) 5 each, 3 left over 2) 5 each, 3 left over 3) 7 x 5 = 35, 43 – 35 = 8, 8 ÷ 2 = 4 each 4) Yes. 29 ÷ 4 = 7 r2 so you can’t have equal groups 5) 220 people

Magnificent: 1) 224 full bags, 1 left over 2) 8 more people 3) 22.4cm 4) £95.60 5) 482.75km

Mind-blowing: 1) 259 packs 2) 395 shoelaces 3) 407 boxes 4) 431 days 5) 44 full spoonfuls