

Year 5 Problems Summer 1 Week 1

Objective: Solve problems involving all four operations including using knowledge of factors and multiples, squares and cubes.

The cost of using a minibus is £1.50 for each mile.
 8 friends go on a 144 mile journey. They share the cost equally.
 How much does each friend pay?

Model answer

I will start by finding out how much the minibus will cost for a journey of 144 miles. To do that I much multiply the cost per mile (£1.50) by the number of miles (144).

I shall estimate this calculation first using rounding. 144 rounds to 140 to the nearest multiple of 10. Multiplying by 1.50 is the same as multiplying by $1\frac{1}{2}$.

$$140 \times 1\frac{1}{2} = 210$$

As I have rounded the 144 down to 140 I know my answer to this part of the problem will be a little more than 210.

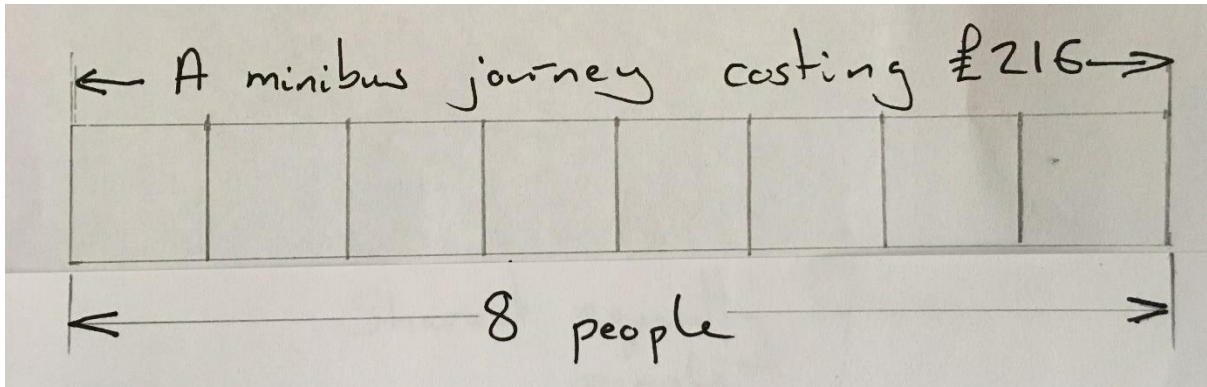
To carry out my calculation 144×1.50 I need to decide whether to use a long multiplication method, a mental method, or some jottings. As I know 1.50 is equal to $1\frac{1}{2}$ I think I can do this in my head if I jot some things down (you may wish to calculate it a different way and that is ok as long as your method is reliable and reasonable efficient).

$$144 \times 1\frac{1}{2} = 144 + 72 \text{ (half of 144)}$$

$$144 + 72 = 216$$

Going back to my problem I now know that the cost of the minibus for a journey of 144 miles is £216

Thinking about the next step in the problem I can see I need to share this cost of £216 equally between 8 friends. I can picture this part of the problem with the bar model.



I can see now that I need to divide £216 by 8.

I shall estimate this calculation first.

I know that:

$$10 \times 8 = 80$$

$$20 \times 8 = 160$$

$$30 \times 8 = 320$$

So I estimate my answer will be between 20 and 30.

I think I shall do this calculation using short division.

$$\begin{array}{r} 27 \\ 8 \overline{) 216} \end{array}$$

My answer 27 is between 20 and 30.

The answer to the problem is each friend pays £27.

Now try these problems.

The cost of using a minibus is £2.50 for each mile.
8 friends go on a 144 mile journey. They share the cost equally.
How much does each friend pay?

Space for working

The cost of using a minibus is £1.50 for each mile.
9 friends go on a 180 mile journey. They share the cost
equally.
How much does each friend pay?

Space for working

Answers:

Each friend pays £45

Each friend pays £30