

Solution

Pupils can use the lowest common multiple of 30 and 18 to approach the problem and identify when the next time a service station which sells petrol and hot food as well as having a bank machine will be available.

Least Common Multiple (LCM) of 30 and 18 = 90

There will be a service station that has petrol, hot food and a bank machine after 90 miles of driving.

The previous service station that had petrol, hot food and a bank machine was 13 miles before the sign that indicated that the concert was 100 miles away.

$$90 - 13 = 77$$

Therefore, Justine and her friends could stop at the service station **77 miles** from the sign they passed (or **21 miles from the end of the motorway**) as this station:

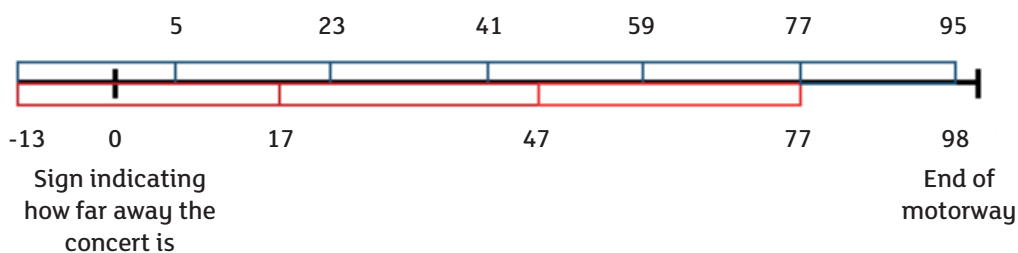
- will have petrol, hot food and a bank machine;
- is less than the 86 miles of petrol remaining; and
- requires the least amount of stops along the way.



Pupils may also solve this problem by counting on in steps of 30 and 18 from -13.

Blue – bank machine

Red – hot food



Justine and her friends could stop at the service station **77 miles** from the sign they passed (or the **second last service station from** the end of the motorway) as this:

- will have petrol, hot food and a bank machine;
- is less than the 86 miles of petrol remaining; and
- requires the least amount of stops along the way.

