

Dividing a Clock Face

Solution

Below is one way to approach the problem, but pupils can approach the problem in any way they think might work.

Design 1

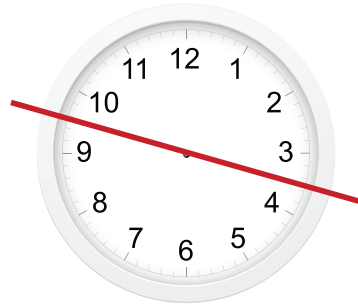
As shown, if one line divides the clock face into two then the numbers in each part of the clock face will add up to the same number, 39.

$$\text{Sum of all numbers} = (12 \times 13) \div 2 = 78$$

$$78 \div 2 = 39$$

$$(1 + 12) + (2 + 11) + (3 + 10) = 39$$

$$(4 + 9) + (5 + 8) + (6 + 7) = 39$$



Design 2

As shown, if the two lines divide the clock face into three parts then the numbers in each part of the clock face will add up to the same number, 26.

$$78 \div 3 = 26$$

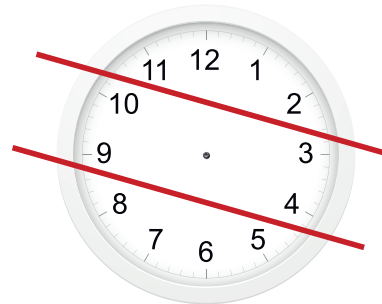
$$39 - 13 = 26$$

Separate the numbers that add up to 26 and can be grouped into each of the three required parts.

$$(1 + 12) + (2 + 11) + (3 + 10) = 39 \quad (1 + 12) + (2 + 11) = 26$$

$$(4 + 9) + (5 + 8) + (6 + 7) = 39 \quad (5 + 8) + (6 + 7) = 26$$

$$(3 + 10) + (4 + 9) = 26$$



Design 3

As shown, if the lines divide the clock face into six parts then the numbers in each part of the clock face will add up to the same number, 13.

$$78 \div 6 = 13$$

From previous designs, the numbers can be grouped into pairs that add up to 13.

$$(1 + 12) + (2 + 11) = 26 \quad (1 + 12) = 13 \text{ and } (2 + 11) = 13$$

$$(3 + 10) + (4 + 9) = 26 \quad (3 + 10) = 13 \text{ and } (4 + 9) = 13$$

$$(5 + 8) + (6 + 7) = 26 \quad (5 + 8) = 13 \text{ and } (6 + 7) = 13$$

