

## Lesson 5 – Division with Negatives and Using Number Lines

### Starter

Find the nth term rule for these sequences

1) 2, 4, 6, 8, 10, ...

2) 3, 8, 13, 18, 23, ...

3) 5, 8, 11, 14, 17, ...

4) 10, 8, 6, 4, 2, ...

### Starter Answers

1)  $2n$

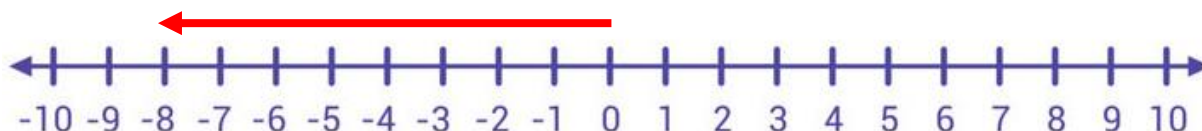
2)  $5n - 2$

3)  $3n + 2$

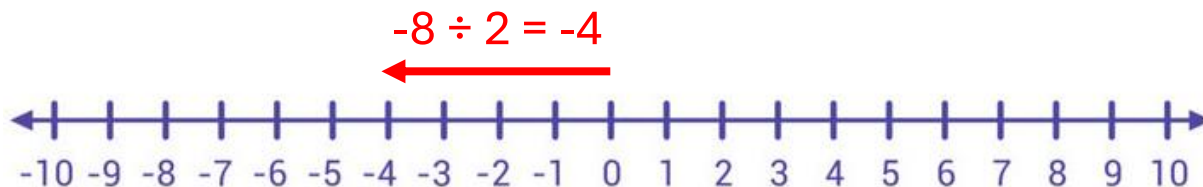
4)  $-2n + 12$

In this lesson, we will look at how to **divide** with **negative numbers**.

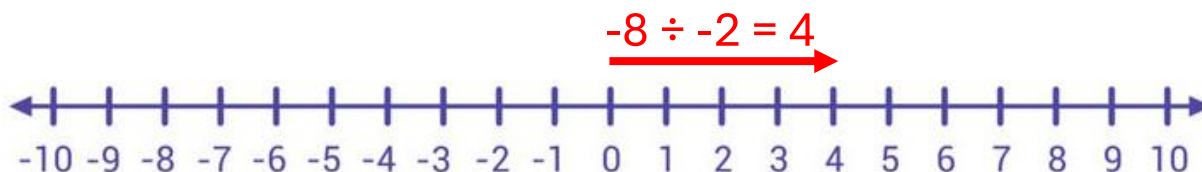
We can represent the number -8 as a distance of eight from zero in the negative direction.



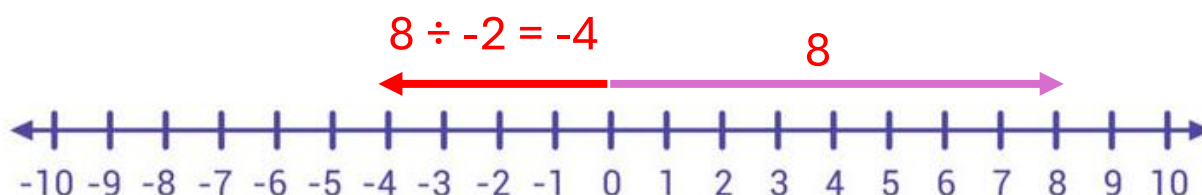
When we divide this number by 2, we are **halving** the distance from zero



When we divide -8 by -2, we are **halving** the distance from zero but in the **opposite direction**.



Similarly, if we divide 8 by -2 we are **halving** the distance from zero in the **opposite direction**.



### Examples

- a)  $12 \div 4 = 3$       The distance from zero is divided by 4
- b)  $12 \div -4 = -3$       The distance from zero is divided by 4 in the opposite direction
- c)  $-12 \div 4 = -3$       The distance from zero is divided by 4
- d)  $-12 \div -4 = 3$       The distance from zero is divided by 4 in the opposite direction

### Your go

Work out:

- 1)  $15 \div -3$
- 2)  $-20 \div 4$
- 3)  $-6 \div -3$
- 4)  $56 \div -8$
- 5)  $-2 \times -3 \times 4$

### Answers

- 1) -5      2) -5      3) 2      4) -7      5) 24  
Do  $-2 \times -3 = 6$   
Then  $6 \times 4$

We can also divide with negatives when we have **decimals** too.

### Example

Work out  $-2.4 \div 0.3$

First work out  $2.4 \div 0.3$ , ignoring the negative for now:

$$\frac{2.4}{0.3} = \frac{24}{3} = 8$$

Then decide whether you think the answer will be positive or negative. It will be negative because we are starting with -2.4 and dividing by a positive number.

So the answer is -8.