

Integers – Lesson 3

In this lesson we will learn to multiply with negative numbers. We will also spend some time building up your skills in adding and subtracting and looking again at simplifying expressions.

First, let us start with some revision: -

1) $-10 + 3$

2) $-10 - 3$

3) $-10 + -3$

4) $-10 - -3$

5) $-10 - -10$

6) $-10 + -10$

7) $0 + -10$

8) $0 - -10$

9) $-3 - -10$

10) $-3 + -10$

One thing we need to be clear about to avoid any confusion is that there are two completely different sets of ways of thinking: one for adding and subtracting, one for multiplying and dividing.

For adding and subtracting: -

- Imagine moving up (adding) or down (subtracting) a vertical number line
- Remember $--$ means add and $+ -$ means subtract

For multiplying and dividing: -

- Multiply or divide as usual
- If both numbers are negative, the answer is positive e.g. $-4 \times -8 = 32$
- If one number is positive and the other negative, the answer is negative
e.g. $4 \times -8 = -32$ and $-3 \times 7 = -21$

Have a look at these examples: -

$5 \times -6 = -30$ one number positive one number negative answer negative	$-7 \times -9 = 63$ both numbers negative answer positive	$-3 \times 8 = -24$ one number negative one number positive answer negative	$-2 \times 0 = 0$ What about this one?
--------------------------------------------------------------------------------------	-----------------------------------------------------------------	--------------------------------------------------------------------------------------	-------------------------------------------

Notice that, if we multiply by zero, the answer is always zero which is neither negative nor positive.

Now try these calculations: -

11) -10×3

12) -10×-3

13) 10×-3

14) 10×3

15) -10×-10

16) -10×10

17) 0×-10

18) $-7 \times -8 =$

19) -9×6

20) $5 \times -3 =$

Look carefully at these calculations and write down "True" or "False".

21) $-7 \times 3 = -21$

22) $4 \times -5 = 20$

23) $-2 \times -8 = -16$

24) $-5 \times -7 = 35$

25) $4 \times -9 = -36$

26) $-3 \times -7 = 28$

27) $-9 \times 6 = -54$

28) $-9 \times 0 = -9$

29) $0 \times -7 = 7$

30) $-10 \times -10 = 100$

We will finish off with some more practice simplifying expressions.

31) $-7b + 2b$

32) $-10c - 2c$

33) $-3d + 8d$

34) $2e + 3f - 7e - 6f$

35) $3g + 4h - g - 10h$

36) $j + 9k - 9j - k$

37) $-3m - 4n + 6m + 5n$

38) $-5p - 6q + 2p + 6q$

39) $-2r - 10s + 6r + 12s$