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**FUNCTIONAL SKILLS**

Maths Level 2



**Area: Numbers and the number system**

Criterion 12: Follow the order of precedence of operators, including indices.

**BIDMAS**

Mathematical calculations must be performed in a certain order. This is known as BIDMAS, or BODMAS. The letters of BIDMAS tell us which order to perform the calculation:

**B**rackets

**I**ndices (or Orders)

Top tip: work step-by-step, breaking down each part of the calculation to avoid mistakes.

**D**ivision

**M**ultiplication

**A**ddition

**S**ubtraction

Let’s look at an example question.

Calculate 5 x (3² + 4) – 6

Using BIDMAS, we must start with the letter **B** for Brackets.

(3² + 4)

Within the brackets, we can see 2 operations: **an** **index/power** and an **addition**.

Indices comes **before** addition in BIDMAS. Therefore, we must calculate 3² first.

3² = 3 x 3 = 9

This gives us 9 + 4 which is 13

Once the brackets have been expanded, the calculation becomes 5 x 13 - 6

We can see that there is a multiplication and a subtraction. Multiplications appears **before** subtraction in BIDMAS,so we must multiply next.

5 x 13 = 65

This gives us 65 - 6

Finally, we need to subtract the 6

65 – 6 = 59

**Indices**

Indices (or powers) are used to show how many times to multiply a number by itself. For example:

7² means 7 × 7 = 49

23 means 2 × 2 × 2 = 8

Here is how we would solve 6³ - 18

Indices is before subtraction according to BIDMAS. Therefore, we have to calculate 6³ first.

6³ = 6 x 6 x 6 = 216

The calculation becomes 216 – 18

Next, we need to complete the subtraction:

216 – 18 = 198

**Top tip**: remember to **always** follow BIDMAS. Otherwise, you may get the wrong answer.

For example,

4 + 6² ÷ 2

If we follow BIDMAS, we will get the **correct** answer.

Indices: 6² = 36

4 + 36 ÷ 2

Division: 36 ÷ 2 = 18

4 + 18

Addition: 4 + 18 = 22

This is **correct**.

If you **did not** follow BIDMAS and just worked from left to right, your answer will be incorrect.

4 + 6² ÷ 2

4 + 36 ÷ 2

4 + 36 = 40

40 ÷ 2 = 20

This is **incorrect**.

A yellow calculator with a grey sticker

Description automatically generated**Practice questions**

Complete these without using a calculator.

**Question 1**

Calculate

8² - 63 ÷ 9

Write your answer in the box below.

**Question 2**

Calculate

72 ÷ (9 x 4)

Write your answer in the box below.

**Question 3**

Calculate

10 x (14 – 3)²

Write your answer in the box below.

**Question 4**

Calculate

42 + 9 x 10

Write your answer in the box below.

**Question 5**

Calculate

9 + 9 x 9 – 9

Write your answer in the box below.

A yellow calculator with a grey sticker

Description automatically generated**Exam questions**

Complete these questions without using a calculator.

**Exam practice 1**

Calculate the value of ***Y***.

***Y*** = 7² + (9 x 5)

Write your answer in the box below. *(1 mark)*

**Exam practice 2**

Calculate the value of ***Z***.

***Z*** = (96 ÷ 12) + (7 x 8)

Write your answer in the box below. *(1 mark)*

**Exam practice 3**

Calculate

12² + (8 x 6) ÷ 12

Write your answer in the box below. *(1 mark)*

**Answers**

**BIDMAS**

**Question 1**: calculate 8² - 63 ÷ 9

First, calculate the indices.

8² = 64

The calculation becomes 64 – 63 ÷ 9

Next, calculate the division.

63 ÷ 9 = 7

Finally, calculate the subtraction.

64 – 7 = **57**

**Question 2**: calculate 72 ÷ (9 x 4)

First, expand the brackets.

(9 x 4 = 36)

The calculation becomes 72 ÷ 36

Finally, calculate the division.

72 ÷ 36 = **2**

**Question 3**: calculate 10 x (14 – 3)²

First, expand the brackets.

(14 – 3) = 11

The calculation becomes 10 + 11²

Next, calculate the indices.

11² = 11 x 11 = 121

The calculation becomes 10 x 121

Finally, complete the multiplication.

10 x 121 = **1210**

**Question 4**: calculate 42 + 9 x 10

First, complete the multiplication.

9 x 10 = 90

The calculation becomes 42 + 90

Finally, complete the addition.

42 + 90 = **132**

**Question 5**: calculate 9 + 9 x 9 – 9

First, complete the multiplication.

9 x 9 = 81

The calculation becomes 9 + 81 – 9

Next, calculate the addition.

9 + 81 = 90

The calculation becomes 90 – 9

Finally, complete the subtraction.

90 – 9 = **81**

**Exam practice**

**Exam practice 1**: calculate the value of Y.

Y = 7² + (9 x 5)

First, expand the brackets.

(9 x 4) = 45

The calculation becomes 7² + 45

Next, calculate the indices.

7² = 7 x 7 = 49

The calculation becomes 49 + 45

Finally, complete the addition.

49 + 45 = 94

**Y = 94**

**Exam practice 2**: calculate the value of Z.

Z = (96 ÷ 12) + (7 x 8)

First, expand the first set of brackets.

96 ÷ 12 = 8

The calculation becomes 8 + (7 x 8)

Next, expand the second set of brackets.

(7 x 8 = 56)

The calculation becomes 8 + 56

Finally, complete the addition.

8 + 56 = 64

**Z = 64**

**Exam practice 3**: calculate 12² + (8 x 6) ÷ 12

First, expand the brackets.

8 x 6 = 48

The calculation becomes 12² + 48 ÷ 12

Next, calculate the indices.

12² = 144

The calculation becomes 144 + 48 ÷ 12

Then, calculate the division.

48 ÷ 12 = 4

The calculation becomes 144 + 4

Finally, complete the addition.

144 + 4 = **148**

**Your functional skills exam**

Your functional skills exams will consist of 2 papers.   
These papers will take place over the following time periods:

* Non-calculator paper – 40 minutes
* Calculator – 1 hour 50 minutes

Further information on the format that your test will take can be obtained from your training provider.

**Hints and tips**

* Find out what format your exam will be in. It may be paper-based   
  or on-screen.
* Plan what you are going to revise in advance. Don’t leave it until the last minute.
* Do as many past papers as you can so you are prepared for the day. If possible, try to complete the past papers following the same format as the actual exam.
* Find a quiet place to study and revise. It helps to sit at a table or a desk, don’t revise in bed.
* Don’t stay up all night revising the night before your exam. It’s important to have a good rest so you feel refreshed and ready to go.
* Read the question 3 times. The first time to ensure you understand what is being asked, the second time to get an understanding of what you need to do, and a third time to figure out exactly what maths techniques you should be applying.
* If you are struggling with a question, skip it and come back to it later. Try not to sit getting worked up about a difficult question, it will only waste exam time. Move on and come back to it after you have answered the other questions.
* Take note of the number of marks available. This will give you an indication of how much working out you must show. For example, 1 mark will need an answer only and more marks will need you to show your working out.
* When you’ve finished the exam, go back and check your answers. If you still have time remaining, use it to check your answers and when you have checked your answers check them again.