

01 - Calculator Skills

Numerical Reasoning Test Preparation Question Pack

This document is part of a set of resources designed to help people prepare for numerical reasoning tests. However, they could also be used by anyone who wants to improve their maths skills, especially how to use a calculator to work with fractions, percentages, ratios and averages.

There are six topic areas covered in these documents (Calculator Skills; Numbers; Fractions; Percentages; Ratio and Proportion; and Averages). For each topic area there are two documents: one is a set of notes and worked examples, and the other is a question pack.

Each set of notes and each question pack is divided up into a number of skills. For each skill, read through the notes and examples and then try the questions for that skill from the question pack. I advise that you work through the skills in order, only moving onto the next one once you have mastered the current one (this is called *mastery learning*).

Questions

You may use a calculator.

The answers can be found at the end of this document.

Use 'Ans' on a calculator to carry out multi-step calculations quickly.

- 1) You want to divide 4572 by 9 and then subtract 258 from this. How can you do this in two calculations on the calculator using the minimum number of button presses possible?
- 2) You want to multiply 17 by 4 and then subtract this from 200. How can you do this in two calculations on the calculator using the minimum number of button presses possible?
- 3) You want to subtract 54 from 107 and then multiply this by 15. How can you do this in two calculations on the calculator using the minimum number of button presses possible?
- 4) You want to divide 253 by 23, then multiply this by 5, then add 45 to this. How can you do this in three calculations on the calculator using the minimum number of button presses possible?
- 5) You want to add 348 and 452, divide 400 by this, and then multiply this by 66. How can you do this in three calculations on the calculator using the minimum number of

button presses possible?

State the order of operations used by calculators.

- 1) What is the order of operations used by calculators?
- 2) We wish to add 4 and 12, divide the result by 6 and then subtract 5. Add the minimum possible number of brackets to the following statement in order to achieve this:

$$4 + 12 \div 6 - 5 =$$

- 3) We wish to multiply 5 and 7 and then divide this by the sum of 3 and 2. Add the minimum possible number of brackets to the following statement in order to achieve this:

$$5 \times 7 \div 3 + 2 =$$

- 4) We wish to divide 10 by 5, multiply this by 3, and then subtract 7. Add the minimum possible number of brackets to the following statement in order to achieve this:

$$3 \times 10 \div 5 - 7 =$$

- 5) We wish to subtract 2 from 8, divide this by 3, and then multiply this by 4. Add the minimum possible number of brackets to the following statement in order to achieve this:

$$4 \times 8 - 2 \div 3 =$$

Use the order of operations to carry out calculations in one step on a calculator quickly.

- 1) You wish to multiply 8 by 14 and then subtract 62 from this. How can you do this in one calculation on the calculator using the minimum possible number of button presses?
- 2) You wish to add 37 and 14 and then multiply this by 12. How can you do this in one calculation on the calculator using the minimum possible number of button presses?
- 3) You wish to divide 209 by the sum of 6 and 5 and then multiply this by 3. How can you do this in one calculation on the calculator using the minimum possible number of button presses?
- 4) You wish to divide 45 by 3, add 8 to this, and then subtract that from 60. How can you do this in one calculation on the calculator using the minimum possible number of button presses?
- 5) You wish to subtract 34 from 87, divide 1060 by this, and then subtract the result from 21. How can you do this in one calculation on the calculator using the minimum possible number of button presses?

Quickly decide which method to use when doing a calculation that involves multiple operations.

Complete the following calculations using any method of your choice:

- 1) Divide 65 by 5 and then add 7 to the result.
- 2) Subtract 14 from 92 and then divide 234 by the result.
- 3) Multiply the following numbers: 4, -20, -5, 25.
- 4) Multiply 6 by 17, add 15 to the result, and then divide the result by 39.
- 5) Multiply 4 by 25 and then subtract the sum of 37 and 63.

Answers

Use 'Ans' on a calculator to carry out multi-step calculations quickly.

1.

Answer to the calculation: 250

Method:

<u>Input</u>	<u>Output</u>
$4572 \div 9 =$	508
$- 258 =$	250

Button presses: 12

2.

Answer to the calculation: 132

Method:

<u>Input</u>	<u>Output</u>
$17 \times 4 =$	68
$200 - \text{Ans} =$	132

Button presses: 11

3.

Answer to the calculation: 795

Method:

<u>Input</u>	<u>Output</u>
$107 - 54 =$	53
$\times 15 =$	795

Button presses: 11

4.

Answer to the calculation: 100

Method:

<u>Input</u>	<u>Output</u>
$253 \div 23 =$	11
$\times 5 =$	55
$+ 45 =$	100

Button presses: 14

5.

Answer to the calculation: 32

Method:

<u>Input</u>	<u>Output</u>
$348 + 452 =$	800
$400 \div \text{Ans} =$	0.5
$\times 66 =$	32

Button presses: 18

State the order of operations used by calculators.

1.

The order of operations is:

- Brackets
- Indices (Powers)
- Division and Multiplication
- Addition and Subtraction

2.

$$(4 + 12) \div 6 - 5 =$$

3.

$$5 \times 7 \div (3 + 2) =$$

4.

In order to strictly follow the sequence given in the instructions, we would have to do:

$$3 \times (10 \div 5) - 7 =$$

However, we also get the same answer if we don't use any brackets:

$$3 \times 10 \div 5 - 7 =$$

(Either way, the result is -1).

This is because dividing 10 by 5 (to give 2) and then multiplying this by 3 (to give 6) is in effect the same as multiplying 3 by 10 (to give 30) and then dividing this by 5 (to give 6).

I will accept either answer as correct since the question is somewhat ambiguous.

5.

$$4 \times ((8 - 2) \div 3) =$$

Use the order of operations to carry out calculations in one step on a calculator quickly.

1.

$$8 \times 14 - 62 = 50$$

Button presses: 8

2.

$$(37 + 14) \times 12 = 612$$

Button presses: 11

3.

$$209 \div (6 + 5) \times 3 = 57$$

Button presses: 12

4.

$$60 - (45 \div 3 + 8) = 37$$

Button presses: 12

5.

$$21 - (1060 \div (87 - 34)) = 1$$

Button presses: 18

Quickly decide which method to use when doing a calculation that involves multiple operations.

1.

20

2.

3

3.

10,000

4.

3

5.

0