GCSE (9−1)
MATHEMATICS

OCR
Oxford Cambridge and RSA

Foundation Check In - 1.03 Combining arithmetic operations

Do not use a calculator for these questions.

1. Work out $7 + 2^2 \times 3$.

2. Put brackets into this statement to make it correct.

    $$15 - 2 \times 3 + 1 = 52$$

3. Insert +, −, × or ÷ to make the statement correct.

    $$25 \boxed{} 14 \boxed{} 2 = 18$$

4. Complete this equation using +, −, × or ÷.

    $$39 \boxed{} 2 \times 4 = 5^2 + 12 \boxed{} 2$$

5. Work out $54 \div \sqrt{81} + 2 \times 4^3$.

6. By using just one pair of brackets, the following can be made true.

    $$\sqrt{64} \times 4 + 4 = 9^2 - 9 \div 2$$

    Show the location of the brackets and give the numeric value of each side of the expression when true.

7. Cara says that $3^2 + 8^2$ is the same as 11^2. Explain why she is wrong.

8. Show that $\dfrac{5 \times 2^3}{\sqrt{81}} = \dfrac{8\sqrt{25}}{(5-2)^2}$.

9. Hari buys 4 pens that cost 80 p each and 6 pencils that cost 15 p less than the pens. How much change does he get from £10?

10. Put the following in order, from smallest to largest.

    $$\dfrac{7^2 + 1}{\sqrt{25}} \qquad \dfrac{5^3 - 9^2}{4^2 - 5} \qquad \dfrac{\sqrt{(8^2 + 6^2)}}{0.5} \qquad 2^3 - 3 \times 2$$

Extension

Use all of the numbers 3, 4, 7, 8, 50 and 75 to make an answer of 137.

Answers

1. 19

2. $(15 - 2) \times (3 + 1) = 52$

3. $25 - 14 \div 2$

4. $39 - 2 \times 4 = 5^2 + 12 \div 2 (= 31)$

5. 134

6. $\sqrt{64} \times 4 + 4 = (9^2 - 9) \div 2$

7. $3^2 + 8^2 = 9 + 64 = 73$. Cara has worked out $(3 + 8)^2 = 11^2$ which is 121.

8. $\dfrac{5 \times 2^3}{\sqrt{81}} = \dfrac{5 \times 8}{9} = \dfrac{40}{9}$ and $\dfrac{8\sqrt{25}}{(5-2)^2} = \dfrac{8 \times 5}{3^2} = \dfrac{40}{9}$

9. Cost of pens $= 4 \times 80 = 320\,\text{p} = £3.20$, cost of pencils $= 6 \times (80 - 15) = 390\,\text{p} = £3.90$
   $10 - 3.20 - 3.90 = £2.90$ change.

10. $2^3 - 3 \times 2 = 2$ $\dfrac{5^3 - 9^2}{4^2 - 5} = 4$ $\dfrac{7^2 + 1}{\sqrt{25}} = 10$ $\dfrac{\sqrt{(8^2 + 6^2)}}{0.5} = 20$

Extension

Here are some possible solutions.

$50 \times 3 + 75 \div 5 - 7 \times 4 = 137$
$(8 - 7) \times 4 \times (50 + 3) - 75 = 137$
$(8 - 7) \times 3 \times 4 + 75 + 50 = 137$

We'd like to know your view on the resources we produce. By clicking on 'Like' or 'Dislike' you can help us to ensure that our resources work for you. When the email template pops up please add additional comments if you wish and then just click 'Send'. Thank you.

Whether you already offer OCR qualifications, are new to OCR, or are considering switching from your current provider/awarding organisation, you can request more information by completing the Expression of Interest form which can be found here: www.ocr.org.uk/expression-of-interest

Looking for a resource? There is now a quick and easy search tool to help find free resources for your qualification: www.ocr.org.uk/i-want-to/find-resources/

GCSE (9−1)
MATHEMATICS

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use the correct order of operations			
AO1	2	Insert brackets to make a calculation correct			
AO1	3	Complete a calculation by choosing the correct operation			
AO1	4	Choose the correct operations to complete a number statement			
AO1	5	Use the correct order of operations			
AO2	6	Insert brackets to make an expression correct			
AO2	7	Explain the correct order in which to carry out a calculation involving indices			
AO2	8	Use the correct order of operations to evaluate and compare two calculations			
AO3	9	Solve a word problem by carrying out the steps in the correct order			
AO3	10	Solve multi-step calculations and then put the answers in order of size			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use the correct order of operations			
AO1	2	Insert brackets to make a calculation correct			
AO1	3	Complete a calculation by choosing the correct operation			
AO1	4	Choose the correct operations to complete a number statement			
AO1	5	Use the correct order of operations			
AO2	6	Insert brackets to make an expression correct			
AO2	7	Explain the correct order in which to carry out a calculation involving indices			
AO2	8	Use the correct order of operations to evaluate and compare two calculations			
AO3	9	Solve a word problem by carrying out the steps in the correct order			
AO3	10	Solve multi-step calculations and then put the answers in order of size			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use the correct order of operations			
AO1	2	Insert brackets to make a calculation correct			
AO1	3	Complete a calculation by choosing the correct operation			
AO1	4	Choose the correct operations to complete a number statement			
AO1	5	Use the correct order of operations			
AO2	6	Insert brackets to make an expression correct			
AO2	7	Explain the correct order in which to carry out a calculation involving indices			
AO2	8	Use the correct order of operations to evaluate and compare two calculations			
AO3	9	Solve a word problem by carrying out the steps in the correct order			
AO3	10	Solve multi-step calculations and then put the answers in order of size			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use the correct order of operations			
AO1	2	Insert brackets to make a calculation correct			
AO1	3	Complete a calculation by choosing the correct operation			
AO1	4	Choose the correct operations to complete a number statement			
AO1	5	Use the correct order of operations			
AO2	6	Insert brackets to make an expression correct			
AO2	7	Explain the correct order in which to carry out a calculation involving indices			
AO2	8	Use the correct order of operations to evaluate and compare two calculations			
AO3	9	Solve a word problem by carrying out the steps in the correct order			
AO3	10	Solve multi-step calculations and then put the answers in order of size			