

BIDMAS and inverse operations

Exam questions

Foundation tier

Please write clearly in block capitals.

Name

Class

Teacher

Time allowed: 60 minutes

Materials

For this booklet you need a black pen, a pencil, a ruler, a rubber and a calculator for Section B.

Instructions

- Use black ink or black ballpoint pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions in the spaces provided.
- **Section A** (questions 1 to 10): you must not use a calculator.
- **Section B** (questions 11 to 20): you may use a calculator.
- Do all rough work in this booklet. Cross through any work you do not want marked.

For teacher's use

Q	Mark	Q	Mark
1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	
TOTAL			

Information

- The marks for each question are shown in brackets.
- The maximum mark for this booklet is 53.

Advice

- Read each question carefully.
- In all calculations, show clearly how you work out your answer.

Section A**You must not use a calculator**Do not
write
outside
the box

- 1** (a) Work out $20 - 12 \div 4$

Answer _____
[1 mark]

- (b) Work out 2×3^2

Answer _____
[1 mark]

- 2** Circle the value of $2 + 8^2 \div 4$

6 16.5 18 25

[1 mark]

- 3** Put one pair of brackets in each calculation to make it correct.

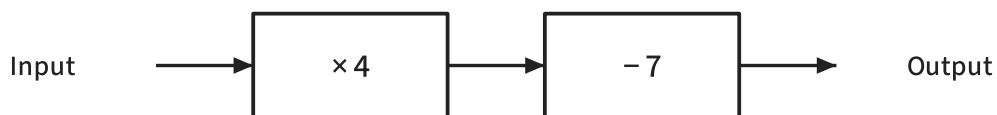
(a) $6 + 4 \times 5 - 2 = 48$

[1 mark]

(b) $36 \div 4 + 5 \times 2 = 8$

[1 mark]

- 4** Here is a number machine.



- (a)** Work out the output when the input is 6

Answer _____

[1 mark]

- (b)** Work out the input when the output is 29

Answer _____

[1 mark]

- 5** Zara works out $18 - 6 \div 3 + 1$
She gets the answer 3

- (a)** Explain the mistake Zara has made.

[1 mark]

- (b)** Work out the correct answer.

Answer _____

[1 mark]

Do not
write
outside
the box

6 $23 \times 57 = 1311$

(a) Write down the value of $1311 \div 57$

Answer _____ [1 mark]

(b) Write down the value of $1311 \div 23$

Answer _____ [1 mark]

(c) Work out the value of 24×57

Answer _____ [1 mark]

7 Write one of +, −, × or ÷ in each box to make the calculation correct.
You may use a sign more than once.

$8 \square 6 \square 2 \square 3 = 42$

[2 marks]

- 8 (a) Write down the reciprocal of $\frac{2}{7}$

Answer _____

[1 mark]

- (b) Work out $6 - 2 \times (3 - 5)^2 \div 4$

Answer _____

[2 marks]

- 9 Work out

$$\frac{36 \times 45}{27 \times 15}$$

Answer _____

[2 marks]

- 10 Here are three number cards.

2

3

5

Write one card in each box to make the answer as large as possible.
You must show your working.

$$\square \times (\square + \square)^2$$

[2 marks]

Section B



You may use a calculator

Do not
write
outside
the box

- 11** (a) Use your calculator to work out

$$\frac{\sqrt{(18.4 + 6.2^2)}}{3.1 \times 0.85}$$

Write down all the figures on your calculator display.

Answer _____

[1 mark]

- (b) Give your answer to (a) to 3 significant figures.

Answer _____

[1 mark]

- 12** Ben wants to find the mean of 12.4, 9.75, 15.1 and 8.35
He types this into his calculator.

$$12.4 + 9.75 + 15.1 + 8.35 \div 4 =$$

- (a) Write down the answer his calculator shows.

Answer _____

[1 mark]

- (b) Write down what Ben should type to find the mean.

Answer _____

[1 mark]

- (c) Work out the mean.

Answer _____

[1 mark]

13

Jo thinks of a positive number.

She squares it, then adds 7, then divides by 4

Her answer is 11.25

(a) Max says,

“To find Jo’s number, multiply 11.25 by 4, subtract 7, then halve the answer.”

Explain the mistake Max has made.

[1 mark]

(b) Work out Jo’s number.

Give your answer to 2 decimal places.

Answer _____

[2 marks]

- 14** Priya uses her calculator to work out

$$\frac{48.7 \times 3.12}{5.86 + 4.27}$$

She gets 30.2, correct to 3 significant figures.

- (a) Round each number to 1 significant figure to show that Priya's answer must be wrong.

[2 marks]

- (b) Explain what Priya has most likely done wrong.

[1 mark]

- (c) Work out the correct value.
Give your answer to 3 significant figures.

Answer _____

[1 mark]

- 15** Here is a calculation.

$$\frac{(4.7 + 2.85)^2}{\sqrt{8.41} \times 1.6}$$

Here are four ways of typing it into a calculator.

A $(4.7 + 2.85)^2 \div \sqrt{8.41} \times 1.6$

B $4.7 + 2.85^2 \div (\sqrt{8.41} \times 1.6)$

C $(4.7 + 2.85)^2 \div (\sqrt{8.41} \times 1.6)$

D $(4.7 + 2.85)^2 \div \sqrt{(8.41 \times 1.6)}$

- (a) Which way gives the value of the calculation?

Answer _____

[1 mark]

- (b) Work out the value of the calculation.
Give your answer to 2 decimal places.

Answer _____

[2 marks]

- 16** Here are three calculations.

A $\frac{1}{0.0705}$ **B** $(5.8 - 2.05)^2$ **C** $4.9 + \sqrt{84.64}$

Write the letters in order of the values of the calculations, smallest first.
You must show your working.

Answer _____

[3 marks]

17 In each calculation, the box stands for a positive number.

(a) Work out the number in the box.

$$(\square + 4.75)^2 = 59.29$$

Answer _____

[2 marks]

(b) Work out the number in the box.

$$(\square \div 1.6 - 2.3)^3 = 42.875$$

Answer _____

[2 marks]

18 Tom wants to find the square of negative 3.5
He presses these keys on his calculator.

$$(-) 3 . 5 x^2 =$$

His calculator shows -12.25

(a) Explain why the calculator does not show the square of negative 3.5

[1 mark]

(b) Work out $(-3.5)^2 + (-1.2)^3 \times 4.5$

Answer _____

[2 marks]

- 19** The reciprocal of a number is equal to $\frac{1}{1.6} + \frac{1}{2.5}$

Work out the number.

Give your answer to 3 significant figures.

Answer _____

[3 marks]

- 20** Mira follows these instructions.

Add 3.7 and 2.15, then square the result.

Divide this by the cube root of 9.8

Subtract your answer from 20

- (a)** Write Mira's instructions as a single calculation.

Answer _____

[1 mark]

- (b)** Work out the answer to Mira's instructions.
Give your answer to 3 significant figures.

Answer _____

[3 marks]

END OF QUESTIONS