

Edexcel GCSE

Mathematics

Higher Tier

Number: Four operations

Information for students

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2). There are 10 questions in this selection.

Advice for students

Show all stages in any calculations.
Work steadily through the paper. Do not spend too long on one question.
If you cannot answer a question, leave it and attempt the next one.
Return at the end to those you have left out.

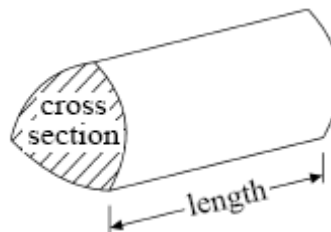
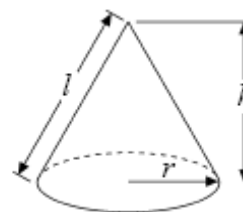
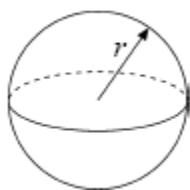
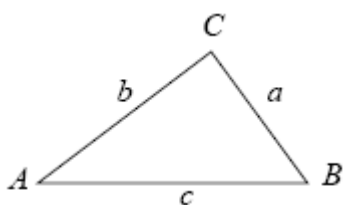
Information for teachers

The questions in this document are taken from the 2009 GCSE Exam Wizard and include questions from examinations set between January 2003 and June 2009 from specifications 1387, 1388, 2540, 2544, 1380 and 2381.

Questions are those tagged as assessing “Four operations” though they might assess other areas of the specification as well. Questions are those tagged as “Higher” so could have (though not necessarily) appeared on either an Intermediate or Higher tier paper.

GCSE Mathematics

Formulae: Higher Tier

You must not write on this formulae page.**Anything you write on this formulae page will gain NO credit.****Volume of prism** = area of cross section \times length**Volume of sphere** $\frac{4}{3} \pi r^3$ **Volume of cone** $\frac{1}{3} \pi r^2 h$ **Surface area of sphere** = $4\pi r^2$ **Curved surface area of cone** = $\pi r l$ **In any triangle ABC****The Quadratic Equation**The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ **Cosine Rule** $a^2 = b^2 + c^2 - 2bc \cos A$ **Area of triangle** = $\frac{1}{2} ab \sin C$

1. Use your calculator to work out the value of

$$\frac{(7.91 - \sqrt[3]{81}) \times 4.32}{6.23 + 1.491}$$

Give your answer correct to 3 significant figures.

.....
(Total 3 marks)

2. Use your calculator to work out the value of $\frac{8.95 + \sqrt{7.84}}{2.03 \times 1.49}$

- (a) Write down all the figures on your calculator display.

.....
(2)

- (b) Write down your answer to part (a) correct to 3 significant figures.

.....
(1)
(Total 3 marks)

3. Work out $2\frac{2}{3} \times 1\frac{1}{4}$

Give your answer in its simplest form.

.....
(Total 3 marks)

4. Julie buys 19 identical calculators.
The total cost is £143.64

Work out the total cost of 31 of these calculators.

£
(Total 3 marks)

5. Work out $\frac{4.6 + 3.85}{3.2^2 - 6.51}$

Write down all the numbers on your calculator display.

.....
(Total 2 marks)

6. Use your calculator to work out the value of

$$\frac{126}{92 \times \sin 47^\circ}$$

Give your answer correct to 3 significant figures.

.....
(Total 2 marks)

7. Use your calculator to work out the value of $\sqrt{7.08^2 - 6.57^2}$

(a) Write down all the figures on your calculator display.

..... (2)

(b) Write your answer to part (a) correct to 2 significant figures.

..... (1)
(Total 3 marks)

8. Work out $147.6 \div 0.24$
You **must** show all your working.

.....
(Total 3 marks)

9. $2\frac{1}{4} \times 1\frac{2}{3}$

$3\frac{3}{4}$

A

$2\frac{11}{12}$

B

$3\frac{2}{12}$

C

$2\frac{2}{12}$

D

$3\frac{11}{12}$

E

(Total 1 mark)

10. Toby invested £4500 for 2 years in a savings account.
He was paid 4% per annum compound interest.

How much did Toby have in his savings account after 2 years?

£

(Total 3 marks)

01. 2

3

$$7.91 - \sqrt[3]{81} = 3.58325 \dots$$

$$3.58325 \dots \times 4.32 = 15.4796 \dots$$

$$6.23 + 1.491 = 7.721$$

$$15.4796 \dots \div 7.721 =$$

B3 for 2 – 2.005

or

B1 for 3.58(325) ($\times 4.32$) or 15.5...

B1 for 7.721 seen

[3]

02. (a) 3.884682778 2
B2 for 3.88468(2...)
(B1 for 11.75 or 3.0247 or 3.88(...))
- (b) 3.88 1
B1ft (to 3 sf any answers to (a) that have ≥ 3 sf)
- [3]**
03. $\frac{8}{3} \times \frac{5}{4} = \frac{8 \times 5}{3 \times 4} = \frac{40}{12} = 3\frac{1}{3}$ 3
B1 for $\frac{8}{3}$ oe or $\frac{5}{4}$ oe
M1 (dep on B1) for multiplying numerator and denominator of
“ $\frac{8}{3}$ ” and “ $\frac{5}{4}$ ”
A1 for $3\frac{1}{3}$ oe mixed number or $\frac{10}{3}$
or
B1 for 1.25 and 2.67 or 2.66(...)
M1 (dep on B1) for correct method of multiplication
A1 for 3.3
- [3]**
04. $143.64 \div 19 = 7.56$
 $7.56 \times 31 = 234.36$ 3
M1 for $143.64 \div 19$ (or 7.56 seen) or 143.64×31 (or 4452.84 seen)
M1(dep) for ‘7.56’ \times 31 or ‘4452.84’ \div 19
or $143.64 + 12 \times$ ‘7.56’
A1 for 234.36 cao accept 234.36p
Alternative method:
M1 for $\frac{31}{19}$ (or 1.63(1...) seen)
M1 (dep) ‘1.63...’ \times 143.64
A1 for 234.36 cao accept 234.36p
- [3]**

05. $4.6 + 3.85 = 8.45$
 $3.2^2 - 6.51 = 3.73$
 $8.45 \div 3.73 =$
 2.26541555 2

M1 for $\frac{169}{20}$ or $\frac{256}{25}$ or $\frac{373}{100}$ or 3.73 or 10.24 or 8.45 seen

A1 for 2.265(41555); accept $\frac{845}{373}$

[2]

06. 1.87 or better 2
 $126/67.28\dots\dots$

M1 for correct order of operation

A1 for 1.87 or better

(sc B1 for 67.3 or better seen)

[2]

07. (a) $50.1264 - 43.1649 = 6.9615$ 2
 $\sqrt{6.9615} =$
 $2.638465\dots$

B2 for 2.638465... accept 2.6384....

(B1 for 6.9615)

(b) 2.6 1
B1 ft

[3]

08. $\frac{147.6}{0.24} = \frac{14760}{24}$

3

$$\begin{array}{r} 615 \\ 24 \overline{)14736^{12}0} \end{array}$$

615

M1 for $14760 \div 24$

M1 for attempt at complete method, either division or cancelling of fraction or chunking method (needs to get to $6 \times x$)

A1 cao

SC B2 for 6.15 or digits 615 seen in working

[3]

09. A

[1]

10. 4500×1.04^2
4867.20

3

M1 for 4500×1.04 or for $4500 + 0.04 \times 4500$ or for 4680 or 180 or 360 or 4860

M1 (dep) '4680' $\times 1.04$ or for '4680' $+ 0.04 \times$ '4680'

A1 for 4867.2(0) cao

(If correct answer seen then ignore any extra years)

Alternative method

M2 for 4500×1.04^2 or 4500×1.04^3

A1 for 4867.2(0) cao

[SC: 367.2(0) seen B2]

[3]