Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Rounding and estimation

Time allowed: 30 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2 and Paper 3

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 24

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 24 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1 Write 1426.3075 correct to

(a) 2 decimal places,

Answer(a) ..... [1]

(b) 2 significant figures.

Answer(b) ..... [1]

(a) Rounding and estimation (b) Significant figures Click for more variations

1	**(a)**	1426.31 cao	**1**	
	(b)	1400 cao	**1**	

2 Write 15.0782 correct to

(a) one decimal place,

Answer(a) ..... [1]

(b) the nearest 10.

Answer(b) ..... [1]

(a) Rounding and estimation (b) Rounding and estimation Click for more variations

2	**(a)**	15.1 cao	**1**	
	(b)	20 cao	**1**	

3 Write these numbers correct to 2 significant figures.

(a) 0.076 499

..... [1]

(b) 10 100

..... [1]

(a) Significant figures (b) Significant figures Click for more variations

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3(a)	0.076 cao	**1**	
3(b)	10 000 cao	**1**	

4 Calculate 324×17.

Give your answer in standard form, correct to 3 significant figures.

Answer ..... [2]

Significant figures Click for more variations

4	5.51×10^3	**2**	**B1** for 5.508×10^3 or figs 551 or 5.5×10^3

5 Find the value of 8^5.

Give your answer correct to 3 significant figures.

..... [2]

Significant figures Click for more variations

5	32 800 cao	**2**	**B1** for 32 768 or *their* answer of more than 3 figures correctly rounded to 3 sf

6

$$p = \frac{4.8 \times 1.98276}{16.83}$$

(a) In the spaces provided, write each number in this calculation correct to 1 significant figure.

Answer(a)

..... × .....

.....

[1]

(b) Use your answer to **part (a)** to estimate the value of p.

Answer(b) ..... [1]

(a) Significant figures (b) Rounding and estimation Click for more variations

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6	**(a)**	$\frac{5\times 2}{20}$	**1**	
	(b)	0.5 or $\frac{1}{2}$ cao	**1**	

7 Sophie buys 73 books for her school.
Each book costs \$21.95 .

(a) By rounding each number correct to 1 significant figure, estimate the total cost of these books.

\$ ..... [1]

(b) Write down whether this estimate is greater or less than the exact cost.

Explain how you decide, without working out the exact cost.

..... because .....

..... [1]

(a) Rounding and estimation (b) Significant figures Click for more variations

7(a)	70×20 and 1400	**1**	
7(b)	Less than [because] both values rounded down oe	**1**	If zero scored, **SC1** for answer of 73×20 and 1460 in **(a)** with Less than [because] the cost of the book is rounded down oe

8 By rounding each number in the calculation correct to 1 significant figure, estimate the value of

$$\frac{38.7\times 3.115}{20.3-4.1^2}.$$

You must show all your working.

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..... [2]

Rounding and estimation Click for more variations

8	$\frac{40\times3}{20-4^2}$	**M1**	Allow **M1** for 3 out of 4 values correctly rounded or for all correct but with any trailing zeros
	30 cao	**A1**	**Dep on M1** with no errors or trailing zeros

9 $D = \sqrt{\frac{1.95\times9.92^2}{8.07}}$

By writing each number correct to 1 significant figure, work out an estimate for D.

$D =$ ..... [3]

Rounding and estimation Click for more variations

9	5 with 2, 10 and 8 shown	**3**	**B2** for $\sqrt{\frac{200}{8}}$ or better or **M1** for two of 2, 10 or 8

10 $b = dm + 2mk$

(a) $d = 3.14$, $m = 7.92$ and $k = 10.16$.

By rounding each value correct to 1 significant figure, work out an estimate for b.

..... [3]

(b) Rearrange the formula to make m the subject.

$m =$ ..... [2]

(a) Rounding and estimation (b) Changing the subject when it appears twice Click for more variations

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10(a)	184 with 3, 8 and 10 shown	**3**	**B1** for 3, 8 and 10 **M1** for $3 \times 8 + 2 \times 8 \times 10$ or for correct substitution of unrounded, truncated or incorrectly rounded values
10(b)	$[m =] \ \frac{b}{d+2k}$ final answer	**2**	**M1** for $[b =] \ m(d + 2k)$

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