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

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Percentages

Time allowed: 45 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2 and Paper 4

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

/ 37

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 37 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 A watch costs $12 400.
In a sale there is a discount of 16%.

Calculate the amount of the discount.

$ ..... [1]

Basic percentages Click for more variations

1	1984	**1**	

2 Write 55 g as a percentage of 2.2 kg.

.....% [2]

Basic percentages Click for more variations

2	2.5	**2**	**M1** for 2200 or 0.055 seen or **SC1** for answer figs 25

3 Increase $22 by 15%.

$ ..... [2]

Percentage increase and decrease Click for more variations

3	25.3[0]	**2**	**M1** for $22 \times \frac{15}{100}$ oe or better

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4 The price of a game increases from \$48 to \$56.40 .

Calculate the percentage increase in the price.

..... % [2]

Percentage increase and decrease Click for more variations

4	17.5	**2**	**M1** for $(\frac{56.40}{48} - 1)$ [× 100] oe or $\frac{56.40 - 48}{48}$ [×100] or $\frac{56.40}{48} \times 100$ [− 100]

5 Roberto buys a toy for \$5.00 .
He then sells it for \$4.60 .

Calculate his percentage loss.

..... % [2]

Percentage increase and decrease Click for more variations

5	8	**2**	**M1** for $\frac{5 - 4.60}{5}$ [×100] or $\frac{4.60}{5} \times 100$

6 In a sale, the original price of a sewing machine is reduced by \$38.
This is an 8% reduction in the original price.

Work out the original price of the sewing machine.

\$ ..... [2]

Reverse percentages Click for more variations

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6	475	**2**	**M1** for $x \times \frac{8}{100} = 38$ or for $\frac{38}{8} \times 100$ oe

7 F is proportional to the product of m and a.

Calculate the percentage change in F when m is increased by 40% and a is decreased by 15%.

..... % [3]

Percentage increase and decrease Click for more variations

7	19	**3**	**M2** for $\left(1+\frac{40}{100}\right)\left(1-\frac{15}{100}\right)$ [ma] oe or **M1** for $F = kma$ or better or $\left(1+\frac{40}{100}\right)$ **and** $\left(1-\frac{15}{100}\right)$ oe seen

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8 In a sale, the prices of coats are reduced by 15%.

(a) The original price of a coat is \$60.

Calculate the sale price of the coat.

\$ ..... [2]

(b) The sale price of a different coat is \$58.14 .

Calculate the original price of this coat .

\$ ..... [2]

(a) Percentage increase and decrease (b) Reverse percentages Click for more variations

8(a)	51	**2**	**M1** for $60\times\frac{100-15}{100}$ oe or **B1** for 9
8(b)	68.40	**2**	**M1** for [ ] $\times\frac{100-15}{100}=58.14$ oe

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9 A dressmaker takes 75 hours to make 31 dresses.
In week 1, she takes a total of 12 hours 30 minutes to make the first 4 dresses.
In week 2, she makes the remaining 27 dresses at a constant hourly rate.

Work out the percentage increase in her hourly rate of making dresses from week 1 to week 2.

..... % [4]

Percentage increase and decrease Click for more variations

9	35	**4**	**M3** for $\frac{27 \div (75-12.5)}{4 \div 12.5} \times 100[-100]$ oe or $\left(\frac{27 \div (75-12.5)}{4 \div 12.5} - 1\right)[\times 100]$ oe or $\frac{27 \div (75-12.5) - (4 \div 12.5)}{4 \div 12.5}[\times 100]$ oe or $\left(\frac{12.5}{4} \div \frac{62.5}{27}\right) \times 100[-100]$ OR **M1** for $4 \div 12.5$ oe **M1** for $27 \div (75-12.5)$ oe

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10 **(a)** Annie and Dermot share \$600 in the ratio 11 : 9.

(i) Show that Annie receives \$330.

[1]

(ii) Find the amount that Dermot receives.

\$ ..... [1]

(b) **(i)** Annie invests \$330 at a rate of 1.5% per year compound interest.

Calculate the amount that Annie has after 8 years.
Give your answer correct to the nearest dollar.

\$ ..... [3]

(ii) Find the amount of **interest** that Annie has, after the 8 years, as a percentage of the \$330.

..... % [2]

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(c) Dermot has $70 to spend.
He spends $24.75 on a shirt.

(i) Find $24.75 as a fraction of $70.
Give your answer in its lowest terms.

..... [1]

(ii) The $24.75 is the sale price after reducing the original price by 10%.

Calculate the original price.

$ ..... [3]

(d) After one year, the value of Annie's car had reduced by 20%.
At the end of the second year, the value of Annie's car had reduced by a further 15% of its value at the end of the first year.

(i) Calculate the overall percentage reduction after the two years.

..... % [2]

(ii) After three years the overall percentage reduction in the value of Annie's car is 40.84%.

Calculate the percentage reduction in the third year.

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..... % [2]

(a)(i) Ratios (a)(ii) Ratios (b)(i) Interest, growth and decay (b)(ii) Basic percentages
(c)(i) Basic fractions (c)(ii) Reverse percentages (d)(i) Percentage increase and decrease
(d)(ii) Percentage increase and decrease Click for more variations

10(a)(i)	600 ÷ (11+ 9) × 11 [=330] with no errors seen	**M1**	Could be in separate steps
10(a)(ii)	270	**1**	
10(b)(i)	372 cao nfww	**3**	**B2** for answer 371.7… or **M1** for $330 \times \left(1+\frac{1.5}{100}\right)^{8}$ oe not spoiled After zero scored, **SC1** for answer 42 or 41.7…
10(b)(ii)	12.6 or 12.7 or 12.63 to 12.73	**2**	**M1** for $\frac{\textit{their}\,\textbf{(b)(i)}-330}{330}$ or $\frac{\textit{their}\,\textbf{(b)(i)}}{330}\times 100$ soi by 112.7 or 113 After zero scored, **SC1** for answer 12%
10(c)(i)	$\frac{99}{280}$ cao final answer	**1**	
10(c)(ii)	27.5[0]	**3**	**M2** for $24.75 \div \frac{100-10}{100}$ oe or **M1** for recognising 24.75 as 90[%] oe
10(d)(i)	32 cao	**2**	**M1** for $\left(1-\frac{20}{100}\right)\left(1-\frac{15}{100}\right)$ [x]oe or for 0.15 × 0.8 [x] oe
10(d)(ii)	13 cao	**2**	**M1** for $\left(1-\frac{20}{100}\right)\left(1-\frac{15}{100}\right)\times x = 40.84 - 32$ oe seen or for *their* **(d)(i)** + $\left(1-\left(\frac{\textit{their}\ \textbf{(d)(i)}}{100}\right)\right)x = 40.84$ oe

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