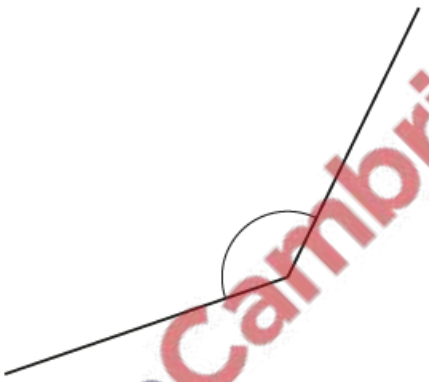
Numbers – 2022 Nov IGCSE 0580 Math

1. Nov/2022/Paper_0580_11/No.1

Write the number two million eight hundred and forty thousand three hundred and twenty-seven in figures.

..... [1]

2. Nov/2022/Paper_0580_11/No.2



Write down the mathematical name of this type of angle.

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3. Nov/2022/Paper_0580_11/No.3

(a) Measure the length of this line in millimetres.

..... mm [1]

(b) Draw a line perpendicular to this line. [1]

4. Nov/2022/Paper_0580_11/No.7

The temperature, in °C, is recorded at the same time in six cities.

London	Helsinki	Oslo	Paris	Madrid	Berlin
6	–2	–5	7	9	2

(a) Which city has the coldest temperature?

..... [1]

(b) What is the difference in temperature between Helsinki and Paris?

..... °C [1]

5. Nov/2022/Paper_0580_11/No.9

Divide $200 in the ratio 7 : 3.

$ ..... , $ ..... [2]

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6. Nov/2022/Paper_0580_11/No.12

The price of a computer is $520.
This price is reduced by 15% in a sale.

Work out the sale price.

$ ..... [2]

7. Nov/2022/Paper_0580_11/No.13

Without using a calculator, work out $\frac{1}{3}+\frac{5}{6}$.

You must show all your working and give your answer as a mixed number in its simplest form.

..... [2]

8. Nov/2022/Paper_0580_11/No.15

A café sells 330 sandwiches.
This is $\frac{11}{14}$ of the sandwiches they make.

Work out the number of sandwiches the café makes.

..... [2]

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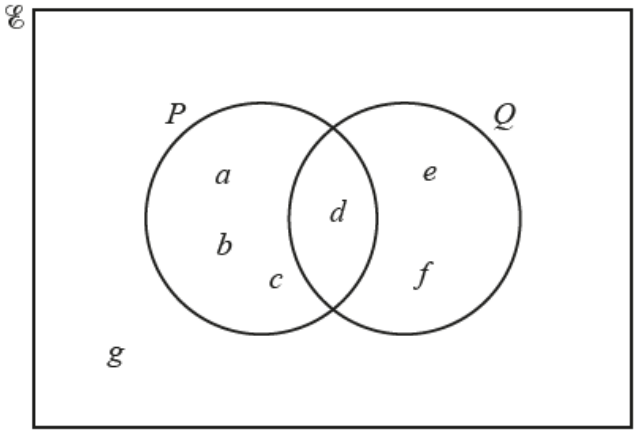
9. Nov/2022/Paper_0580_11/No.18



The Venn diagram shows the elements of the sets $\mathscr{E}$, P and Q.

Complete the statements.

(a) $P = \{$ ..... $\}$ [1]

(b) $n(P \cup Q) =$ ..... [1]

10. Nov/2022/Paper_0580_11/No.20

(a) Write 0.00273 in standard form.

..... [1]

(b) Sam has to answer this question.

> Calculate 9306×4532.
>
> Give your answer in standard form correct to 3 significant figures.

Sam writes 42.1×10^6 as his answer to this question.

What two errors has Sam made?

Error 1 .....

Error 2 .....

[2]

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11. Nov/2022/Paper_0580_12/No.1

(a) Write the number eighty thousand and eighty in figures.

..... [1]

(b) Write down the value of the 4 in the number 643 719.

..... [1]

12. Nov/2022/Paper_0580_12/No.2

Find the value of $\sqrt{53.29}$.

..... [1]

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13. Nov/2022/Paper_0580_12/No.8

(a) Simplify.

$6a + 3b - 2a - 5b$

..... [2]

(b) $s = 5t + \frac{1}{2}at^2$

Find the value of s when $t = 6$ and $a = 3$.

$s =$ ..... [2]

14. Nov/2022/Paper_0580_12/No.10

Calculate.

(a) 2000×1.2^3

..... [1]

(b) $2\frac{1}{8} \times \frac{6}{17}$

..... [1]

(c) $\frac{4.5(\cos 30°)}{\sqrt{3}} - 2$

..... [1]

15. Nov/2022/Paper_0580_12/No.15

Jenna buys 2.4 m of ribbon and 4.8 m of fabric.
The total cost is \$33.48 .
Ribbon costs \$0.85 per metre.

Find the cost of 1 m of fabric.

\$ ..... [3]

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16. Nov/2022/Paper_0580_12/No.14

Calculate.

(a) 2000×1.2^3

..... [1]

(b) $2\frac{1}{8} \times \frac{6}{17}$

..... [1]

(c) $\frac{4.5(\cos 30°)}{\sqrt{3}} - 2$

..... [1]

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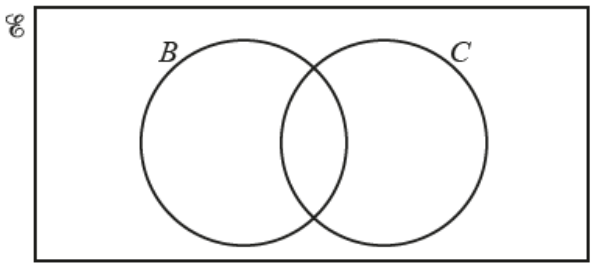
17. Nov/2022/Paper_0580_12/No.17

(a) $\mathscr{E}$ = { people in a group}
B = { people who own a bicycle}
C = { people who own a car}

There are 120 people in the group.
21 people own a bicycle.
15 people own both a bicycle and a car.
35 people do not own a bicycle and do not own a car.



(i) Complete the Venn diagram.

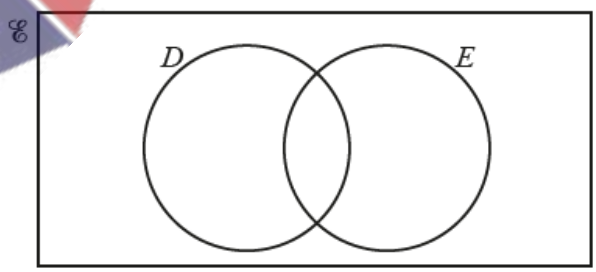
[2]

(ii) A person from the group is chosen at random.

Find the probability that this person owns a car.

..... [1]

(b)



Shade the region $D \cup E$. [1]

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18. Nov/2022/Paper_0580_12/No.19

In a survey of 1200 people, 150 people are left-handed.

Work out the expected number of left-handed people in a town with 56 000 people.

..... [2]

19. Nov/2022/Paper_0580_13/No.1

Complete this shopping bill.

2.25 kg apples at $2.80 per kg = $ .....

3.2 kg carrots at $0.65 per kg = $ .....

Total = $ ..... [3]

20. Nov/2022/Paper_0580_13/No.2

Sunita is 3 years and 4 months old.

Work out her age in months.

..... months [1]

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21. Nov/2022/Paper_0580_13/No.3

120 121 149 164 216

From this list, write down

(a) a square number,

..... [1]

(b) a cube number.

..... [1]

22. Nov/2022/Paper_0580_13/No.6

Marco starts work at 20 45 and finishes at 02 08 the next day.

Find the length of time, in hours and minutes, he works.

..... h ..... min [1]

23. Nov/2022/Paper_0580_13/No.8

Calculate.

$$\sqrt{15} + \frac{4.8}{2.2}$$

..... [1]

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24. Nov/2022/Paper_0580_13/No.9

Nerina invests \$5400 at a rate of r% per year simple interest.
At the end of 3 years, the total interest earned is \$429.30 .

Calculate the value of r.

$r =$ ..... [2]

25. Nov/2022/Paper_0580_13/No.12

Without using a calculator, work out $\frac{5}{7} - \frac{2}{3}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [2]

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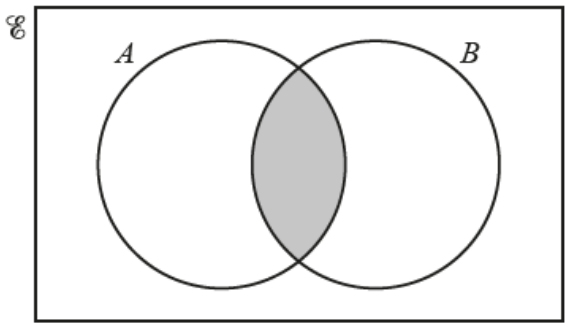
26. Nov/2022/Paper_0580_13/No.17

Write 0.007 in standard form.

..... [1]

27. Nov/2022/Paper_0580_13/No.19

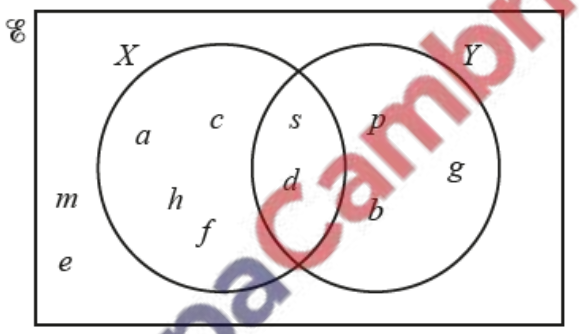
(a)



Use set notation to describe the shaded region in the Venn diagram.

..... [1]

(b)



(i) List the elements of set X.

..... [1]

(ii) Write down $n(X \cup Y)$.

..... [1]

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28. Nov/2022/Paper_0580_21/No.1

Write down a common multiple of 18 and 24.

..... [1]

29. Nov/2022/Paper_0580_21/No.2

A train journey starts at 23 40 and finishes at 06 50.

Work out the time taken for this journey.

..... h ..... min [1]

30. Nov/2022/Paper_0580_21/No.3

Write 32 cm as a fraction of 2 m.
Give your answer in its simplest form.

..... [2]

31. Nov/2022/Paper_0580_21/No.4

Divide $200 in the ratio 7 : 3.

$ ..... , $ ..... [2]

32. Nov/2022/Paper_0580_21/No.6

The price of a computer is $520.
This price is reduced by 15% in a sale.

Work out the sale price.

$ ..... [2]

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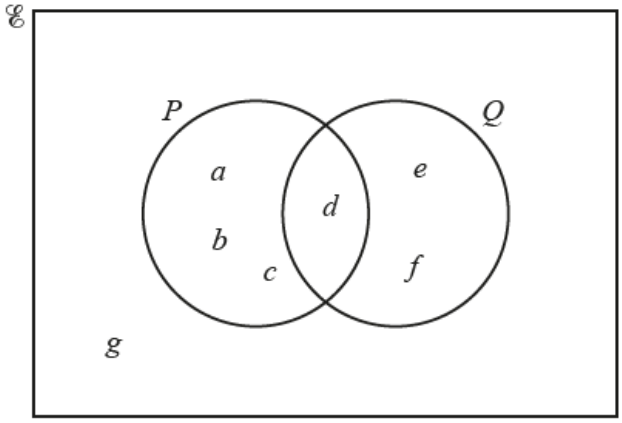
33. Nov/2022/Paper_0580_21/No.7



The Venn diagram shows the elements of the sets $\mathscr{E}$, P and Q.

Complete the statements.

(a) $P = \{$ ..... $\}$ [1]

(b) $n(P \cup Q) =$ ..... [1]

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34. Nov/2022/Paper_0580_21/No.9

Without using a calculator, work out $\frac{1}{3} + \frac{5}{6}$.

You must show all your working and give your answer as a mixed number in its simplest form.

..... [2]

35. Nov/2022/Paper_0580_21/No.24

Violet and Wilfred recorded their times to run 200 m, correct to the nearest second.
Violet took 36 seconds and Wilfred took 39 seconds.

Work out the upper bound of the difference between their times.

..... s [2]

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36. Nov/2022/Paper_0580_22/No.3

Find the sum of 3^2 and -3^2.

..... [1]

37. Nov/2022/Paper_0580_22/No.5

Jenna buys 2.4 m of ribbon and 4.8 m of fabric.
The total cost is $33.48 .
Ribbon costs $0.85 per metre.

Find the cost of 1 m of fabric.

$ ..... [3]

38. Nov/2022/Paper_0580_22/No.7

Without using a calculator, work out $\frac{5}{9} - \frac{1}{6}$.

You must show all your working and give your answer as a fraction in its simplest form.

..... [2]

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39. Nov/2022/Paper_0580_22/No.10

Calculate.

(a) 2000×1.2^3

..... [1]

(b) $2\frac{1}{8} \times \frac{6}{17}$

..... [1]

(c) $\frac{4.5(\cos 30°)}{\sqrt{3}} - 2$

..... [1]

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40. Nov/2022/Paper_0580_22/No.12

$x = 3^2 \times 5^2 \times 7 \times 199^{57}$ when written as a product of its prime factors.

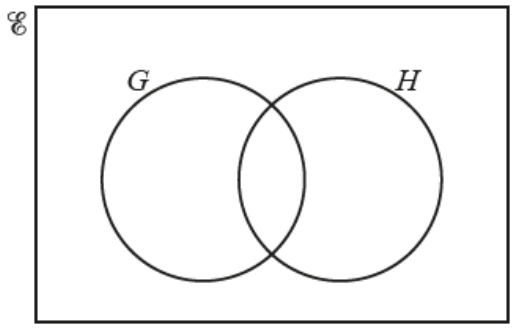
Write $x \div 315$ as a product of its prime factors.

..... [2]

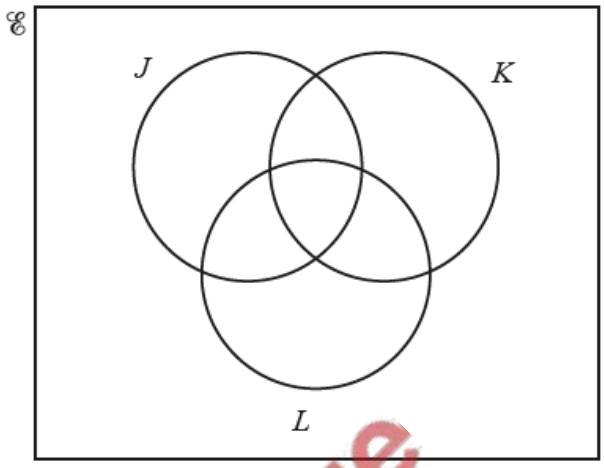
41. Nov/2022/Paper_0580_22/No.16

(a) Shade the region indicated in each Venn diagram.

$G \cap H'$

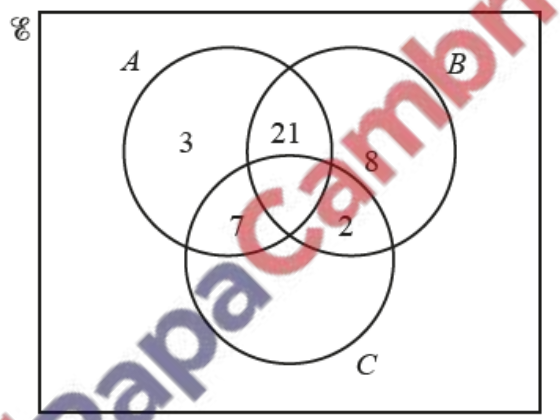


$(J \cup K') \cap L$



[2]

(b) The Venn diagram shows some information about the number of elements in sets A, B, C and $\mathscr{E}$.



Given the following information, complete the Venn diagram.

$n(A \cap B \cap C) = 1$
$n(A \cup B \cup C)' = 17$
$n(C) = 42$

[2]

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42. Nov/2022/Paper_0580_22/No.18

Write $0.4\dot{1}\dot{9}$ as a fraction in its simplest form.
You must show all your working.

..... [3]

43. Nov/2022/Paper_0580_23/No.1

Marco starts work at 2045 and finishes at 0208 the next day.

Find the length of time, in hours and minutes, he works.

..... h ..... min [1]

44. Nov/2022/Paper_0580_23/No.2

120 121 149 164 216

From this list, write down

(a) a square number

..... [1]

(b) a cube number.

..... [1]

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45. Nov/2022/Paper_0580_23/No.3

Calculate.

$$\sqrt{15}+\frac{4.8}{2.2}$$

..... [1]

46. Nov/2022/Paper_0580_23/No.5

Without using a calculator, work out $\frac{5}{7}-\frac{2}{3}$.

You must show all your working and give your answer as a fraction in its simplest form.

..... [2]

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47. Nov/2022/Paper_0580_23/No.7

Find the lowest common multiple (LCM) of 36 and 60.

..... [2]

48. Nov/2022/Paper_0580_23/No.12

Keita invests $4000 at a rate of 2.6% per year compound interest.

Work out the interest earned on the investment at the end of 3 years.

$ ..... [3]

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49. Nov/2022/Paper_0580_23/No.13

Convert $0.2\dot{4}$ to a fraction.
You must show all your working and give your answer in its simplest form.

..... [2]

50. Nov/2022/Paper_0580_31/No.1

Helga buys some items to do some knitting.

(a) Complete Helga's bill from one shop.

Item	Cost ($)
2 pairs of knitting needles at $4.95 a pair	
6 buttons at $0.65 each	
1 knitting pattern at $3.60	3.60
Total	

[3]

(b) Helga also buys 8 balls of wool from another shop.
Each ball costs $3.12 .
Helga pays with a $50 note.

Work out the amount of change she receives.

$ ..... [2]

(c) Helga knits some squares.
Each square is either white, pink or blue.
The number of squares are in the ratio white : pink : blue = 5 : 3 : 2.
30 squares are blue.

Show that Helga knits 150 squares.

[2]

(d) Helga uses some of the squares to make a rectangular blanket.
The blanket is 6 squares long and 4 squares wide.

(i) Calculate the percentage of the 150 squares she uses to make this blanket.

..... % [2]

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(ii) Each square has side length 15 cm.

Work out the perimeter of this blanket.
Give your answer in metres.

..... m [3]

51. Nov/2022/Paper_0580_31/No.3(a)

Miguel works in an office.

(a) It takes Miguel 40 minutes to drive to work.

(i) He leaves home at 07 45.

What time does he arrive at work?

..... [1]

(ii) Miguel drives to work at an average speed of 57 km/h.

Show that he drives 38 km.

[2]

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52. Nov/2022/Paper_0580_31/No.4

(a) Find

(i) a multiple of 3 between 70 and 80,

..... [1]

(ii) a factor of 63 between 5 and 10,

..... [1]

(iii) a cube number between 60 and 90,

..... [1]

(iv) the reciprocal of 7.

..... [1]

(b) Work out $\frac{2}{7}$ of 84.

..... [1]

(c) Find the value of

(i) $\sqrt[3]{3375}$,

..... [1]

(ii) 12^0.

..... [1]

(d) Rana hires a car.
The cost is \$74 per day plus a delivery cost of \$17.50 .
Rana pays a total of \$461.50 .

Calculate the number of days that Rana hires the car.

..... days [2]

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(e) A train to town A leaves a station every 25 minutes.
A train to town B leaves the same station every 45 minutes.
Both trains leave at 08 00.

Find the next time both trains leave together.

..... [3]

53. Nov/2022/Paper_0580_31/No.5(b)

(b) Carlotta buys a bicycle.

(i) The length, l cm, of the bicycle is 96 cm, correct to the nearest centimetre.

Complete this statement about the value of l.

..... $\leqslant l <$ ..... [2]

(ii) The diameter of each bicycle wheel is 46 cm.
Carlotta rides the bicycle a distance of 1.4 km.

Calculate the number of complete revolutions that a wheel makes during this journey.

..... [5]

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54. Nov/2022/Paper_0580_31/No.9

(a) Sami buys a new car.

(i) She pays a deposit of $2250 and 36 equal monthly payments of $437.50 .

Show that she pays a total amount of $18 000.

[2]

(ii) Sami later sells the car for $13 680.

Calculate the percentage loss.

..... % [2]

(b) Sami invests $12 750 for 6 years at a rate of 1.8% per year compound interest.

Calculate the value of her investment at the end of the 6 years.

$ ..... [2]

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55. Nov/2022/Paper_0580_32/No.1

(a) 2 18 27 29 39 49 80 92

From this list of numbers, write down

(i) a multiple of 8,

..... [1]

(ii) a factor of 46,

..... [1]

(iii) a square number,

..... [1]

(iv) a cube number,

..... [1]

(v) a prime number.

..... [1]

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(b) Write 0.003 857 correct to

(i) 3 decimal places,

..... [1]

(ii) 3 significant figures.

..... [1]

(c) Anna invests \$16 000 at a rate of 3.8% per year compound interest.

Calculate the value of her investment at the end of 5 years.

\$ ..... [2]

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(d) **(i)** Write 48 as the product of its prime factors.

..... [2]

(ii) Find the lowest common multiple (LCM) of 48 and 126.

..... [2]

(e) The mass of a truck, m tonnes, is 28.5 tonnes, correct to 1 decimal place.

Complete this statement about the value of m.

..... $\leqslant m <$ ..... [2]

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56. Nov/2022/Paper_0580_32/No.4

Mr and Mrs Perez and their 3 children go on holiday to Tokyo.

(a) The holiday costs $3800 for an adult and $2400 for a child.
8% tax is then added to the cost of the holiday.

Find the total cost of the holiday, including tax, for the Perez family.

$ ..... [4]

(b) The plane takes 11 hours 40 minutes to fly from Los Angeles to Tokyo.
The plane leaves on Wednesday at 1035 local time.
The local time in Tokyo is 17 hours ahead of the local time in Los Angeles.

(i) Find the day and local time in Tokyo when the plane arrives.

Day ..... Time ..... [3]

(ii) The distance the plane flies is 8820 km.

Calculate the average speed of the plane.

..... km/h [2]

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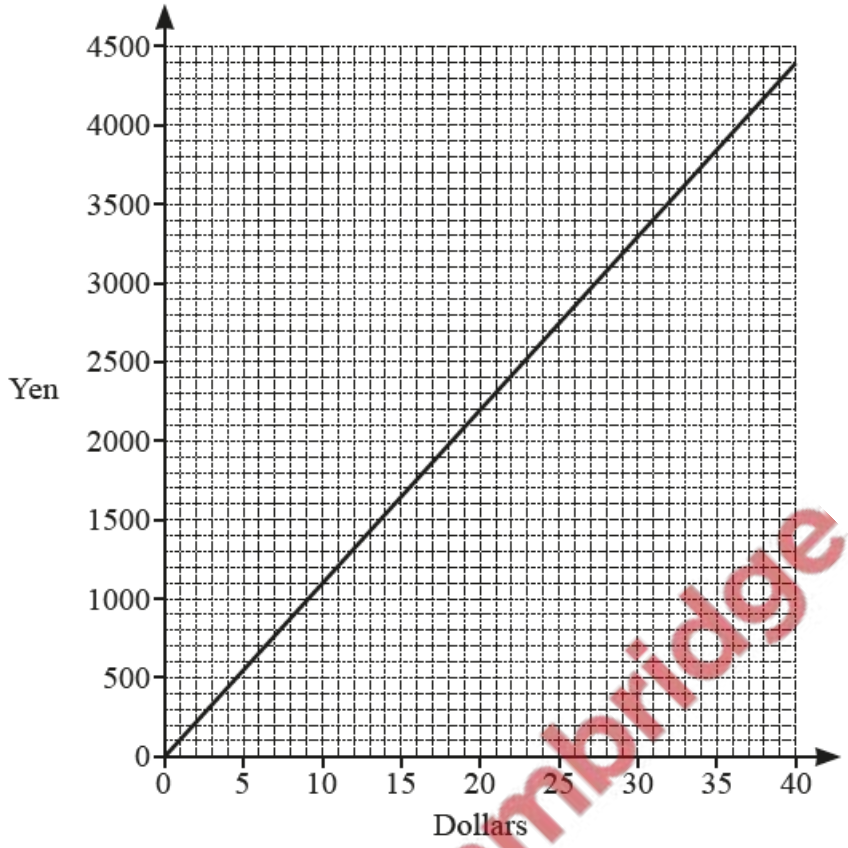
(c) The diagram shows a conversion graph between dollars and Japanese yen.



A watch costs $100.

Find the cost of this watch in yen.

..... yen [2]

(d) The family go to a restaurant.
The total cost of the food and drinks is $154.
The ratio cost of food : cost of drinks = 21 : 4.

Work out the cost of drinks.

$ ..... [2]

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57. Nov/2022/Paper_0580_32/No.9

(a) Write down the reciprocal of $\frac{1}{3}$.

..... [1]

(b) Write down the value of 3^0.

..... [1]

(c) Find a fraction between $\frac{3}{25}$ and $\frac{4}{25}$.

..... [1]

(d) Find the difference in temperature between $-5\,°C$ and $9\,°C$.

..... °C [1]

(e) Write in standard form.

(i) 5 600 000

..... [1]

(ii) 0.000 072

..... [1]

(f) Calculate $(5.2 \times 10^6) \times (3.8 \times 10^{-2})$.
Give your answer in standard form.

..... [1]

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58. Nov/2022/Paper_0580_33/No.1

(a) List all the factors of 68.

..... [2]

(b) Put **one** pair of brackets into each calculation to make it correct.

(i) $7 + 3 \times 5 - 1 = 19$

[1]

(ii) $12 + 16 \div 2 + 5 = 19$

[1]

(c) Find

(i) the reciprocal of $\frac{2}{7}$,

..... [1]

(ii) the value of 10^0.

..... [1]

(d) Calculate.

(i) $3^2 + 3^4$

..... [1]

(ii) $\sqrt{3} \times \sqrt{12}$

..... [1]

(iii) 5^{-3}

..... [1]

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(e) Write these numbers in order of size, starting with the smallest.

$\sqrt{10}$ $\quad$ 3.142 $\quad$ 1.8^2 $\quad$ π $\quad$ $\frac{22}{7}$

..... < ..... < ..... < ..... < ..... [2]

smallest

(f) By writing each number in the calculation correct to 1 significant figure, work out an estimate for the value of

$$\frac{136+47.2}{62.9\div 18.1}.$$

You must show all your working.

..... [2]

(g) Write 4.73×10^6 as an ordinary number.

..... [1]

(h) Write down a prime number between 30 and 40.

..... [1]

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59. Nov/2022/Paper_0580_33/No.3

(a) The population of Alaska is 735 720.

(i) Write this number in words.

.....

..... [1]

(ii) The land area of Alaska is 1 477 300 square kilometres.

Work out the average number of people per square kilometre.

..... [1]

(iii) In Alaska, the city with the highest population is Anchorage with 291 830 people.

What percentage of the population of Alaska live in Anchorage?

..... % [1]

(b) The length, L km, of a race is 1569 km, correct to the nearest kilometre.

Complete this statement about the value of L.

..... $\leqslant L <$ ..... [2]

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(c) The table gives some information about two mountains.
The temperatures are taken at the top of each mountain on the same day.

		Height in metres	Maximum temperature	Minimum temperature
Denali	Highest mountain in Alaska	6190	−9 °C	−20 °C
Everest	Highest mountain in the world	8849	..... °C	−38 °C

(i) Find the difference between the height of Denali and the height of Everest.

..... m [1]

(ii) Find the difference between the maximum temperature and the minimum temperature at the top of Denali.

..... °C [1]

(iii) The maximum temperature at the top of Everest was 27 °C colder than the maximum temperature at the top of Denali.

Complete the table. [1]

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60. Nov/2022/Paper_0580_41/No.2

(a) Write

(i) 2994.99 correct to the nearest 10,

..... [1]

(ii) 0.983 correct to 1 decimal place,

..... [1]

(iii) 2090 correct to 2 significant figures.

..... [1]

(b) Write down a prime number between 90 and 100.

..... [1]

(c) Write 2^{-6} as a fraction.

..... [1]

(d) Write 0.007 01 in standard form.

..... [1]

(e) Simplify $1.5 \times 10^{x} + 1.5 \times 10^{x-1}$ giving your answer in standard form.

..... [2]

(f) Write $0.3\dot{7}$ as a fraction.
You must show all your working.

..... [2]

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61. Nov/2022/Paper_0580_41/No.4

(a) **(i)** Zak invests $500 at a rate of 2% per year simple interest.

Calculate the value of Zak's investment at the end of 5 years.

$ ..... [3]

(ii) Yasmin invests $500 at a rate of 1.8% per year compound interest.

Calculate the value of Yasmin's investment at the end of 5 years.

$ ..... [2]

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(iii) Zak and Yasmin continue with these investments.

How many **more complete** years is it before the value of Yasmin's investment is greater than the value of Zak's investment?

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..... [3]

62. Nov/2022/Paper_0580_42/No.1(a)

(a) (i) At a football club, season tickets are sold for seated areas and for standing areas.
The cost of season tickets are in the ratio seated : standing = 5 : 3.
The cost of a season ticket for the standing area is $45.

Find the cost of a season ticket for the seated area.

$ ..... [2]

(ii) In 2021, the value of the team's players was $2.65 million.
In 2022 this value has decreased by 12%.

Find the value in 2022.

$ ..... million [2]

(iii) The number of people at a football match is 1455.
This is 6.25% of the total number of people allowed in the stadium.

Find the total number of people allowed in the stadium.

..... [2]

(iv) The average attendance increased exponentially by 4% each year for the three years from 2016 to 2019.
In 2019 the average attendance was 1631.

Find the average attendance for 2016.

..... [3]

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(a) Here are the ingredients needed to make a pasta bake to serve 12 people.

250 g butter
600 g pasta
460 g mushrooms
280 g cheese
800 ml milk

(i) Find the mass of the cheese as a percentage of the mass of the mushrooms.

..... % [1]

(ii) Find the mass of butter needed to make a pasta bake to serve 18 people.

..... g [2]

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(iii) Monica has 2.2 litres of milk and 1.5 kg of each other ingredient.

Calculate the greatest number of people she can serve with pasta bake.

..... [3]

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(b) In 2019, a packet of pasta cost \$2.40.
This was an increase of 25% of the cost of a packet in 2018.

(i) Work out the cost in 2018.

\$ ..... [2]

(ii) In 2020, the cost of a packet increased by 15% from the cost in 2019.

Work out the total percentage increase in the cost of a packet from 2018 to 2020.

..... % [3]

(c)

NOT TO SCALE

Pasta is sold in packets with width 11.5 cm, correct to the nearest 0.5 cm.
A shop places these packets in a single line on a shelf of length 2 m, correct to the nearest 0.1 m.

Find the maximum number of these packets that will fit along this shelf.
You must show all your working.

..... [3]

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