

0580 Mathematics Paper 2 - Number

Topical questions | 473 questions

1. Question | 0580 Feb-March 2016 P2 V2 Q6

6 Write the recurring decimal $0.\dot{4}$ as a fraction.
[$0.\dot{4}$ means $0.444\dots$]

..... [2]

2. Question | 0580 Feb-March 2016 P2 V2 Q9

9 **Without using your calculator**, work out $1\frac{7}{12} + \frac{13}{20}$.

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

..... [3]

3. Question | 0580 Feb-March 2016 P2 V2 Q12

- 12** A metal pole is 500 cm long, correct to the nearest centimetre.
The pole is cut into rods each of length 5.8 cm, correct to the nearest millimetre.

Calculate the largest number of rods that the pole can be cut into.

..... [3]

4. Question | 0580 Feb-March 2016 P2 V2 Q13

- 13** (a) Write 2016 as the product of prime factors.

..... [3]

(b) Write 2016 in standard form.

..... [1]

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5. Question | 0580 May-June 2016 P2 V1 Q1

1 A train leaves Zurich at 22 40 and arrives in Vienna at 07 32 the next day.

Work out the time taken.

..... h min [1]

6. Question | 0580 May-June 2016 P2 V1 Q2

2 From a sample of 80 batteries, 3 are faulty.

Work out the percentage of faulty batteries.

..... % [1]

7. Question | 0580 May-June 2016 P2 V1 Q3

3 Write 1.27×10^{-3} as an ordinary number.

.....[1]

8. Question | 0580 May-June 2016 P2 V1 Q4

4 Calculate $(2.1 - 0.078)^{17}$, giving your answer correct to 4 significant figures.

.....[2]

9. Question | 0580 May-June 2016 P2 V1 Q5

- 5
- Omar changes 2000 Saudi Arabian riyals (SAR) into euros (€) when the exchange rate is $\text{€}1 = 5.087 \text{ SAR}$.
Work out how much Omar receives, giving your answer correct to the nearest euro.

€[2]

10. Question | 0580 May-June 2016 P2 V1 Q6

- 6
- Find the lowest common multiple (LCM) of 36 and 48.

..... [2]

11. Question | 0580 May-June 2016 P2 V1 Q10

10 The sides of an equilateral triangle are 9.4 cm, correct to the nearest millimetre.

Work out the upper bound of the perimeter of this triangle.

..... cm [2]

12. Question | 0580 May-June 2016 P2 V1 Q16

16 **Without using a calculator**, work out $\frac{6}{7} \div 1\frac{2}{3}$.

Show all your working and give your answer as a fraction in its lowest terms.

..... [3]

13. Question | 0580 May-June 2016 P2 V1 Q18

18 A car of length 4.3 m is travelling at 105 km/h.
It passes over a bridge of length 36 m.

Calculate the time, in seconds, it takes to pass over the bridge **completely**.

..... s [3]

14. Question | 0580 May-June 2016 P2 V2 Q1

1 Write 0.000 057 4 in standard form.

..... [1]

15. Question | 0580 May-June 2016 P2 V2 Q2

2 Calculate.

$$\frac{3.07 + 2^4}{5.03 - 1.79}$$

..... [1]

16. Question | 0580 May-June 2016 P2 V2 Q3

3 Write 3.5897 correct to 4 significant figures.

..... [1]

17. Question | 0580 May-June 2016 P2 V2 Q5

5 8 9 10 11 12 13 14 15 16

From the list of numbers, write down

(a) the square numbers,

..... [1]

(b) a prime factor of 99.

..... [1]

18. Question | 0580 May-June 2016 P2 V2 Q12

12 Write the recurring decimal $0.3\dot{6}$ as a fraction.
Give your answer in its simplest form.
[$0.3\dot{6}$ means $0.3666\dots$]

..... [3]

19. Question | 0580 May-June 2016 P2 V2 Q13

13 The base of a triangle is 9 cm correct to the nearest cm.
The area of this triangle is 40 cm^2 correct to the nearest 5 cm^2 .

Calculate the upper bound for the perpendicular height of this triangle.

..... cm [3]

20. Question | 0580 May-June 2016 P2 V2 Q14

14 **Without using a calculator,** work out $2\frac{5}{8} \times \frac{3}{7}$.
Show all your working and give your answer as a mixed number in its lowest terms.

..... [3]

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21. Question | 0580 May-June 2016 P2 V2 Q19

- 19** It is estimated that the world's population is growing at a rate of 1.14% per year. On January 1st 2014 the population was 7.23 billion.

(a) Find the expected population on January 1st 2020.

.....billion [2]

(b) Find the year when the population is expected to reach 10 billion.

..... [2]

22. Question | 0580 May-June 2016 P2 V3 Q1

- 1** Find the cube root of 4913.

..... [1]

23. Question | 0580 May-June 2016 P2 V3 Q2

- 2** Write 71 496 correct to 2 significant figures.

..... [1]

24. Question | 0580 May-June 2016 P2 V3 Q5

5 **Without using a calculator**, work out $\frac{1}{12} \times 1\frac{1}{5}$.

Show all your working and give your answer as a fraction in its lowest terms.

..... [2]

25. Question | 0580 May-June 2016 P2 V3 Q8

8 Write the recurring decimal $0.\dot{3}2$ as a fraction.
[$0.3\dot{2}$ means $0.3222\dots$]

..... [2]

10 Find the highest common factor (HCF) of 56 and 70.

..... [2]

27. Question | 0580 May-June 2016 P2 V3 Q14

- 14 (a) $\mathcal{C} = \{x: 2 \leq x \leq 16, x \text{ is an integer}\}$
 $M = \{\text{even numbers}\}$
 $P = \{\text{prime numbers}\}$

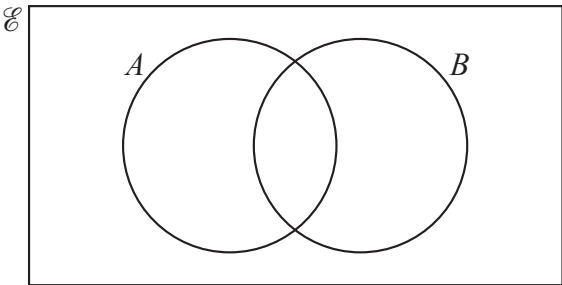
(i) Find $n(M)$.

..... [1]

(ii) Write down the set $(P \cup M)'$.

$(P \cup M)' = \{.....\}$ [1]

(b) On the Venn diagram, shade $A \cap B'$.



[1]

28. Question | 0580 May-June 2016 P2 V3 Q17

- 17 (a) $V = IR$

In an experiment I and R are both measured correct to 1 decimal place.

When $I = 4.0$ and $R = 2.7$, find the **lower** bound for V .

..... [2]

- (b) $S = \frac{D}{T}$

In an experiment D and T are both measured correct to 2 significant figures.

When $D = 7.6$ and $T = 0.23$, find the **upper** bound for S .

..... [2]

29. Question | 0580 May-June 2016 P2 V3 Q19

19 At the start of an experiment there are 20 000 bacteria.
The number of bacteria increases at a rate of 30% per hour.

(a) Work out the number of bacteria after 4 hours.

..... [2]

(b) After how many **whole** hours, from the start of the experiment, will the number of bacteria be greater than one million?

..... hours [2]

30. Question | 0580 Oct-Nov 2016 P2 V1 Q1

1 Write down the temperature which is 5 °C below –2 °C.

..... °C [1]

31. Question | 0580 Oct-Nov 2016 P2 V1 Q2

2 Write 0.040 190 7 correct to

(a) 3 significant figures,

.....[1]

(b) 3 decimal places.

.....[1]

32. Question | 0580 Oct-Nov 2016 P2 V1 Q3

- 3 The price of a toy is 12 euros (€) in Germany and 14 Swiss francs in Switzerland.
1 Swiss franc = €0.905

Calculate the difference between these two prices.
Give your answer in euros.

€[2]

33. Question | 0580 Oct-Nov 2016 P2 V1 Q4

- 4 Work out $\frac{2}{3} - \frac{1}{4}$, giving your answer as a fraction in its lowest terms.

Do not use a calculator and show all the steps of your working.

.....[2]

34. Question | 0580 Oct-Nov 2016 P2 V1 Q5

5 (a) Write 5^{-3} as a fraction.

..... [1]

(b) Write 0.004 56 in standard form.

..... [1]

35. Question | 0580 Oct-Nov 2016 P2 V1 Q12

12 (a) Write \$0.70 as a fraction of \$5.60, giving your answer in its lowest terms.

..... [1]

(b) Write the recurring decimal $0.\dot{1}\dot{8}$ as a fraction in its lowest terms.
[$0.\dot{1}\dot{8}$ means 0.181818...]

..... [2]

36. Question | 0580 Oct-Nov 2016 P2 V1 Q15

15 Work out.

(a) $2\begin{pmatrix} 3 \\ 5 \end{pmatrix} - \begin{pmatrix} 1 \\ 2 \end{pmatrix}$

..... [1]

(b) $\begin{pmatrix} 1 & 2 \end{pmatrix} \begin{pmatrix} 2 \\ 3 \end{pmatrix}$

..... [2]

37. Question | 0580 Oct-Nov 2016 P2 V2 Q1

1 (a) Write 14 835 correct to the nearest thousand.

..... [1]

(b) Write your answer to **part (a)** in standard form.

..... [1]

38. Question | 0580 Oct-Nov 2016 P2 V2 Q6

6 The sides of a square are 8 cm, correct to the nearest centimetre.

Calculate the upper bound for the area of the square.

..... cm² [2]

39. Question | 0580 Oct-Nov 2016 P2 V2 Q12

12 Ralf and Susie share \$57 in the ratio 2 : 1.

(a) Calculate the amount Ralf receives.

\$ [2]

(b) Ralf gives \$2 to Susie.

Calculate the new ratio Ralf's money : Susie's money.
Give your answer in its simplest form.

..... : [2]

14 Without using your calculator, work out $\frac{3}{4} + \frac{2}{3} - \frac{1}{8}$.

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

..... [4]

41. Question | 0580 Oct-Nov 2016 P2 V3 Q4

4 Write in standard form.

(a) 2 470 000

(b) 0.0079

..... [1]

..... [1]

42. Question | 0580 Oct-Nov 2016 P2 V3 Q5

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

Write down all the steps of your working and give your answer as a fraction in its simplest form.

..... [2]

43. Question | 0580 Oct-Nov 2016 P2 V3 Q7

7 Write these in order of size, smallest first.

0.6³ 0.22 $\sqrt{0.09}$ 0.4²

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

44. Question | 0580 Oct-Nov 2016 P2 V3 Q8

- 8** The length of a car is 4.2 m, correct to 1 decimal place.

Write down the upper bound and the lower bound of the length of this car.

Upper bound = ... m

Lower bound = ... m [2]

45. Question | 0580 Oct-Nov 2016 P2 V3 Q11

- 11** Ahmed paid \$34 000 for a car.
His car decreased in value by 40% at the end of the first year.
The value at the end of the second year was 10% less than the value at the end of the first year.
- Calculate the value of Ahmed’s car after 2 years.

\$ [2]

46. Question | 0580 Oct-Nov 2016 P2 V3 Q13

- 13** Write the recurring decimal $0.\dot{2}$ as a fraction.
[$0.\dot{2}$ means 0.222...]

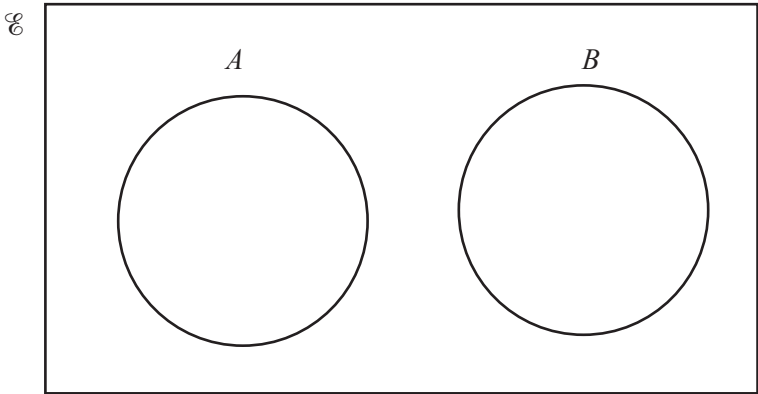
..... [2]

47. Question | 0580 Oct-Nov 2016 P2 V3 Q20

20 (a) $\mathcal{C} = \left\{ 7, 9.3, \pi, \frac{5}{9}, 2\sqrt{8} \right\}$

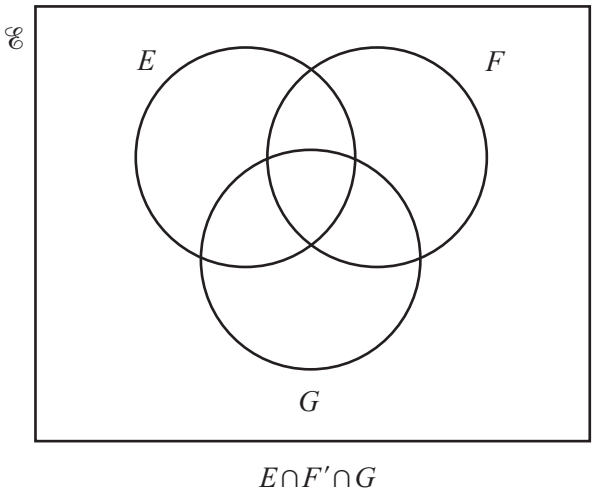
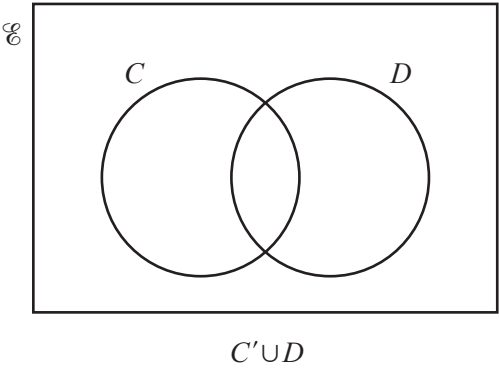
$A = \{\text{integers}\}$
 $B = \{\text{irrational numbers}\}$

Write all the elements of $\mathcal{C}$ in their correct place on the Venn diagram.



[2]

(b) Shade the region in each of the Venn diagrams below.



[2]

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48. Question | 0580 Feb-March 2017 P2 V2 Q3

- 3** **Without using your calculator** and by rounding each number correct to 1 significant figure, estimate the value of

$$\frac{10.3 \times 19.5}{88.9 - 43.2}.$$

You must show all your working.

..... [2]

49. Question | 0580 Feb-March 2017 P2 V2 Q4

- 4** The population of the world grows exponentially at a rate of 1.1% per year.

Find the number of years it takes for the population to grow from 7 billion to 7.31 billion.
Give your answer correct to the nearest whole number.

.....years [2]

50. Question | 0580 Feb-March 2017 P2 V2 Q6

- 6** Write the recurring decimal $0.1\dot{7}$ as a fraction.
Show all your working.

..... [2]

51. Question | 0580 Feb-March 2017 P2 V2 Q7

- 7** The length of a rectangle is 9.3 cm, correct to 1 decimal place.
Its width is 7.7 cm, correct to 1 decimal place.

Write down the lower bound and the upper bound for the area of the rectangle.

Lower bound = ... cm^2

Upper bound = ... cm^2 [3]

52. Question | 0580 Feb-March 2017 P2 V2 Q8

8 **Without using your calculator**, work out $3\frac{1}{3} \div 2\frac{1}{2}$.

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

..... [3]

53. Question | 0580 Feb-March 2017 P2 V2 Q10

10 Indira buys a television in a sale for \$924.
This was a reduction of 12% on the original price.

Calculate the original price of the television.

\$..... [3]

54. Question | 0580 May-June 2017 P2 V1 Q2

2 The thickness of one sheet of paper is 8×10^{-3} cm.

Work out the thickness of 250 sheets of paper.

..... cm [1]

55. Question | 0580 May-June 2017 P2 V1 Q3

3 Write 23.4571 correct to

(a) 4 significant figures,

..... [1]

(b) the nearest 10.

..... [1]

56. Question | 0580 May-June 2017 P2 V1 Q4

4 The table shows the temperatures in five places at 10am one day in January.

Place	Temperature (°C)
Helsinki	−7
Chicago	−10
London	3
Moscow	−4
Bangkok	26

(a) Which place was the coldest?

..... [1]

(b) At 2 pm the temperature in Helsinki had increased by 4 °C.

Write down the temperature in Helsinki at 2 pm.

..... °C [1]

57. Question | 0580 May-June 2017 P2 V1 Q7

7 **Without using a calculator**, work out $1\frac{2}{3} + \frac{5}{7}$.

Write down all the steps of your working and give your answer as a mixed number in its simplest form.

..... [3]

58. Question | 0580 May-June 2017 P2 V2 Q1

1 Write 0.071 64 correct to 2 significant figures.

..... [1]

59. Question | 0580 May-June 2017 P2 V2 Q4

4 Calculate $\sqrt{120} + 3.8^2 - 25$.

..... [1]

60. Question | 0580 May-June 2017 P2 V2 Q5

5 Work out 85 cents as a percentage of \$2.03 .

..... % [1]

61. Question | 0580 May-June 2017 P2 V2 Q9

9 **Without using a calculator**, work out $\frac{5}{6} - \frac{1}{2}$.

Show all the steps of your working and give your answer as a fraction in its simplest form.

..... [2]

62. Question | 0580 May-June 2017 P2 V2 Q11

11 (a) Write 0.0605 in standard form.

..... [1]

(b) Calculate $0.1 \times 5.1 \times 10^4$, giving your answer in standard form.

..... [1]

63. Question | 0580 May-June 2017 P2 V2 Q14

14 Work out.

(a) $125^{\frac{2}{3}}$

..... [1]

(b) $\left(\frac{1}{3}\right)^{-2}$

..... [1]

64. Question | 0580 May-June 2017 P2 V2 Q18

18 A rectangle has length 62 mm and width 47 mm, both correct to the nearest millimetre.
The area of this rectangle is $A \text{ mm}^2$.

Complete the statement about the value of A .

..... $\leq A <$ [3]

65. Question | 0580 May-June 2017 P2 V3 Q3

3 Find the lowest common multiple (LCM) of 20 and 24.

.....[2]

66. Question | 0580 May-June 2017 P2 V3 Q14

14 Write the recurring decimal $0.\dot{6}\dot{3}$ as a fraction in its lowest terms.
You must show all your working.

.....[3]

19 Without using your calculator, work out $\frac{11}{12} - \left(\frac{3}{4} - \frac{2}{3}\right)$.

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

..... [4]

68. Question | 0580 May-June 2017 P2 V3 Q24

- 24
- Marcel invests \$2500 for 3 years at a rate of 1.6% per year simple interest.

Jacques invests \$2000 for 3 years at a rate of $x\%$ per year compound interest.

At the end of the 3 years Marcel and Jacques receive the same amount of interest.

Calculate the value of x correct to 3 significant figures.

$x = \dots\dots\dots[5]$

69. Question | 0580 Oct-Nov 2017 P2 V1 Q2

2 Work out.

$$2^{-4} \times 2^5$$

..... [1]

70. Question | 0580 Oct-Nov 2017 P2 V1 Q3

3 (a) Use a calculator to work out $\frac{5^{0.4} - \sqrt{3}}{0.13 - 0.015}$.

Write down all the digits in your calculator display.

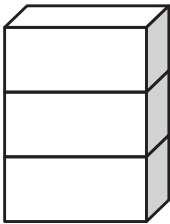
..... [1]

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

..... [1]

71. Question | 0580 Oct-Nov 2017 P2 V1 Q8

8



NOT TO
SCALE

The diagram shows three identical cuboids in a tower.
The height of one cuboid is 6.5 cm, correct to the nearest millimetre.

Work out the upper bound of the height of the tower.

..... cm [2]

72. Question | 0580 Oct-Nov 2017 P2 V1 Q9

- 9 The value of a motorbike is \$12 400.
Each year, the value of the motorbike decreases exponentially by 15%.

Calculate the value of the motorbike after 3 years.

\$..... [2]

73. Question | 0580 Oct-Nov 2017 P2 V1 Q10

- 10 **Without using a calculator**, work out $1\frac{2}{3} - \frac{11}{15}$.
Write down all the steps of your working and give your answer as a fraction in its lowest terms.

..... [3]

74. Question | 0580 Oct-Nov 2017 P2 V1 Q12

12 $\sqrt{5}$ -7 343 -11 0.4 2.5 $\frac{1}{3}$

From this list of numbers, write down

- (a) a cube number,

..... [1]
- (b) the smallest number,

..... [1]
- (c) a natural number.

..... [1]

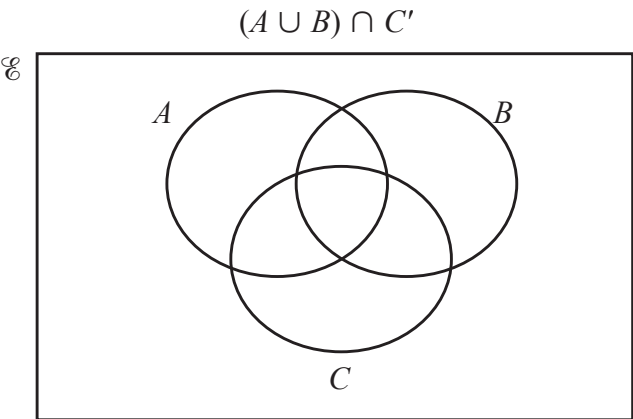
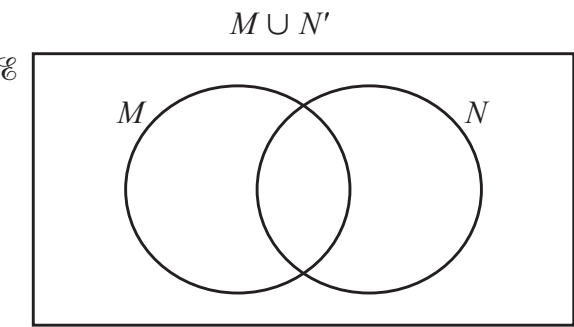
75. Question | 0580 Oct-Nov 2017 P2 V1 Q15

15 (a) $Q = \{1, 2, 3, 4, 5, 6\}$

Write down a set P where $P \subset Q$.

$P = \dots\dots\dots$ [1]

(b) Shade these regions in the Venn diagrams.



[2]

76. Question | 0580 Oct-Nov 2017 P2 V2 Q1

- 1 One day, at noon, in Maseru, the temperature was 17°C .
At midnight the temperature was 20°C lower.

Work out the temperature at midnight.

$\dots\dots\dots^{\circ}\text{C}$ [1]

77. Question | 0580 Oct-Nov 2017 P2 V2 Q2

2 Write 5.17×10^{-3} as an ordinary number.

..... [1]

78. Question | 0580 Oct-Nov 2017 P2 V2 Q4

4 (a) 1 and 12 are factors of 12.

Write down all the other factors of 12.

..... [1]

(b) Write down the multiples of 9 between 20 and 40.

..... [1]

79. Question | 0580 Oct-Nov 2017 P2 V2 Q6

6 Write 55 g as a percentage of 2.2 kg.

.....% [2]

80. Question | 0580 Oct-Nov 2017 P2 V2 Q8

8 Amar cycles at a speed of 18 km/h.
It takes him 55 minutes to cycle between two villages.

Calculate the distance between the two villages.

..... km [2]

81. Question | 0580 Oct-Nov 2017 P2 V2 Q9

9 Work out, giving your answer in standard form.

$1.2 \times 10^{40} + 1.2 \times 10^{41}$

..... [2]

82. Question | 0580 Oct-Nov 2017 P2 V2 Q10

10 The sides of a triangle are 5.2 cm, 6.3 cm and 9.4 cm, each correct to the nearest millimetre.

Calculate the lower bound of the perimeter of the triangle.

..... cm [2]

83. Question | 0580 Oct-Nov 2017 P2 V2 Q11

11 Write the recurring decimal $0.\dot{4}\dot{8}$ as a fraction.

Show all your working.

..... [2]

84. Question | 0580 Oct-Nov 2017 P2 V2 Q13

13 (a) Write $\frac{11}{3}$ as a mixed number.

..... [1]

(b) **Without using a calculator**, work out $\frac{1}{4} + \frac{5}{12}$.
Show all the steps of your working and give your answer as a fraction in its lowest terms.

..... [2]

85. Question | 0580 May-June 2018 P2 V1 Q1

1 Write down a prime number between 20 and 30.

..... [1]

86. Question | 0580 May-June 2018 P2 V1 Q2

2 Write 0.000 038 7 in standard form.

..... [1]

87. Question | 0580 May-June 2018 P2 V1 Q3

3 Write the recurring decimal $0.\dot{6}\dot{3}$ as a fraction.

..... [1]

88. Question | 0580 May-June 2018 P2 V1 Q9

9 $3^{-q} \times \frac{1}{27} = 81$

Find the value of q .

$q =$ [2]

89. Question | 0580 May-June 2018 P2 V1 Q10

10 (a) Calculate $\sqrt{2.38 + 6.4^2}$, writing down your full calculator display.

..... [1]

(b) Write your answer to **part (a)** correct to 4 decimal places.

..... [1]

90. Question | 0580 May-June 2018 P2 V1 Q11

11 Find the exact value of $8^{\frac{2}{3}} \times 49^{-\frac{1}{2}}$.

..... [2]

91. Question | 0580 May-June 2018 P2 V1 Q13

13 Without using your calculator, work out $1\frac{3}{4} \times \frac{6}{35}$.

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

..... [3]

92. Question | 0580 May-June 2018 P2 V2 Q1

1 One morning, Marcia works from 08 20 to 11 15.

Find how long she works for.
Give your answer in hours and minutes.

..... h min [1]

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..... [2]

.....[2]

8 Here are some numbers written in standard form.

3.4×10^{-1}

1.36×10^6

7.9×10^0

2.4×10^5

5.21×10^{-3}

4.3×10^{-2}

From these numbers, write down

(a) the largest number,

..... [1]

(b) the smallest number.

..... [1]

96. Question | 0580 May-June 2018 P2 V2 Q12

- 12** Anna walks 31 km at a speed of 5 km/h.
Both values are correct to the nearest whole number.

Work out the upper bound of the time taken for Anna’s walk.

..... hours [2]

97. Question | 0580 May-June 2018 P2 V3 Q1

- 1** One day in Chamonix the temperature at noon was 6 °C.
At midnight the temperature was 11 °C lower.

Write down the temperature at midnight.

..... °C [1]

98. Question | 0580 May-June 2018 P2 V3 Q3

- 3** Liz takes 65 seconds to run 400 m.

Calculate her average speed.

..... m/s [1]

99. Question | 0580 May-June 2018 P2 V3 Q4

4 Complete the list of factors of 36.

1, 2, ... , 36 [2]

100. Question | 0580 May-June 2018 P2 V3 Q5

5 Increase \$22 by 15%.

\$..... [2]

101. Question | 0580 May-June 2018 P2 V3 Q6

6 (a) Write 209 802 correct to the nearest thousand.

..... [1]

(b) Write 4123 correct to 3 significant figures.

..... [1]

102. Question | 0580 May-June 2018 P2 V3 Q8

8 (a) Write 4.82×10^{-3} as an ordinary number.

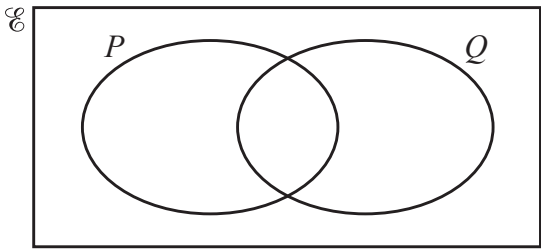
..... [1]

(b) Write 52 million in standard form.

..... [1]

103. Question | 0580 May-June 2018 P2 V3 Q12

12



$n(\mathcal{E}) = 20, n(P) = 10, n(Q) = 13$ and $n(P \cup Q)' = 5$.

Work out $n(P \cap Q)$.
You may use the Venn diagram to help you.

$n(P \cap Q) = \dots\dots\dots [2]$

104. Question | 0580 May-June 2018 P2 V3 Q15

15 Without using a calculator, work out $\frac{2}{3} \div 1\frac{1}{5}$.

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

$\dots\dots\dots [3]$

105. Question | 0580 May-June 2018 P2 V3 Q16

16 (a) The length of the side of a square is 12 cm, correct to the nearest centimetre.

Calculate the upper bound for the perimeter of the square.

..... cm [2]

(b) Jo measures the length of a rope and records her measurement correct to the nearest ten centimetres. The upper bound for her measurement is 12.35 m.

Write down the measurement she records.

..... m [1]

106. Question | 0580 May-June 2018 P2 V3 Q17

17 (a) Find the value of $\left(\frac{1}{81}\right)^{-\frac{3}{4}}$.

..... [1]

(b) Simplify. $\sqrt[3]{27t^{27}}$

..... [2]

107. Question | 0580 Oct-Nov 2018 P2 V1 Q1

1 Carlos starts work at 21 20 and finishes at 06 15 the next day.

Calculate how long Carlos is at work.

..... h min [1]

108. Question | 0580 Oct-Nov 2018 P2 V1 Q4

4 Work out $(6.4 \times 10^7) + (9.6 \times 10^6)$.
Give your answer in standard form.

..... [2]

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109. Question | 0580 Oct-Nov 2018 P2 V1 Q8

- 8** Saafia has a barrel containing 6000 millilitres of oil, correct to the nearest 100 ml.
She uses the oil to fill bottles which each hold exactly 50 ml.

Calculate the upper bound for the number of bottles she can fill.

..... [2]

110. Question | 0580 Oct-Nov 2018 P2 V1 Q9

- 9** Jan invests \$800 at a rate of 3% per year simple interest.

Calculate the value of her investment at the end of 4 years.

\$ [3]

111. Question | 0580 Oct-Nov 2018 P2 V1 Q12

- 12** Find the integer values of n that satisfy the inequality $15 \leq 4n < 28$.

..... [3]

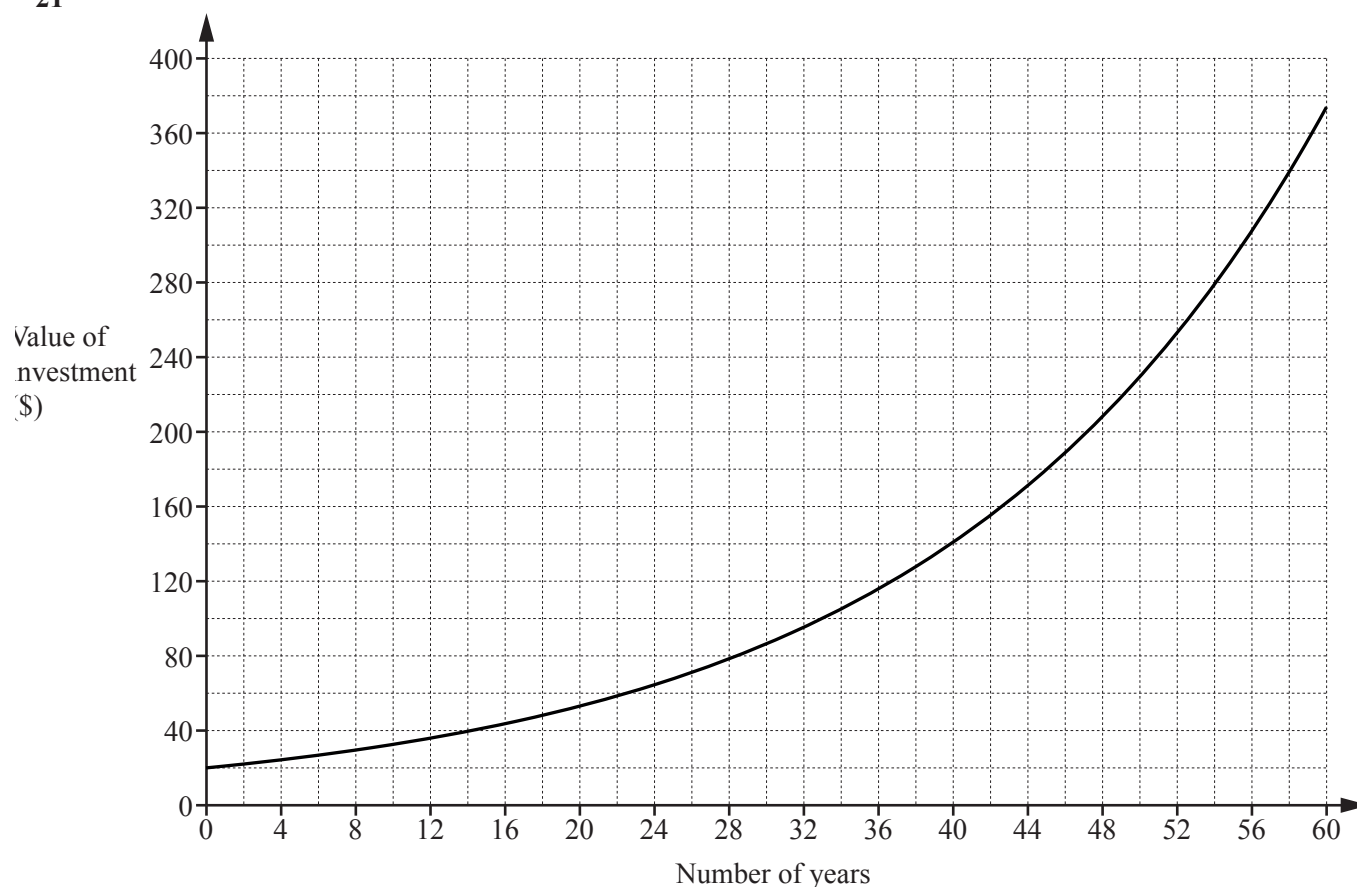
112. Question | 0580 Oct-Nov 2018 P2 V1 Q14

14 Without using your calculator, work out $\frac{3}{8} \div 2\frac{1}{4}$.

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

..... [3]

21



When Heidi was born, her grandfather invested some money in an account that paid compound interest. The graph shows the exponential growth of this investment.

(a) Use the graph to find

(i) the original amount of money invested,

\$ [1]

(ii) the number of years it took for the original amount to double,

..... years [1]

(iii) the value of the investment after 54 years.

\$ [1]

(b) This account earned compound interest at a rate of $r\%$ per year.

Use your answers to **part (a)(i)** and **part (a)(ii)** to write down an equation in terms of r .
You do not have to solve your equation.

..... [2]

114. Question | 0580 Oct-Nov 2018 P2 V2 Q3

3 Calculate $0.125^{-\frac{2}{3}}$.

..... [1]

115. Question | 0580 Oct-Nov 2018 P2 V2 Q5

5 **Without using a calculator**, work out $\frac{1}{15} + \frac{2}{5}$.

Write down all the steps of your working and give your answer as a fraction in its simplest form.

..... [2]

116. Question | 0580 Oct-Nov 2018 P2 V2 Q7

7 $C = \{x : x \text{ is an integer and } 5 < x < 12\}$ $D = \{5, 10\}$

(a) Put a ring around the correct statement from the list below.

$D = \emptyset$ $C \cap D = \{10\}$ $6 \in D$ $D \subset C$ [1]

(b) Find $n(C \cup D)$.

..... [1]

117. Question | 0580 Oct-Nov 2018 P2 V2 Q9

- 9** There are 30 000 lions in Africa.
The number of lions in Africa decreases exponentially by 2% each year.

Find the number of lions in Africa after 6 years.
Give your answer correct to the nearest hundred.

..... [2]

118. Question | 0580 Oct-Nov 2018 P2 V2 Q11

- 11** An equilateral triangle has side length 12 cm, correct to the nearest centimetre.

Find the lower bound and the upper bound of the perimeter of the triangle.

Lower bound = ... cm

Upper bound = ... cm [2]

119. Question | 0580 Oct-Nov 2018 P2 V2 Q23

23 **(a)** Write 56 as a product of its prime factors.

..... [2]

(b) Find the lowest common multiple (LCM) of 56 and 42.

120. Question | 0580 Oct-Nov 2018 P2 V3 Q1

1 Work out $\frac{7}{11}$ of 198 kg.

..... [2]

..... kg [1]

121. Question | 0580 Oct-Nov 2018 P2 V3 Q3

3 Work out \$1.45 as a percentage of \$72.50 .

..... % [1]

122. Question | 0580 Oct-Nov 2018 P2 V3 Q4

4 Calculate.

$$\frac{5.39 - 0.98}{0.743 - 0.0743}$$

..... [1]

123. Question | 0580 Oct-Nov 2018 P2 V3 Q5

5 Work out.

$$\left(\frac{125}{27}\right)^{-\frac{2}{3}}$$

..... [1]

124. Question | 0580 Oct-Nov 2018 P2 V3 Q6

6 (a) Write the number five million, two hundred and seven in figures.

..... [1]

(b) Write 0.008 13 in standard form.

..... [1]

125. Question | 0580 Oct-Nov 2018 P2 V3 Q8

8 Write these numbers correct to 2 significant figures.

(a) 0.076 499

..... [1]

(b) 10 100

..... [1]

126. Question | 0580 Oct-Nov 2018 P2 V3 Q9

9 Without using a calculator, work out $\frac{1}{4} \div \frac{2}{3}$.

You must show all your working and give your answer as a fraction.

..... [2]

127. Question | 0580 Oct-Nov 2018 P2 V3 Q12

12 The area of a square is 42.5 cm^2 , correct to the nearest 0.5 cm^2 .

Calculate the lower bound of the length of the side of the square.

..... cm [2]

128. Question | 0580 Oct-Nov 2018 P2 V3 Q13

13 Change the recurring decimal $0.1\dot{8}$ to a fraction.
You must show all your working.

..... [2]

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129. Question | 0580 Oct-Nov 2018 P2 V3 Q15

15 A car travels at 108 km/h for 20 seconds.

Calculate the distance the car travels.
Give your answer in metres.

..... m [3]

130. Question | 0580 Feb-March 2019 P2 V2 Q1

1 The temperature at 07 00 is -3°C .
This temperature is 11°C higher than the temperature at 01 00.

Find the temperature at 01 00.

..... $^{\circ}\text{C}$ [1]

131. Question | 0580 Feb-March 2019 P2 V2 Q2

2 Jodi swims 22 lengths of a swimming pool to raise money for charity.
She receives \$15 for each length she swims.

Calculate how much money Jodi raises for charity.

\$..... [1]

132. Question | 0580 Feb-March 2019 P2 V2 Q3

3 Write the recurring decimal $0.\dot{2}\dot{3}$ as a fraction.

..... [1]

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133. Question | 0580 Feb-March 2019 P2 V2 Q4

- 4** **(a)** Write 0.046 875 correct to 2 significant figures.

..... [1]

- (b)** Write 2 760 000 in standard form.

..... [1]

134. Question | 0580 Feb-March 2019 P2 V2 Q5

- 5** A tourist changes \$500 to euros (€) when the exchange rate is €1 = \$1.0697 .

Calculate how many euros he receives.

€..... [2]

135. Question | 0580 Feb-March 2019 P2 V2 Q11

- 11** The number of passengers on a train increases from 63 to 77.

Calculate the percentage increase.

.....% [3]

136. Question | 0580 Feb-March 2019 P2 V2 Q14

- 14** Eric invests an amount in a bank that pays compound interest at a rate of 2.16% per year. At the end of 5 years, the value of his investment is \$6 999.31 .

Calculate the amount Eric invests.

\$..... [3]

137. Question | 0580 Feb-March 2019 P2 V2 Q21

- 21** **Without using a calculator,** work out $3\frac{1}{8} \div \frac{5}{12}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [4]

138. Question | 0580 May-June 2019 P2 V1 Q1

1 Work out \$1.20 as a percentage of \$16.

.....% [1]

139. Question | 0580 May-June 2019 P2 V1 Q3

3 Calculate $\sqrt[3]{8.1^2 - 1.3^{0.8}}$.

..... [1]

140. Question | 0580 May-June 2019 P2 V1 Q4

4 An equilateral triangle has sides of length 15 cm, correct to the nearest centimetre.

Calculate the upper bound of the perimeter of this triangle.

..... cm [1]

141. Question | 0580 May-June 2019 P2 V1 Q9

9 Write the recurring decimal $0.4\dot{7}$ as a fraction.
Show all your working.

..... [2]

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12 27 28 29 30 31 32 33

(a) a multiple of 7,

..... [1]

(b) a cube number,

..... [1]

(c) a prime number.

..... [1]

14 Without using a calculator, work out $\frac{5}{6} + \frac{2}{3}$.

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

..... [3]

144. Question | 0580 May-June 2019 P2 V1 Q19

- 19

A model of a car has a scale $1 : 20$.
The volume of the actual car is 12 m^3 .

Find the volume of the model.
Give your answer in cubic centimetres.

..... cm^3 [3]

145. Question | 0580 May-June 2019 P2 V2 Q1

- 1

Write down a prime number between 50 and 60.

..... [1]

146. Question | 0580 May-June 2019 P2 V2 Q3

- 3

Write the recurring decimal $0.\dot{7}$ as a fraction.

..... [1]

147. Question | 0580 May-June 2019 P2 V2 Q5

- 5** The distance between Prague and Vienna is 254 kilometres.
The local time in Prague is the same as the local time in Vienna.
A train leaves Prague at 15 20 and arrives in Vienna at 19 50 the same day.
- Calculate the average speed of the train.

..... km/h [2]

148. Question | 0580 May-June 2019 P2 V2 Q8

- 8** (a) Write 0.047 883 correct to 2 significant figures.

..... [1]

- (b) Write 0.005 27 in standard form.

..... [1]

149. Question | 0580 May-June 2019 P2 V2 Q9

- 9** Find the highest common factor (HCF) of 90 and 48.

..... [2]

150. Question | 0580 May-June 2019 P2 V2 Q10

10 On a map with scale 1 : 25 000, the area of a lake is 33.6 square centimetres.

Calculate the actual area of the lake, giving your answer in square kilometres.

..... km² [2]

151. Question | 0580 May-June 2019 P2 V2 Q13

13 **Without using a calculator**, work out $2\frac{1}{4} \div \frac{3}{7}$.

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

..... [3]

152. Question | 0580 May-June 2019 P2 V2 Q15

15 Shona buys a chair in a sale for \$435.60 .
This is a reduction of 12% on the original price.

Calculate the original price of the chair.

\$..... [3]

153. Question | 0580 May-June 2019 P2 V3 Q1

1 Write 1.8972 correct to 2 decimal places.

..... [1]

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3 Giulio's reaction times are measured in two games.
In the first game his reaction time is $\frac{1}{3}$ of a second.
In the second game his reaction time is $\frac{1}{8}$ of a second.
Find the difference between the two reaction times.

..... [1]

156. Question | 0580 May-June 2019 P2 V3 Q7

7 Here is a list of numbers.

21 $\frac{2}{3}$ $\sqrt{13}$ 31 $\sqrt{121}$ 51 0.7

From this list, write down

(a) a prime number, ... [1]

(b) an irrational number. [1]

157. Question | 0580 May-June 2019 P2 V3 Q9

9 **Without using a calculator**, work out $\frac{12}{35} \times \frac{7}{9}$.

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

..... [2]

158. Question | 0580 May-June 2019 P2 V3 Q16

16 $A = \frac{b \times h}{2}$

$A = 10$, correct to the nearest whole number.
 $h = 4$, correct to the nearest whole number.

Work out the upper bound for the value of b .

..... [3]

159. Question | 0580 Oct-Nov 2019 P2 V1 Q1

1 Work out 5% of \$25.

\$ [1]

160. Question | 0580 Oct-Nov 2019 P2 V1 Q3

3 Calculate.

$$\frac{16.379 - 0.879}{4.2} \times 1.241$$

Give your answer correct to 2 significant figures.

..... [2]

161. Question | 0580 Oct-Nov 2019 P2 V1 Q4

4 Write 15 060

(a) in words,

..... [1]

(b) in standard form.

..... [1]

162. Question | 0580 Oct-Nov 2019 P2 V1 Q8

8 Without using a calculator, work out $\frac{5}{16} \times 1\frac{1}{7}$.

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

..... [2]

163. Question | 0580 Oct-Nov 2019 P2 V1 Q9

9 Paula invests \$600 at a rate of $r\%$ per year simple interest.
At the end of 10 years, the total interest earned is \$90.

Find the value of r .

$r =$ [2]

164. Question | 0580 Oct-Nov 2019 P2 V1 Q12

12 The sides of a square are 15.1 cm, correct to 1 decimal place.

Find the upper bound of the area of the square.

..... cm² [2]

165. Question | 0580 Oct-Nov 2019 P2 V2 Q1

1 The lowest temperature recorded at Scott Base in Antarctica is -57.0°C .
The highest temperature recorded at Scott Base is 63.8°C more than this.

What is the highest temperature recorded at Scott Base?

..... $^{\circ}\text{C}$ [1]

166. Question | 0580 Oct-Nov 2019 P2 V2 Q2

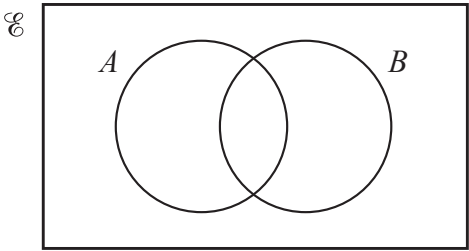
2 Calculate.

$$\frac{5}{8} + \sqrt[3]{340}$$

..... [1]

167. Question | 0580 Oct-Nov 2019 P2 V2 Q4

4 On the Venn diagram, shade the region $(A \cap B)'$.



[1]

168. Question | 0580 Oct-Nov 2019 P2 V2 Q7

7 Rashid changes 30 000 rupees to dollars when the exchange rate is \$1 = 68.14 rupees.

How many dollars does he receive?

\$ [2]

169. Question | 0580 Oct-Nov 2019 P2 V2 Q10

10 Write the recurring decimal $0.6\dot{7}$ as a fraction.
Show all your working and give your answer in its simplest form.

..... [2]

170. Question | 0580 Oct-Nov 2019 P2 V2 Q11

11 **Without using a calculator**, work out $3\frac{5}{8} - 1\frac{2}{3}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

171. Question | 0580 Oct-Nov 2019 P2 V3 Q1

1 Write down the temperature that is 7°C below -3°C .

..... $^{\circ}\text{C}$ [1]

172. Question | 0580 Oct-Nov 2019 P2 V3 Q2

2 Calculate $\sqrt{256^{0.25} + 4 \times 8}$.

..... [1]

173. Question | 0580 Oct-Nov 2019 P2 V3 Q3

3 Here is a list of numbers.

87 77 57 47 27

From this list, write down

(a) a cube number,

..... [1]

(b) a prime number.

..... [1]

174. Question | 0580 Oct-Nov 2019 P2 V3 Q4

4 Find the highest common factor (HCF) of 84 and 105.

..... [2]

175. Question | 0580 Oct-Nov 2019 P2 V3 Q5

5 Write in standard form.

(a) 72 000

..... [1]

(b) 0.0018

..... [1]

176. Question | 0580 Oct-Nov 2019 P2 V3 Q15

15 Without using a calculator, work out $\frac{2}{3} + \frac{1}{4} \times \frac{2}{3}$.

Write down all the steps of your working and give your answer as a fraction in its simplest form.

..... [4]

177. Question | 0580 Oct-Nov 2019 P2 V3 Q18

18 (a) $M = \{x : x \text{ is an integer and } 2 \leq x < 6\}$

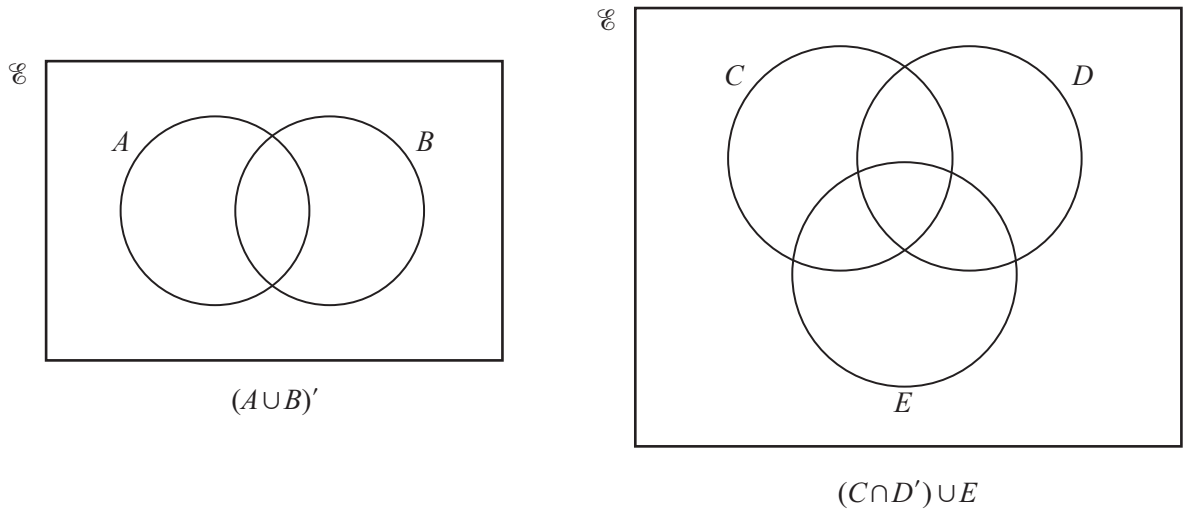
(i) Find $n(M)$.

..... [1]

(ii) Write down a set N where $N \subset M$ and $N \neq \emptyset$.

{.....} [1]

(b) In each Venn diagram, shade the required region.



[2]

178. Question | 0580 Feb-March 2020 P2 V2 Q1

- 1
- 3.56
- 5
- $\sqrt{196}$
- 8
- $\sqrt{7}$
- 12

From the list, write down a number that is

- (a) a multiple of 3,

..... [1]
- (b) a cube number,

..... [1]
- (c) a prime number,

..... [1]
- (d) an irrational number.

..... [1]

179. Question | 0580 Feb-March 2020 P2 V2 Q5

5 **Without using a calculator,** work out $\frac{15}{28} \div \frac{4}{7}$.

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

..... [3]

180. Question | 0580 Feb-March 2020 P2 V2 Q8

8 Calculate the value of $(2.3 \times 10^{-3}) + (6.8 \times 10^{-4})$.
Give your answer in standard form.

..... [1]

181. Question | 0580 Feb-March 2020 P2 V2 Q12

12 The population of a town decreases exponentially at a rate of 1.7% per year.
The population now is 250 000.

Calculate the population at the end of 5 years.
Give your answer correct to the nearest hundred.

..... [3]

13 Write the recurring decimal $0.2\dot{6}$ as a fraction.
You must show all your working.

..... [2]

183. Question | 0580 Feb-March 2020 P2 V2 Q18

- 18
- A car travels at a constant speed.
It travels a distance of 146.2 m, correct to 1 decimal place.
This takes 7 seconds, correct to the nearest second.

Calculate the upper bound for the speed of the car.

..... m/s [3]

184. Question | 0580 May-June 2020 P2 V1 Q2

- 2
- Find the highest **odd** number that is a factor of 60 and a factor of 90.

..... [1]

185. Question | 0580 May-June 2020 P2 V1 Q7

7 $234 = 2 \times 3^2 \times 13$ $1872 = 2^4 \times 3^2 \times 13$ $234 \times 1872 = 438\,048$

Use this information to write 438 048 as a product of its prime factors.

..... [1]

186. Question | 0580 May-June 2020 P2 V1 Q8

8 **Without using a calculator**, work out $\left(2\frac{1}{3} - \frac{7}{8}\right) \times \frac{6}{25}$.

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

..... [4]

187. Question | 0580 May-June 2020 P2 V1 Q18

18 $P = 2(w + h)$

$w = 12$ correct to the nearest whole number.
 $h = 4$ correct to the nearest whole number.

Work out the upper bound for the value of P .

..... [2]

188. Question | 0580 May-June 2020 P2 V2 Q2

- 2 At noon the temperature in Maseru was 21°C .
At midnight the temperature had fallen by 26°C .

Work out the temperature at midnight.

..... $^{\circ}\text{C}$ [1]

189. Question | 0580 May-June 2020 P2 V2 Q4

4 Write down

- (a) a square number greater than 10,

..... [1]

- (b) an irrational number.

..... [1]

190. Question | 0580 May-June 2020 P2 V2 Q8

8 Write 2^{-4} as a decimal.

..... [1]

191. Question | 0580 May-June 2020 P2 V2 Q11

11 **Without using a calculator**, work out $1\frac{3}{4} - \frac{11}{12}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

192. Question | 0580 May-June 2020 P2 V2 Q12

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

Calculate his percentage loss.

..... % [2]

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193. Question | 0580 May-June 2020 P2 V2 Q15

- 15** Ella's height is 175 cm, correct to the nearest 5 cm.

Write down the upper bound of Ella's height.

..... cm [1]

194. Question | 0580 May-June 2020 P2 V2 Q16

- 16** Calculate $(3 \times 10^{-3})^3$.
Give your answer in standard form.

..... [1]

195. Question | 0580 May-June 2020 P2 V2 Q17

- 17** A train of length 105 m takes 11 seconds to pass completely through a station of length 225 m.
Calculate the speed of the train in km/h.

..... km/h [3]

196. Question | 0580 May-June 2020 P2 V3 Q1

1 32 33 34 35 36 37 38 39

From this list of numbers, write down

- (a) a multiple of 8,

..... [1]
- (b) a square number,

..... [1]
- (c) a prime number.

..... [1]

197. Question | 0580 May-June 2020 P2 V3 Q7

7 **Without using a calculator**, work out $3\frac{1}{4} - 2\frac{2}{3}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

198. Question | 0580 May-June 2020 P2 V3 Q16

- 16** Paddy and Anna each invest \$2000 for 5 years.
Paddy earns simple interest at a rate of 1.25% per year.
Anna earns compound interest at a rate of $r\%$ per year.
At the end of 5 years, Paddy’s investment is worth the same as Anna’s investment.

Calculate the value of r .

$r = \dots\dots\dots [5]$

199. Question | 0580 Oct-Nov 2020 P2 V1 Q3

- 3
- Rangan buys 3.6 kg of potatoes and 2.8 kg of leeks.
The total cost is \$13.72 .
Leeks cost \$2.65 per kilogram.

Find the cost of 1 kg of potatoes.

\$ [3]

200. Question | 0580 Oct-Nov 2020 P2 V1 Q5

5

$$T = \frac{49.2 - 9.59}{4.085 \times 2.35}$$

By writing each number correct to 1 significant figure, work out an estimate for T .
You must show all your working.

..... [2]

201. Question | 0580 Oct-Nov 2020 P2 V1 Q6

- 6

Without using a calculator, work out $2\frac{2}{3} \times 2\frac{3}{4}$.

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

..... [3]

202. Question | 0580 Oct-Nov 2020 P2 V1 Q8

- 8

(a) 1, 2, 3, 5 and 7 are all common factors of two numbers.

Write down the digit that the two numbers must end in.

..... [1]

- (b)**

Write 84 as a product of its prime factors.

..... [2]

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203. Question | 0580 Oct-Nov 2020 P2 V1 Q10

- 10** A town has a population of 45 000.
This population increases exponentially at a rate of 1.6% per year.

Find the population of the town at the end of 5 years.
Give your answer correct to the nearest hundred.

..... [3]

204. Question | 0580 Oct-Nov 2020 P2 V1 Q13

- 13** Write the recurring decimal $0.1\dot{7}$ as a fraction in its simplest form.
You must show all your working.

..... [3]

205. Question | 0580 Oct-Nov 2020 P2 V2 Q1

- 1** Write two hundred thousand and seventeen in figures.

..... [1]

206. Question | 0580 Oct-Nov 2020 P2 V2 Q2

- 2** Insert one pair of brackets to make this calculation correct.

$$7 - 5 - 3 + 4 = 9 \quad [1]$$

207. Question | 0580 Oct-Nov 2020 P2 V2 Q5

5 Increase 42 by 16%.

..... [2]

208. Question | 0580 Oct-Nov 2020 P2 V2 Q10

10 **Without using a calculator**, work out $\frac{5}{6} \div 1\frac{1}{3}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

209. Question | 0580 Oct-Nov 2020 P2 V2 Q12

- 12** Alex and Chris share sweets in the ratio Alex : Chris = 7 : 3.
Alex receives 20 more sweets than Chris.

Work out the number of sweets Chris receives.

..... [2]

210. Question | 0580 Oct-Nov 2020 P2 V2 Q14

- 14** Work out $(3 \times 10^{199}) + (2 \times 10^{201})$.
Give your answer in standard form.

..... [2]

211. Question | 0580 Oct-Nov 2020 P2 V2 Q16

- 16** The selling price of a shirt is \$26.50 .
This includes a tax of 6%.

Calculate the price of the shirt before the tax was added.

\$ [2]

212. Question | 0580 Oct-Nov 2020 P2 V2 Q18

- 18** The sides of an isosceles triangle are measured correct to the nearest millimetre.
One side has a length of 8.2 cm and another has a length of 9.4 cm.

Find the largest possible value of the perimeter of this triangle.

..... cm [3]

213. Question | 0580 Oct-Nov 2020 P2 V3 Q1

1 Write down the cube number that is greater than 50 but less than 100.

..... [1]

214. Question | 0580 Oct-Nov 2020 P2 V3 Q2

2 Calculate.

$$\frac{4}{\sqrt{0.0025}}$$

..... [1]

215. Question | 0580 Oct-Nov 2020 P2 V3 Q5

5 Thor changes 40 000 Icelandic Krona into dollars when the exchange rate is 1 krona = \$0.0099 .

Work out how many dollars he receives.

\$ [1]

216. Question | 0580 Oct-Nov 2020 P2 V3 Q7

7 Change $457\,000\text{ cm}^2$ into m^2 .

..... m^2 [1]

217. Question | 0580 Oct-Nov 2020 P2 V3 Q8

8 The length, $l\text{ cm}$, of a line is 18.3 cm, correct to the nearest millimetre.

Complete this statement about the value of l .

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

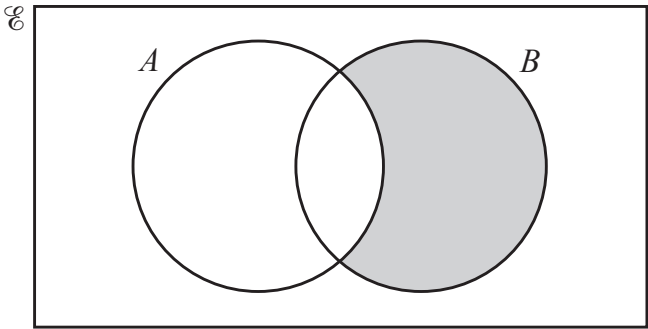
218. Question | 0580 Oct-Nov 2020 P2 V3 Q9

- 9 **Without using a calculator**, work out $1\frac{1}{7} \times 2\frac{1}{10}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

219. Question | 0580 Oct-Nov 2020 P2 V3 Q13

13



Use set notation to describe the shaded region.

..... [1]

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220. Question | 0580 Oct-Nov 2020 P2 V3 Q14

14 $N = 2^4 \times 3 \times 7^5$

$PN = K$, where P is an integer and K is a square number.

Find the smallest value of P .

$P =$ [2]

221. Question | 0580 Oct-Nov 2020 P2 V3 Q17

- 17** Adil and Brian are paid the same wage.
Adil is given a 7% pay decrease and his new wage is \$427.80 .
Brian is given a 7% pay increase.

Work out Brian's new wage.

\$ [3]

222. Question | 0580 Specimen 2020 P2 Q1

- 1** A train leaves Zurich at 22 40 and arrives in Vienna at 07 32 the next day.

Work out the time the train takes.

..... h min [1]

223. Question | 0580 Specimen 2020 P2 Q2

2 In a box of 80 glasses, 3 are broken.

Work out the percentage of broken glasses in the box.

..... % [1]

224. Question | 0580 Specimen 2020 P2 Q3

3 Here is a list of numbers.

Put a ring around the number with the largest value.

0.3030 $\frac{1}{3}$ 0.0330 $\frac{3}{10}$ 33% [1]

225. Question | 0580 Specimen 2020 P2 Q10

10 Explain why $\sqrt{3}$ is irrational.

..... [1]

226. Question | 0580 Specimen 2020 P2 Q11

11 The mass, m kilograms, of a horse is 429 kg, correct to the nearest kilogram.

Complete this statement about the value of m .

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

227. Question | 0580 Specimen 2020 P2 Q14

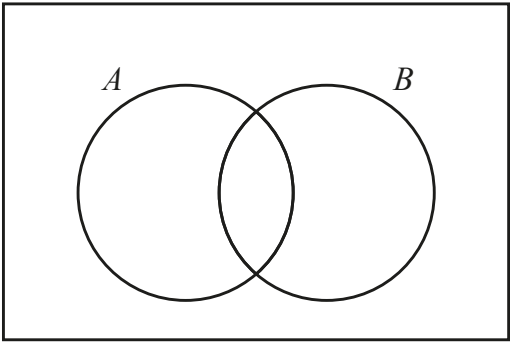
14 Without using your calculator, work out $1\frac{7}{12} + \frac{13}{20}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

228. Question part 1/2 | 0580 Specimen 2020 P2 Q18

18 Shade the region in each of the Venn diagrams below.

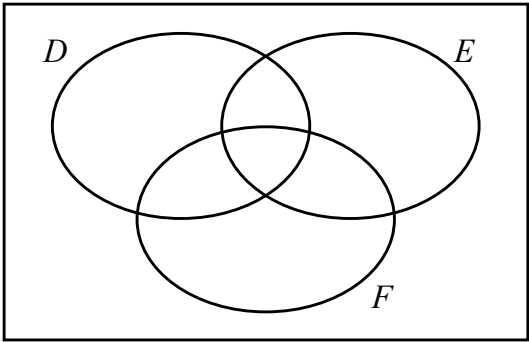
(a)

$\mathcal{U}$ 

$A' \cup B$

[1]

(b)

$\mathcal{U}$ 

$(D \cap E)' \cap F$

[1]

228. Question part 2/2 | 0580 Specimen 2020 P2 Q18

229. Question | 0580 Specimen 2020 P2 Q19

19 Use a calculator to find the decimal value of $\frac{\sqrt{29 - 3 \times 32^{0.4}}}{3}$.

..... [1]

230. Question | 0580 Specimen 2020 P2 Q20

20 Write the recurring decimal $0.\dot{3}2$ as a fraction.
You must show all your working.

..... [2]

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231. Question | 0580 Feb-March 2021 P2 V2 Q2

- 2** Sahil and Anika share \$78 in the ratio 5 : 8.

Calculate the amount each receives.

Sahil \$

Anika \$ [2]

232. Question | 0580 Feb-March 2021 P2 V2 Q4

- 4** By writing each number correct to 1 significant figure, find an estimate for the value of

$$\frac{2.8 \times 82.6}{27.8 - 13.9} .$$

..... [2]

233. Question | 0580 Feb-March 2021 P2 V2 Q6

- 6** Joseph spends $\frac{5}{24}$ of one week's earnings to buy a jacket.
The cost of the jacket is \$56.50 .

Calculate the amount Joseph earns in a week.

\$ [2]

234. Question | 0580 Feb-March 2021 P2 V2 Q7

- 7 **Without using a calculator,** work out $2\frac{1}{4} \times 3\frac{2}{3}$.

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

..... [3]

235. Question | 0580 Feb-March 2021 P2 V2 Q8

- 8 Write $0.\dot{3}\dot{7}$ as a fraction.

..... [1]

236. Question | 0580 Feb-March 2021 P2 V2 Q9

- 9 Calculate $4.8 \times 10^6 + 3.7 \times 10^7$.
Give your answer in standard form.

..... [1]

237. Question | 0580 Feb-March 2021 P2 V2 Q11

- 11** Find the highest common factor (HCF) of 36 and 84.

..... [2]

238. Question | 0580 Feb-March 2021 P2 V2 Q13

- 13** The population of one variety of butterfly is decreasing exponentially at a rate of 34% per year.
At the end of 2014, the population was 125.9 million.

Calculate the population at the end of 2019.

..... million [2]

239. Question | 0580 Feb-March 2021 P2 V2 Q22

- 22 (a)** A bag of rice has a mass of 25 kg, correct to the nearest kilogram.

Calculate the lower bound of the total mass of 10 of these bags.

..... kg [1]

- (b)** Virat has 200 metres of wire, correct to the nearest metre.
He cuts the wire into n pieces of length 3 metres, correct to the nearest 20 centimetres.

Calculate the largest possible value of n .

$n =$ [3]

240. Question | 0580 May-June 2021 P2 V1 Q5

5 Work out.

(a) $\begin{pmatrix} 6 \\ -5 \end{pmatrix} + \begin{pmatrix} 8 \\ -1 \end{pmatrix}$

$$\begin{pmatrix} \\ \end{pmatrix} \quad [1]$$

(b) $3 \begin{pmatrix} -4 \\ 7 \end{pmatrix}$

$$\begin{pmatrix} \\ \end{pmatrix} \quad [1]$$

241. Question | 0580 May-June 2021 P2 V1 Q8

- 8

Without using a calculator, work out $1\frac{3}{8} - \frac{5}{6}$.

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

..... [3]

242. Question | 0580 May-June 2021 P2 V1 Q12

- 12

The profit a company makes decreases exponentially at a rate of 0.9% per year.

In 2014, the profit was \$9500.

Calculate the profit in 2019.

\$ [2]

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243. Question | 0580 May-June 2021 P2 V1 Q20

- 20** The distance between two towns is 600 km, correct to the nearest 10 km.
A car takes 8 hours 40 minutes, correct to the nearest 10 minutes, to travel this distance.

Calculate the lower bound for the average speed of the car in km/h.

..... km/h [3]

244. Question | 0580 May-June 2021 P2 V2 Q2

- 2** Calculate $\sqrt[4]{0.0256}$.

..... [1]

245. Question | 0580 May-June 2021 P2 V2 Q4

- 4** Write down an expression for the range of k consecutive integers.

..... [1]

246. Question | 0580 May-June 2021 P2 V2 Q7

- 7 (a) Complete these statements.

The reciprocal of 0.2 is

A prime number between 90 and 100 is [2]

(b)

$\frac{7}{5}$ 0.6 $\sqrt{7}$ 8 $\sqrt{9}$

From this list, write down an irrational number.

..... [1]

247. Question | 0580 May-June 2021 P2 V2 Q9

- 9 **Without using a calculator**, work out $\frac{2}{3} \div 1\frac{3}{7}$.

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

..... [3]

248. Question | 0580 May-June 2021 P2 V2 Q10

10 (a) Write 0.006 54 in standard form.

..... [1]

(b) The number 1.467×10^{102} is written as an ordinary number.

Write down the number of zeros that follow the digit 7.

..... [1]

249. Question | 0580 May-June 2021 P2 V2 Q11

11 Write $0.\dot{0}\dot{4}$ as a fraction in its simplest form.

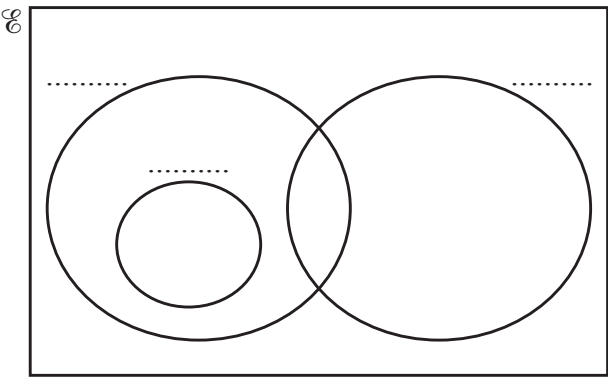
..... [1]

- 12 (a) $\mathcal{E} = \{\text{integers greater than 2}\}$
 $A = \{\text{prime numbers}\}$
 $B = \{\text{odd numbers}\}$
 $C = \{\text{square numbers}\}$

(i) Describe the type of numbers in the set $B' \cap C$.

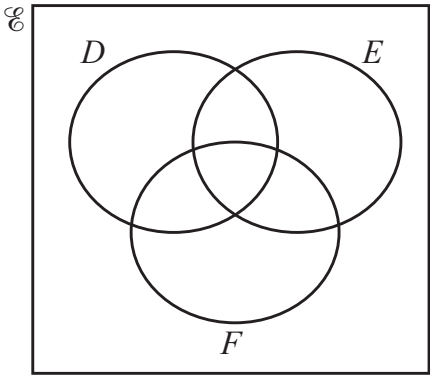
..... [1]

(ii) Complete the set labels on the Venn diagram.



[1]

(b)



Shade the region $D' \cup (E \cap F)'$.

[1]

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251. Question | 0580 May-June 2021 P2 V3 Q1

- 1** Write down the number that is 23 less than -1.6 .

..... [1]

252. Question | 0580 May-June 2021 P2 V3 Q2

- 2** Write as a fraction in its simplest form.

(a) 72%

..... [1]

(b) 0.004

..... [1]

253. Question | 0580 May-June 2021 P2 V3 Q5

- 5** Jo invests \$600 for 7 years at a rate of 1.5% per year simple interest.

Calculate the total interest earned during the 7 years.

\$ [2]

254. Question | 0580 May-June 2021 P2 V3 Q7

7 12 18 29 49 91 125

From the list of numbers, write down

(a) a cube number,

..... [1]

(b) a prime number.

..... [1]

255. Question | 0580 May-June 2021 P2 V3 Q8

8 Alex changes 190 euros (€) into pounds (£) when £1 = €1.1723 .

Calculate the amount Alex receives.
Give your answer correct to 2 decimal places.

£ [2]

256. Question | 0580 May-June 2021 P2 V3 Q9

- 9** **Without using a calculator**, work out $1\frac{2}{3} \div 7\frac{1}{2}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

257. Question | 0580 May-June 2021 P2 V3 Q16

- 16** The sides of a regular hexagon are 80 mm, correct to the nearest millimetre.
Calculate the lower bound of the perimeter of the hexagon.

..... mm [2]

258. Question | 0580 May-June 2021 P2 V3 Q20

- 20** Simplify $2.1 \times 10^p + 2.1 \times 10^{p-1}$.
Give your answer in standard form.

..... [2]

259. Question | 0580 Oct-Nov 2021 P2 V1 Q1

- 1 P is a prime number where $60 < P < 80$.
 P is 2 less than a square number.

Find the value of P .

$P = \dots\dots\dots$ [2]

260. Question | 0580 Oct-Nov 2021 P2 V1 Q2

- 2 Hank flies from Los Angeles to Shanghai.
- (a) The flight departs on Friday 22 July at 21 40.
The flight takes 13 hours 35 minutes.
The local time in Shanghai is 15 hours ahead of the local time in Los Angeles.

Find the day, date and time in Shanghai when Hank’s flight arrives.

Day $\dots\dots\dots$, Date $\dots\dots\dots$, Time $\dots\dots\dots$ [3]

- (b) The cost of the flight is \$920.
The exchange rate is \$1 = 6.87 Chinese yuan.

Find the cost of the flight in yuan.

$\dots\dots\dots$ yuan [1]

261. Question | 0580 Oct-Nov 2021 P2 V1 Q3

3 Calculate.

$$\frac{4.87 - 2.7}{-0.2 + \sqrt[3]{0.729}}$$

..... [1]

262. Question | 0580 Oct-Nov 2021 P2 V1 Q7

7 **Without using a calculator**, work out $1\frac{5}{6} + \frac{2}{5}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

263. Question | 0580 Oct-Nov 2021 P2 V1 Q12

12 Chai invests some money.

By the end of the first year, the value of the investment has decreased by 35%.

By the end of the second year, the value of the investment has increased by 40% of its value at the end of the first year.

Find the overall percentage change in the value of the investment.

..... % [3]

264. Question | 0580 Oct-Nov 2021 P2 V2 Q1

1 The temperature at midnight is -8.5°C .

The temperature at 11 am is -1°C .

Work out the difference between the temperature at midnight and the temperature at 11 am.

..... $^{\circ}\text{C}$ [1]

265. Question | 0580 Oct-Nov 2021 P2 V2 Q3

3 Change 2.15 hours into minutes.

..... min [1]

266. Question | 0580 Oct-Nov 2021 P2 V2 Q6

6 **Without using a calculator**, work out $\frac{1}{3} \div \frac{7}{6} + \frac{1}{5}$.

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

..... [4]

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267. Question | 0580 Oct-Nov 2021 P2 V2 Q8

8 Calculate $\sqrt[4]{39\frac{1}{16}}$.

..... [1]

268. Question | 0580 Oct-Nov 2021 P2 V2 Q9

9	2.1×10^{-1}	0.2	22%	$\sqrt{0.2}$	$\frac{24}{1000}$
----------	----------------------	-----	-----	--------------	-------------------

Write these values in order of size, starting with the smallest.

$$\dots\dots\dots < \dots\dots\dots < \dots\dots\dots < \dots\dots\dots < \dots\dots\dots [2]$$

smallest

13 (a) Write 243×27^{2n} as a single power of 3 in terms of n .
..... [2]

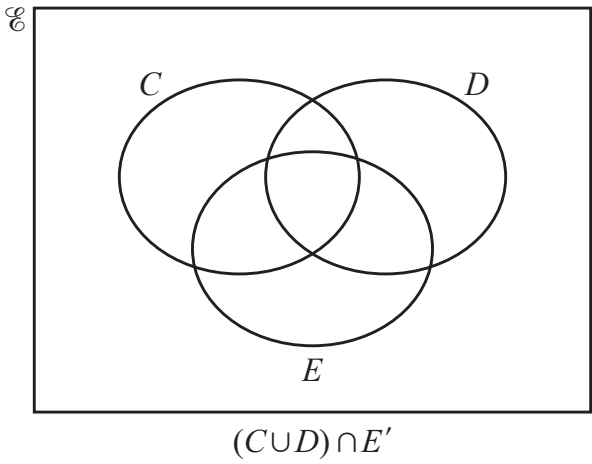
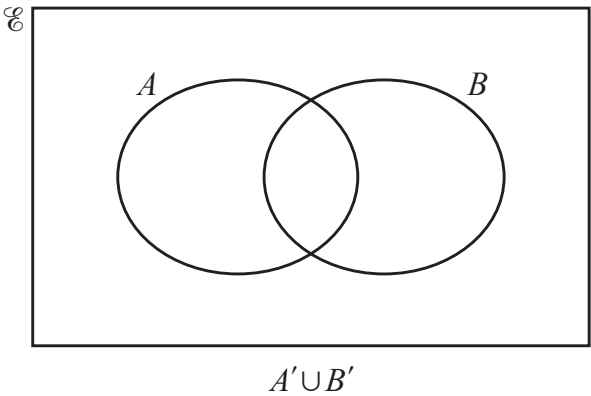
(b) $k = 2 \times 3^2 \times p^3$, where p is a prime number greater than 3.

Write $6k^2$ as a product of prime factors in terms of p .

..... [2]

270. Question | 0580 Oct-Nov 2021 P2 V2 Q19

19 In these Venn diagrams, shade the given regions.



[2]

271. Question | 0580 Oct-Nov 2021 P2 V3 Q1

1 Write 26 g as a percentage of 208 g.

..... % [1]

272. Question | 0580 Oct-Nov 2021 P2 V3 Q3

3

11 13 15 17 19

From this list, write down the number that is both a prime number and a factor of 195.

..... [1]

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273. Question | 0580 Oct-Nov 2021 P2 V3 Q4

4 (a) $=$ $\neq$ $>$ $<$

Put a ring around each of the symbols that make this statement correct.

0.5 5% [1]

(b) Insert one pair of brackets to make this statement correct.

$7 - 3 - 1 + 2 = 7$ [1]

274. Question | 0580 Oct-Nov 2021 P2 V3 Q5

5 Nina changes 153 euros into dollars when the exchange rate is $\$1 = 0.9$ euros.

Calculate the amount Nina receives.

\$ [1]

275. Question | 0580 Oct-Nov 2021 P2 V3 Q6

6 Marek buys a computer for \$420.
He sells it at a loss of 15%.

Calculate the selling price of this computer.

\$ [2]

276. Question | 0580 Oct-Nov 2021 P2 V3 Q8

- 8
- Beatrice walks 1 km at a speed of 4 km/h and then 2 km at a speed of 4.5 km/h.

Work out Beatrice’s average speed for the whole journey.

..... km/h [3]

277. Question | 0580 Oct-Nov 2021 P2 V3 Q9

- 9
- Write the recurring decimal $0.\dot{2}\dot{7}$ as a fraction.

..... [1]

12 **Without using a calculator**, work out $\frac{11}{12} + \frac{3}{4}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

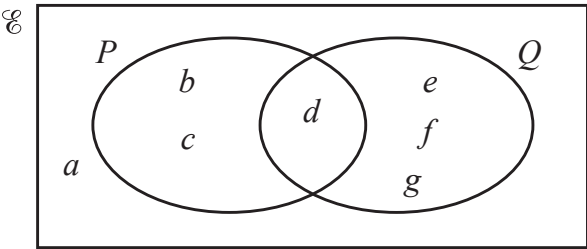
279. Question | 0580 Oct-Nov 2021 P2 V3 Q13

13 Calculate $0.04^2 + 0.03 \times 0.28$.
Give your answer in standard form.

..... [2]

280. Question | 0580 Oct-Nov 2021 P2 V3 Q14

14



(a) Complete the statement.

$P \cup Q = \{ \dots \}$ [1]

(b) Find $n(Q)$.

..... [1]

(c) Find $n(P' \cap Q)$.

..... [1]

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281. Question | 0580 Oct-Nov 2021 P2 V3 Q15

- 15** The cost of a train journey is increased by 6% to a new cost of \$153.70 .

Calculate the original cost of the train journey.

\$ [2]

282. Question | 0580 Oct-Nov 2021 P2 V3 Q16

- 16** Jo and Mo share \$26.
Jo receives \$5 more than Mo.

Find the ratio Jo's money : Mo's money.
Give your answer in its simplest form.

..... : [3]

283. Question | 0580 Feb-March 2022 P2 V2 Q2

- 2** Work out $\sqrt{5} \times 6^2$.
Give your answer correct to 2 decimal places.

..... [2]

284. Question | 0580 Feb-March 2022 P2 V2 Q3

- 3** A journey starts at 21 15 one day and ends at 04 33 the next day.

Calculate the time taken, in hours and minutes.

..... h min [1]

285. Question | 0580 Feb-March 2022 P2 V2 Q12

- 12 (a)** Sanjay invests \$700 in an account paying simple interest at a rate of 2.5% per year.

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

\$ [3]

- (b)** Meera invests \$700 in an account paying compound interest at a rate of $r\%$ per year.
At the end of 17 years the value of her investment is \$1030.35 .

Find the value of r .

$r =$ [3]

286. Question | 0580 Feb-March 2022 P2 V2 Q15

- 15
- Without using a calculator**, work out $2\frac{1}{3} \times \frac{11}{14}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

287. Question | 0580 May-June 2022 P2 V1 Q1

- 1
- Write down a prime number between 30 and 40.

..... [1]

288. Question | 0580 May-June 2022 P2 V1 Q2

- 2
- Calculate $4^5 - 5^4$.

..... [1]

289. Question | 0580 May-June 2022 P2 V1 Q3

- 3
- Jason starts a run at 10.05 am and finishes at 1.02 pm.
Work out the time Jason takes to complete the run.

..... h min [1]

290. Question | 0580 May-June 2022 P2 V1 Q4

4 Calculate $\frac{1-0.7}{0.45-0.38}$, giving your answer correct to 4 significant figures.

..... [2]

291. Question | 0580 May-June 2022 P2 V1 Q5

5 Kirsty changes \$380.80 into pounds (£) when £1 = \$1.19 .
Calculate the amount Kirsty receives.

£ [2]

292. Question | 0580 May-June 2022 P2 V1 Q6

6 Write 180 as a product of its prime factors.

..... [2]

293. Question | 0580 May-June 2022 P2 V1 Q7

7 **Without using a calculator**, work out $\frac{3}{7} - \frac{2}{21}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [2]

294. Question | 0580 May-June 2022 P2 V1 Q13

13 Work out $2 \times 10^{100} - 2 \times 10^{98}$, giving your answer in standard form.

..... [2]

295. Question | 0580 May-June 2022 P2 V1 Q14

14 A train passes through a station at a speed of 108 km/h.
The length of the station is 120 m.
The train takes 7 seconds to completely pass through the station.

Work out the length of the train.

..... m [3]

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296. Question | 0580 May-June 2022 P2 V2 Q1

- 1** At noon, the temperature is 4°C .
At midnight, the temperature is -9°C .

Work out the difference in temperature between noon and midnight.

..... $^{\circ}\text{C}$ [1]

297. Question | 0580 May-June 2022 P2 V2 Q3

- 3** Figs cost 43 cents each.
Lyra has \$5 to buy some figs.

Calculate the largest number of figs Lyra can buy and the amount of change, in cents, she receives.

..... figs and cents change [3]

298. Question | 0580 May-June 2022 P2 V2 Q4

- 4** Find the value of $\sqrt{68} \times \sqrt{153}$.

..... [1]

299. Question | 0580 May-June 2022 P2 V2 Q7

- 7 The price of a coat is \$126.
In a sale, this price is reduced by 18%.

Find the sale price of the coat.

\$ [2]

300. Question | 0580 May-June 2022 P2 V2 Q11

- 11 Find the value of p when $6^p \times 6^4 = 6^{28}$.

$p =$ [1]

301. Question | 0580 May-June 2022 P2 V2 Q13

- 13 **Without using a calculator**, work out $4\frac{1}{8} - 2\frac{5}{6}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

302. Question | 0580 May-June 2022 P2 V2 Q14

- 14** Carlos invests \$4540 at a rate of $r\%$ per year compound interest.
At the end of 10 years he has earned \$1328.54 in interest.

Calculate the value of r .

$r = \dots\dots\dots$ [3]

303. Question | 0580 May-June 2022 P2 V2 Q15

- 15** Find the highest common factor (HCF) of $12a^3b$ and $20a^2b^2$.

$\dots\dots\dots$ [2]

304. Question | 0580 May-June 2022 P2 V3 Q2

- 2** Work out the value of $\frac{mk^3}{\sqrt{3}}$ when $m = 4$ and $k = 7$.

$\dots\dots\dots$ [2]

305. Question | 0580 May-June 2022 P2 V3 Q8

- 8

Without using a calculator, work out $\frac{2}{9} \div \frac{5}{6}$.

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

..... [2]

306. Question | 0580 May-June 2022 P2 V3 Q9

- 9

Change 300 m/min to km/h.

..... km/h [2]

307. Question | 0580 May-June 2022 P2 V3 Q12

- 12** f is a common factor of 14 and 28.
 m is a common multiple of 10 and 25.
 p is a prime number.

Work out the largest possible value of $\frac{f}{mp}$.

..... [4]

308. Question | 0580 May-June 2022 P2 V3 Q21

- 21** Neha has a piece of ribbon of length 23 cm, correct to the nearest cm.
From this ribbon she cuts off a piece with length 87 mm, correct to the nearest mm.

Work out the lower bound and the upper bound for the length of the remaining ribbon.
Give your answer in centimetres.

Lower bound = ... cm

Upper bound = ...cm [3]

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309. Question | 0580 Oct-Nov 2022 P2 V1 Q1

1 Write down a common multiple of 18 and 24.

..... [1]

310. Question | 0580 Oct-Nov 2022 P2 V1 Q2

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

Work out the time taken for this journey.

..... h min [1]

311. Question | 0580 Oct-Nov 2022 P2 V1 Q3

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

..... [2]

312. Question | 0580 Oct-Nov 2022 P2 V1 Q4

4 Divide \$200 in the ratio 7 : 3.

\$, \$ [2]

313. Question | 0580 Oct-Nov 2022 P2 V1 Q6

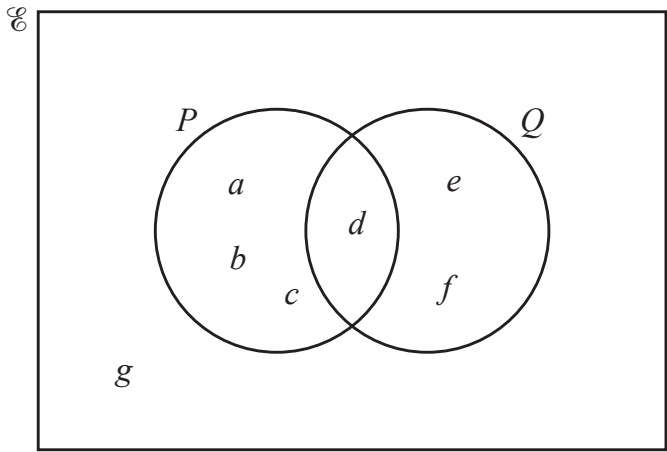
6 The price of a computer is \$520.
This price is reduced by 15% in a sale.

Work out the sale price.

\$ [2]

314. Question | 0580 Oct-Nov 2022 P2 V1 Q7

7



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

Complete the statements.

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

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

315. Question | 0580 Oct-Nov 2022 P2 V1 Q9

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.

$\dots\dots\dots$ [2]

316. Question | 0580 Oct-Nov 2022 P2 V1 Q24

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]

317. Question | 0580 Oct-Nov 2022 P2 V2 Q3

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

..... [1]

318. Question | 0580 Oct-Nov 2022 P2 V2 Q5

- 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]

319. Question | 0580 Oct-Nov 2022 P2 V2 Q7

- 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]

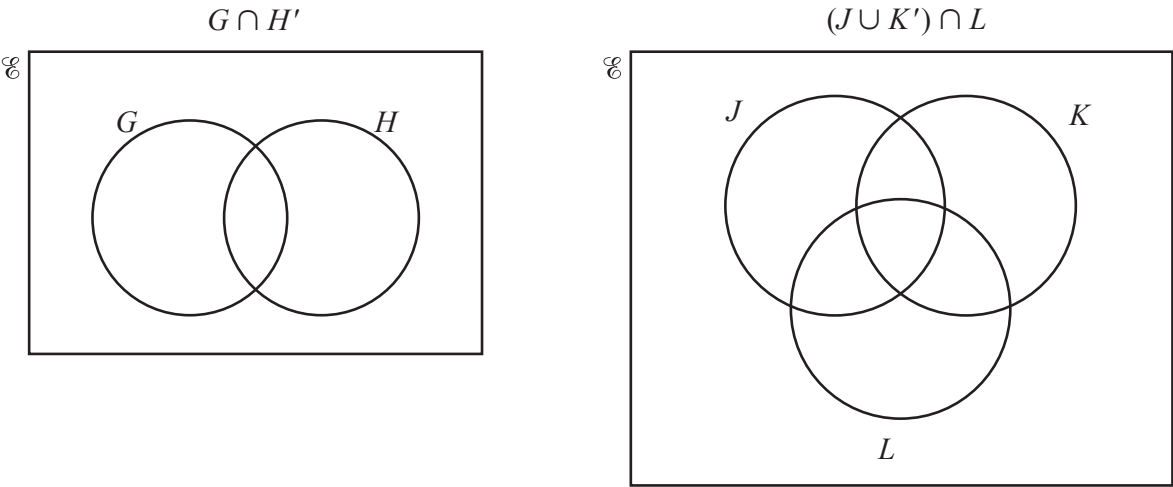
12 $x = 3^2 \times 5^2 \times 7 \times 199^{57}$ when written as a product of its prime factors.

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

..... [2]

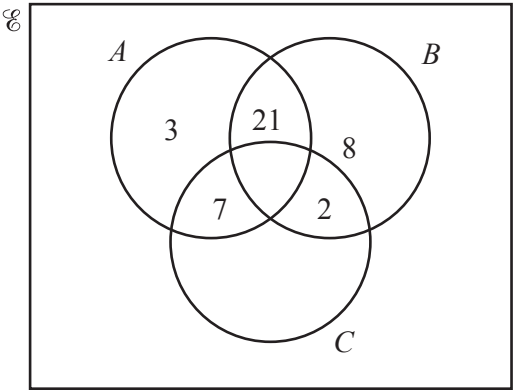
321. Question | 0580 Oct-Nov 2022 P2 V2 Q16

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



[2]

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



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]

322. Question | 0580 Oct-Nov 2022 P2 V2 Q18

18 Write 0.419 as a fraction in its simplest form.
You must show all your working.

..... [3]

323. Question | 0580 Oct-Nov 2022 P2 V3 Q1

1 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]

324. Question | 0580 Oct-Nov 2022 P2 V3 Q2

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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325. Question | 0580 Oct-Nov 2022 P2 V3 Q3

3 Calculate.

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

..... [1]

326. Question | 0580 Oct-Nov 2022 P2 V3 Q5

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]

327. Question | 0580 Oct-Nov 2022 P2 V3 Q7

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

..... [2]

328. Question | 0580 Oct-Nov 2022 P2 V3 Q12

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]

329. Question | 0580 Oct-Nov 2022 P2 V3 Q13

13 Convert $0.\dot{2}\dot{4}$ to a fraction.
You must show all your working and give your answer in its simplest form.

..... [2]

330. Question | 0580 Feb-March 2023 P2 V2 Q1

1	12	15	27	29	91	93
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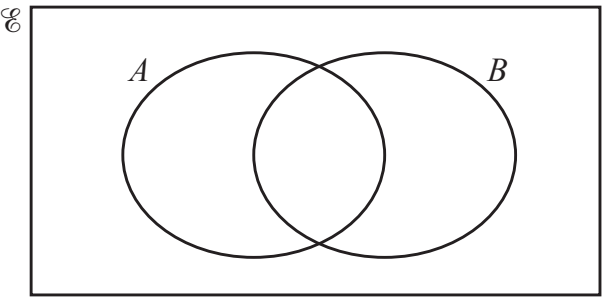
From the list of numbers, write down

(a) a cube number [1]

(b) a prime number. [1]

331. Question | 0580 Feb-March 2023 P2 V2 Q3

3



On the Venn diagram, shade the region $A \cap B$. [1]

332. Question | 0580 Feb-March 2023 P2 V2 Q6

6 Without using a calculator, work out $\frac{4}{7} \div 8$.

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

..... [2]

333. Question | 0580 Feb-March 2023 P2 V2 Q8

8 Calculate 0.3^2 .
Give your answer in standard form.

..... [2]

334. Question | 0580 Feb-March 2023 P2 V2 Q15

15 Simplify $(3125w^{3125})^{\frac{1}{5}}$.

..... [2]

335. Question | 0580 Feb-March 2023 P2 V2 Q21

- 21** A car travels 14 km, correct to the nearest kilometre.
This takes 12 minutes, correct to the nearest minute.

Calculate the lower bound of the speed of the car.
Give your answer in kilometres per minute.

..... km/min [3]

336. Question | 0580 May-June 2023 P2 V1 Q2

- 2** A train journey starts at 21 43.
It takes 8 hours and 32 minutes.

Find the time the journey finishes.

..... [1]

337. Question | 0580 May-June 2023 P2 V1 Q4

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

$$\frac{6.7 \times 2.1}{18 - 5.9}.$$

You must show all your working.

..... [2]

338. Question | 0580 May-June 2023 P2 V1 Q7

- 7 The scale of a map is 1 : 125 000.
On a map, the length of an island is 9.4 cm.

Calculate the actual length of the island, giving your answer in kilometres.

..... km [2]

339. Question | 0580 May-June 2023 P2 V1 Q10

- 10 **Without using a calculator**, work out $2\frac{1}{7} \div \frac{5}{9}$.

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

..... [3]

340. Question | 0580 May-June 2023 P2 V1 Q13

- 13 Anya invests \$6000 in an account that pays compound interest at a rate of $r\%$ per year. At the end of 8 years, the account has earned \$621.70 in interest.

Calculate the value of r .

$r = \dots\dots\dots$ [3]

341. Question | 0580 May-June 2023 P2 V2 Q1

- 1 Find the temperature that is 8°C colder than -5°C .

$\dots\dots\dots^{\circ}\text{C}$ [1]

342. Question | 0580 May-June 2023 P2 V2 Q2

- 2 There are two prime numbers in this list.

27 47 57 61 75 93

Work out the sum of these two prime numbers.

$\dots\dots\dots$ [2]

343. Question | 0580 May-June 2023 P2 V2 Q4

- 4 The distance from town A to town B on a map is 3.5 cm.
The scale on the map is 1 : 250 000.

Find the actual distance, in kilometres, from town A to town B .

..... km [2]

344. Question | 0580 May-June 2023 P2 V2 Q6

6 $\mathcal{C} = \{x: 1 \leq x \leq 20\}$
 $E = \{\text{even numbers}\}$
 $M = \{\text{multiples of } 5\}$

(a) Find $n(M)$.

..... [1]

(b) Find the elements in the set $E \cap M$.

..... [1]

(c) $y \notin E$.

Write down a possible value of y .

..... [1]

345. Question | 0580 May-June 2023 P2 V2 Q7

- 7
- Without using a calculator**, work out $\frac{4}{7} \div 1\frac{5}{21}$.

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

..... [3]

346. Question | 0580 May-June 2023 P2 V2 Q16

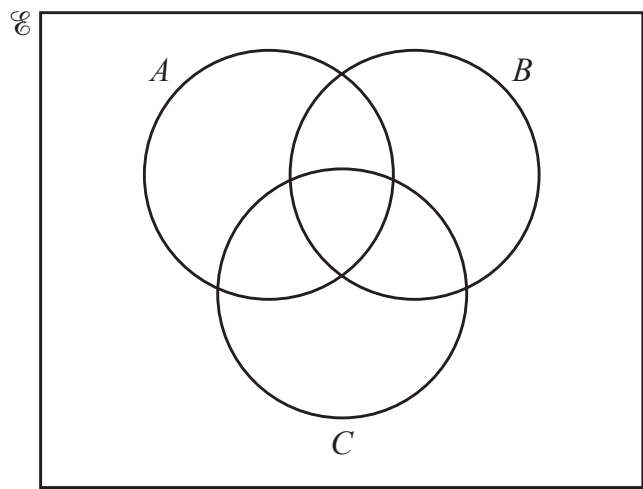
- 16
- Write $0.\dot{6}\dot{2}\dot{1}$ as a fraction in its simplest form.

You must show all your working.

..... [3]

347. Question | 0580 May-June 2023 P2 V2 Q20

20 In the Venn diagram, shade the region $A \cap B' \cap C$.



[1]

348. Question | 0580 May-June 2023 P2 V3 Q2

2 A film lasts for 2 hours 50 minutes.
The film ends at 23 05.

Find the time the film starts.

..... [1]

349. Question | 0580 May-June 2023 P2 V3 Q6

- 6
- At the end of the day, a shopkeeper has 12 tins of cat food left.
This is $\frac{3}{13}$ of the number he had at the beginning of the day.

Calculate the number of tins he had at the beginning of the day.

..... [2]

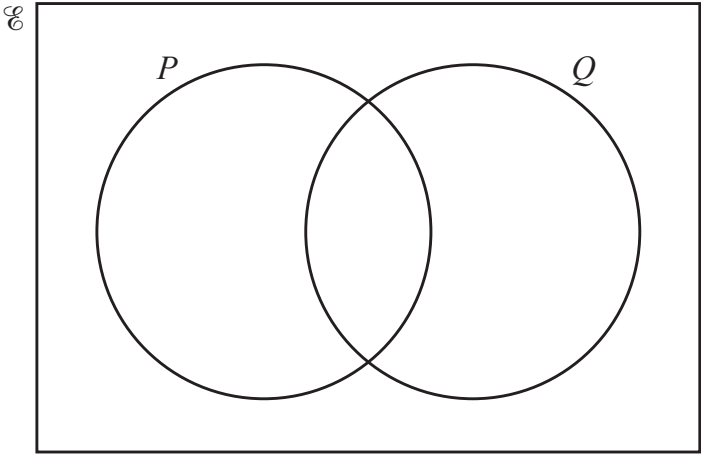
350. Question | 0580 May-June 2023 P2 V3 Q10

- 10
- Without using a calculator**, work out $5\frac{11}{12} + 2\frac{1}{4}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

351. Question | 0580 May-June 2023 P2 V3 Q11

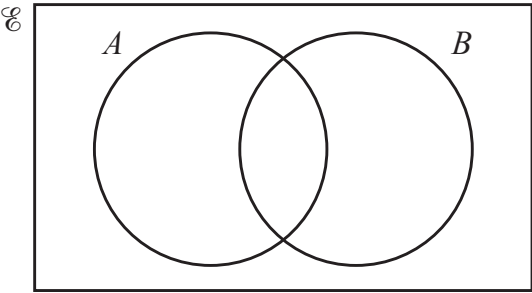
- 11
- (a)
- $$\mathcal{C} = \{ a, b, e, g, l, m, o, r, t, y \}$$
$$P = \{ a, b, e, g, l, r \}$$
$$Q = \{ e, g, m, o, r, t, y \}$$



Complete the Venn diagram.

[2]

(b)



Shade the region $A' \cap B$.

[1]

352. Question | 0580 May-June 2023 P2 V3 Q13

- 13
- Calculate $\sqrt{42} + 3^{0.4}$.

.....

[1]

353. Question | 0580 May-June 2023 P2 V3 Q14

- 14

Write $0.5\overline{81}$ as a fraction.
You must show all your working and give your answer in its simplest form.

..... [3]

354. Question | 0580 May-June 2023 P2 V3 Q15

- 15

The number of trees in a forest is decreasing exponentially at a rate of 1.75% per year.
Eleven years ago there were 980 trees.

Calculate the number of trees in the forest now.
Give your answer correct to the nearest integer.

..... [2]

355. Question | 0580 May-June 2023 P2 V3 Q23

- 23** A train travels between two stations.
The distance between the stations is 220 km, correct to the nearest kilometre.
The speed of the train is 125 km/h, correct to the nearest 5 km/h.

Calculate the upper bound for the time the journey takes.
Give your answer in hours and minutes.

..... h min [4]

356. Question | 0580 Oct-Nov 2023 P2 V1 Q4

4 The table shows some information about Amir’s shopping.

Fruit	Cost per kilogram	Number of kilograms Amir buys	Cost
Oranges	\$2.35	3.2	\$.....
Bananas	\$.....	2.8	\$.....
Total			\$13.54

Complete the table.

[3]

357. Question | 0580 Oct-Nov 2023 P2 V1 Q7

7 The exchange rate between Singapore dollars and euros is 1 Singapore dollar = 0.62 euros.
Find the value of 161.20 euros in Singapore dollars.

..... Singapore dollars [1]

358. Question | 0580 Oct-Nov 2023 P2 V1 Q8

8 Calculate.
 $7\frac{3}{11} \times 3\frac{3}{10}$

..... [1]

359. Question | 0580 Oct-Nov 2023 P2 V1 Q9

9 Find the highest common factor (HCF) of 140 and 126.

..... [2]

360. Question | 0580 Oct-Nov 2023 P2 V1 Q12

12 Write $0.\dot{4}\dot{2}$ as a fraction in its simplest form.
You must show all your working.

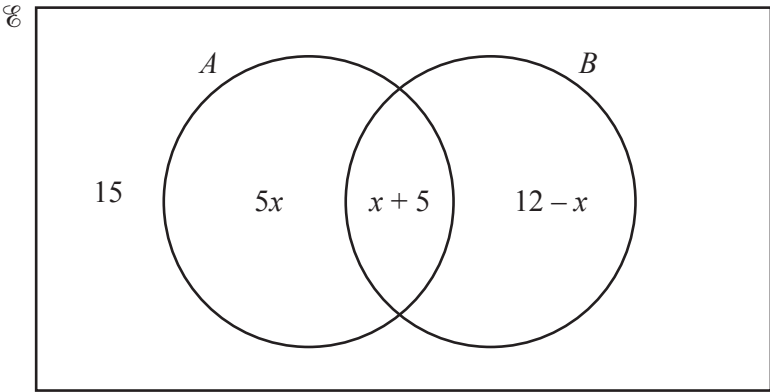
..... [3]

- 13** At the end of 2021 there were 27 000 rhinos living in the wild.
The number of rhinos is expected to decrease exponentially by 3% each year.

Work out the number of rhinos expected to be living in the wild 4 years later, at the end of 2025.
Give your answer correct to the nearest whole number.

..... [3]

14 (a)

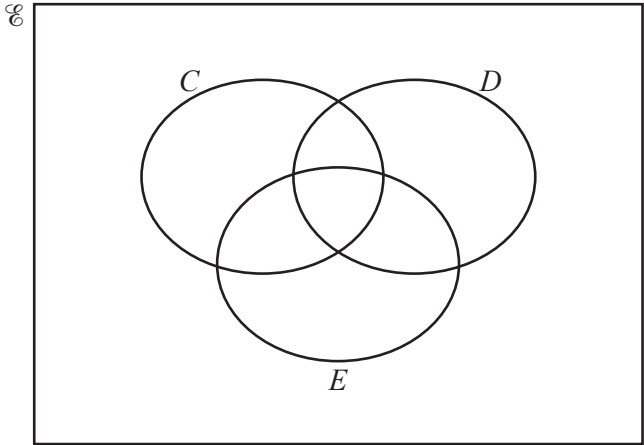


The Venn diagram shows information about the number of elements in sets A , B and $\mathcal{E}$.
 $n(\mathcal{E}) = 52$.

Find $n(A \cap B)$.

..... [3]

(b) In this Venn diagram, shade the region $C \cap D \cap E$.



[1]

363. Question | 0580 Oct-Nov 2023 P2 V1 Q16

16 $P = 2w + 2h$

$w = 11$ and $h = 9.5$, both correct to 2 significant figures.

Find the lower bound and the upper bound for P .

Lower bound = ...

Upper bound = ... [3]

364. Question | 0580 Oct-Nov 2023 P2 V2 Q1

1 Write 24.07839

(a) correct to 2 decimal places

..... [1]

(b) correct to the nearest 10.

..... [1]

365. Question | 0580 Oct-Nov 2023 P2 V2 Q2

2 Write down the number that is 9 greater than -23 .

..... [1]

366. Question | 0580 Oct-Nov 2023 P2 V2 Q4

4 Change 62 000 millimetres into kilometres.

..... km [1]

367. Question | 0580 Oct-Nov 2023 P2 V2 Q6

6 (a) Explain why 111 is not a prime number.

..... [1]

(b) Find a prime number between 110 and 120.

..... [1]

368. Question | 0580 Oct-Nov 2023 P2 V2 Q8

8 **Without using a calculator**, work out $3\frac{1}{8} - 1\frac{3}{4}$.

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

..... [3]

369. Question | 0580 Oct-Nov 2023 P2 V2 Q9

9 Write 90 as a product of its prime factors.

..... [2]

370. Question | 0580 Oct-Nov 2023 P2 V2 Q16

16 Find the lowest common multiple (LCM) of $12x^8$ and $8x^{12}$.

..... [2]

371. Question | 0580 Oct-Nov 2023 P2 V2 Q20

20 The area of a rectangle is 55.2 cm^2 , correct to 1 decimal place.
The length of the rectangle is 9 cm, correct to the nearest cm.

Calculate the upper bound of the width of the rectangle.

..... cm [3]

372. Question | 0580 Oct-Nov 2023 P2 V3 Q1

1 Tara goes on a journey by train.
The train leaves at 06 48.
The journey takes 12 hours and 35 minutes.

Find the time when Tara arrives.

..... [1]

373. Question | 0580 Oct-Nov 2023 P2 V3 Q2

2

61	63	64	66	68	69
----	----	----	----	----	----

From this list, write down

(a) a cube number

..... [1]

(b) a prime number.

..... [1]

374. Question | 0580 Oct-Nov 2023 P2 V3 Q4

4 Shubhu invests \$750 in a savings account for 5 years.
The account pays simple interest at a rate of 1.8% per year.

Calculate the total interest she earns during the 5 years.

\$ [2]

7 **Without using a calculator**, work out $1\frac{5}{6} \div \frac{11}{15}$.

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

..... [3]

8 Find the highest common factor (HCF) of 48 and 80.

..... [2]

377. Question | 0580 Oct-Nov 2023 P2 V3 Q12

- 12 Oliver sent 22% more messages in June than in May.
He sent 305 messages in June.

Find how many more messages he sent in June than in May.

..... [3]

378. Question | 0580 Feb-March 2024 P2 V2 Q1

- 1 A night bus runs from 21 50 to 05 18 the next day.

Work out the number of hours and minutes that the night bus runs.

..... h min [1]

379. Question | 0580 Feb-March 2024 P2 V2 Q2

2 Calculate $\sqrt{5.76} + 2.8^3$.

..... [1]

380. Question | 0580 Feb-March 2024 P2 V2 Q11

11 **Without using a calculator**, work out $1\frac{1}{4} - \frac{5}{6}$.

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

..... [3]

381. Question | 0580 Feb-March 2024 P2 V2 Q14

14 A train, 1750 metres long, is travelling at 55 km/h.

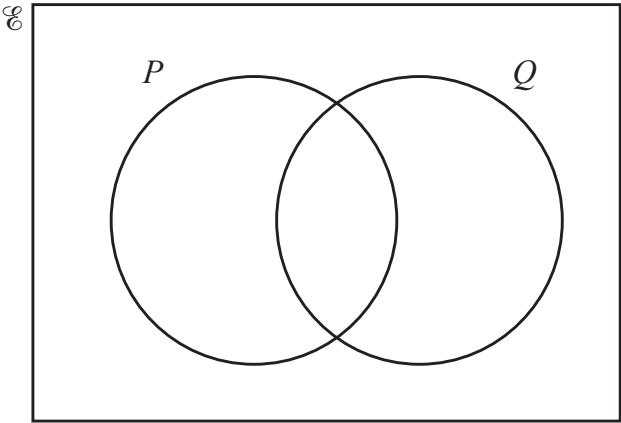
Calculate how long it will take for the whole train to completely cross a bridge that is 480 metres long.
Give your answer in seconds, correct to the nearest second.

..... s [3]

382. Question | 0580 Feb-March 2024 P2 V2 Q16

16 x is an integer.

$\mathcal{E} = \{x : 1 \leq x \leq 10\}$
 $P = \{x : x \text{ is an even number}\}$
 $Q = \{x : x \text{ is a multiple of } 5\}$



Complete the Venn diagram.

[2]

383. Question | 0580 Feb-March 2024 P2 V2 Q18

18 Find the highest common factor (HCF) of $28x^5$ and $98x^3$.

..... [2]

384. Question | 0580 May-June 2024 P2 V1 Q4

4 Find the greatest **odd** number that is a factor of 140 and a factor of 210.

..... [2]

385. Question | 0580 May-June 2024 P2 V1 Q5

5 Calculate.

(a) $\sqrt[3]{343} - \sqrt{40.96}$

..... [1]

(b) $(192 + 4 \times 16)^{1.25}$

..... [1]

386. Question | 0580 May-June 2024 P2 V1 Q9

- 9 The value of a car is \$8000.
Each year the value of the car decreases exponentially by 25%.

Calculate the value of this car after 3 years.

\$ [2]

387. Question | 0580 May-June 2024 P2 V1 Q10

- 10 Amir invests \$1500 in an account.
The account pays compound interest at a rate of r % per year.
At the end of 8 years the value of his investment is \$1656.73 .

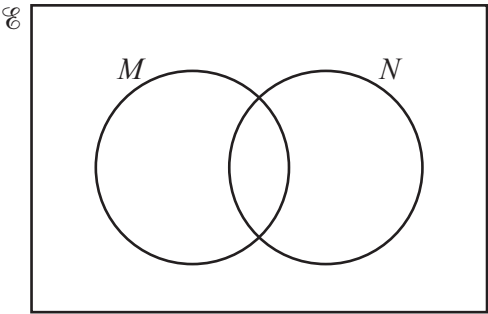
Find the value of r .

$r =$ [3]

15 Write $0.1\dot{4}\dot{6}$ as a fraction in its simplest form.
You must show all your working.

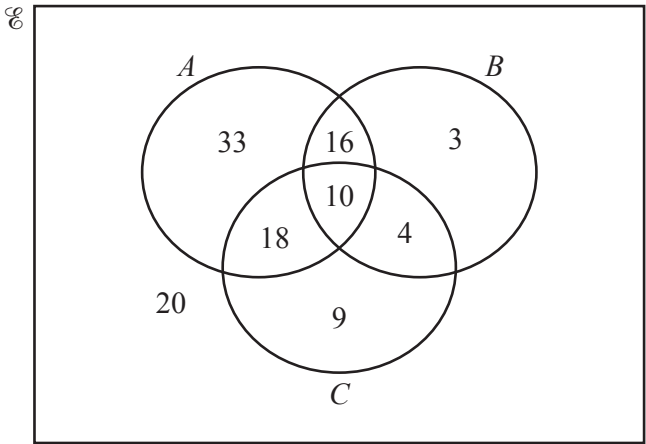
..... [3]

16 (a) In the Venn diagram, shade the region $M' \cap N'$.



[1]

(b) Find $n(B \cap (A' \cup C))$.



..... [1]

390. Question | 0580 May-June 2024 P2 V2 Q1

- 1 The temperature at midnight is -4°C .
The temperature at noon is 25°C .

Work out the difference between these two temperatures.

..... $^{\circ}\text{C}$ [1]

391. Question | 0580 May-June 2024 P2 V2 Q2

- 2 A gardener charges \$6.55 for each hour he works plus a fixed charge of \$15.50 .

Calculate the total amount he charges when he works for 4 hours.

\$ [2]

392. Question | 0580 May-June 2024 P2 V2 Q4

- 4 Jonah has \$750.
He spends $\frac{1}{4}$ of this money on travel and some of this money on food.
He now has \$437.50 .

Work out the fraction of the \$750 he spends on food.

..... [3]

393. Question | 0580 May-June 2024 P2 V2 Q5

5 The table shows part of a tram timetable.

Newpoint	Westhill
10 30	11 17
12 18	
13 30	14 17

All the trams take the same number of minutes to complete the journey from Newpoint to Westhill.
Complete the table.

[2]

394. Question | 0580 May-June 2024 P2 V2 Q6

6 Write 0.04628 correct to 2 significant figures.

..... [1]

395. Question | 0580 May-June 2024 P2 V2 Q8

8 Kai invests \$5000 in an account paying simple interest at a rate of $r\%$ per year.
At the end of 8 years, the value of his investment is \$5700.

Find the value of r .

$r =$ [3]

396. Question | 0580 May-June 2024 P2 V2 Q10

10 Write 174 000 in standard form.

..... [1]

397. Question | 0580 May-June 2024 P2 V2 Q13

13 **Without using a calculator**, work out $2\frac{1}{4} \div 1\frac{7}{8}$.

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

..... [3]

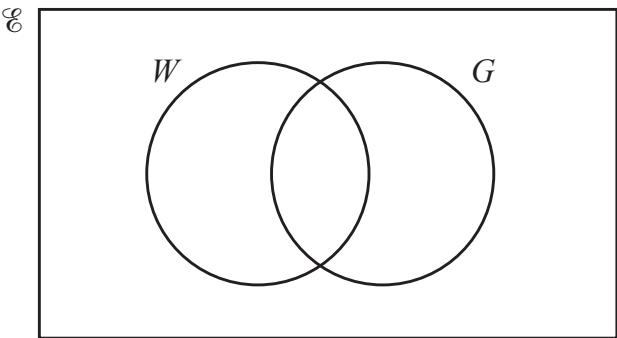
398. Question | 0580 May-June 2024 P2 V2 Q17

- 17 $W = \{\text{students who walk to school}\}$
 $G = \{\text{students who wear glasses}\}$

There are 20 students in a class.

- 8 walk to school
- 3 wear glasses and walk to school
- 2 do not wear glasses and do not walk to school.

Complete the Venn diagram.



[2]

399. Question | 0580 May-June 2024 P2 V3 Q1

- 1 Write the number two million two thousand and two in figures.

..... [1]

400. Question | 0580 May-June 2024 P2 V3 Q2

- 2 Put one pair of brackets into this calculation to make it correct.

$5 - 4 \times 3 - 9 - 2 = 0$

[1]

401. Question | 0580 May-June 2024 P2 V3 Q7

- 7 The scale of a map is 1 : 40 000.
On the map the distance between two villages is 37 cm.

Calculate the actual distance between the two villages.
Give your answer in kilometres.

..... km [2]

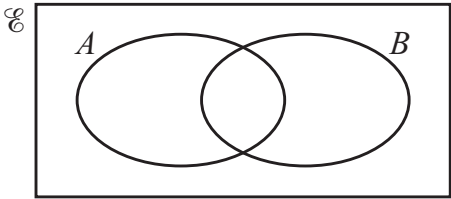
402. Question | 0580 May-June 2024 P2 V3 Q8

- 8 **Without using a calculator**, work out $\frac{3}{7} - \frac{1}{14}$.

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

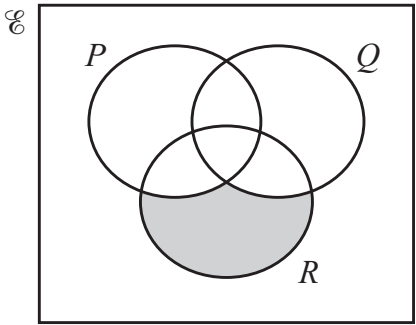
..... [2]

13 (a)



Shade the region $A \cup B'$. [1]

(b)



Use set notation to describe the shaded region.
..... [1]

17 Work out, giving each answer in standard form.

(a) $(2.1 \times 10^{101}) \times (8 \times 10^{101})$

..... [2]

(b) $(2.1 \times 10^{101}) + (2.1 \times 10^{100})$

..... [2]

405. Question | 0580 May-June 2024 P2 V3 Q21

- 21 Write the recurring decimal $0.4\dot{1}$ as a fraction in its simplest form.
You must show all your working.

..... [2]

406. Question | 0580 Oct-Nov 2024 P2 V1 Q1

- 1 A concert starts at 19 50 and finishes 2 hours 42 minutes later.

Work out the time the concert finishes.

..... [1]

407. Question | 0580 Oct-Nov 2024 P2 V1 Q2

- 2 Find the reciprocal of $1\frac{1}{4}$.

..... [1]

408. Question | 0580 Oct-Nov 2024 P2 V1 Q3

- 3 Use one of the symbols $<$, $>$ or $=$ to make each statement true.

$\frac{2}{7}$ 0.2861
 $\frac{99}{900}$ 11%
 1^3 4^0

[2]

409. Question | 0580 Oct-Nov 2024 P2 V1 Q4

- 4
- Safia has a piece of fabric of length 5.6 m.
She cuts the fabric into two parts, with lengths in the ratio 3 : 4.

Calculate the length of the longer part.

..... m [2]

410. Question | 0580 Oct-Nov 2024 P2 V1 Q5

- 5
- Work out.

(a) $3\begin{pmatrix} 6 \\ -4 \end{pmatrix}$

$\begin{pmatrix} \\ \end{pmatrix}$ [1]

(b) $\begin{pmatrix} 4 \\ -1 \end{pmatrix} + \begin{pmatrix} -7 \\ 5 \end{pmatrix}$

$\begin{pmatrix} \\ \end{pmatrix}$ [1]

411. Question | 0580 Oct-Nov 2024 P2 V1 Q8

- 8
- Edith invests \$3000 in a savings account.
The account pays simple interest at a rate of 2.6% per year.

Calculate the total interest earned at the end of 3 years.

\$ [2]

412. Question | 0580 Oct-Nov 2024 P2 V1 Q11

- 11
- Without using a calculator**, work out $5\frac{1}{3} - 3\frac{4}{7}$.
You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

413. Question | 0580 Oct-Nov 2024 P2 V1 Q19

- 19
- $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
 $P = \{\text{odd numbers}\}$
 $Q = \{\text{multiples of 3}\}$
 $R = \{\text{square numbers}\}$

(a) Find $P \cap Q \cap R$.

{ } [1]

(b) (i) Find $Q \cup R$.

{ } [1]

(ii) Find $n(P \cap (Q \cup R)')$.

..... [1]

414. Question | 0580 Oct-Nov 2024 P2 V2 Q3

3

0.25	3.142	$\sqrt{3}$	-3	24	-0.4	1.2	$-\frac{1}{4}$
------	-------	------------	------	----	--------	-----	----------------

Complete each statement with a number from the list.

..... is a natural number.

..... is an irrational number.

..... is the reciprocal of 4.

[3]

415. Question | 0580 Oct-Nov 2024 P2 V2 Q7

7 **Without using a calculator**, work out $\frac{2}{7} \div \frac{6}{11}$.

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

..... [2]

416. Question | 0580 Oct-Nov 2024 P2 V2 Q10

10 Calculate $\sqrt[3]{1 + 10.9 \times 0.4^2}$.

..... [1]

417. Question | 0580 Oct-Nov 2024 P2 V2 Q15

15 At the start of an experiment there are 40 000 bacteria.
The number of bacteria increases at a rate of 15% per hour.

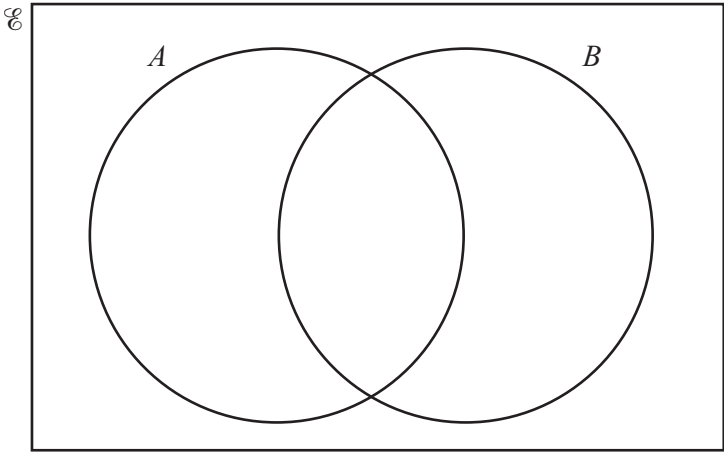
Calculate the number of bacteria after 3 hours.

..... [2]

418. Question | 0580 Oct-Nov 2024 P2 V2 Q18

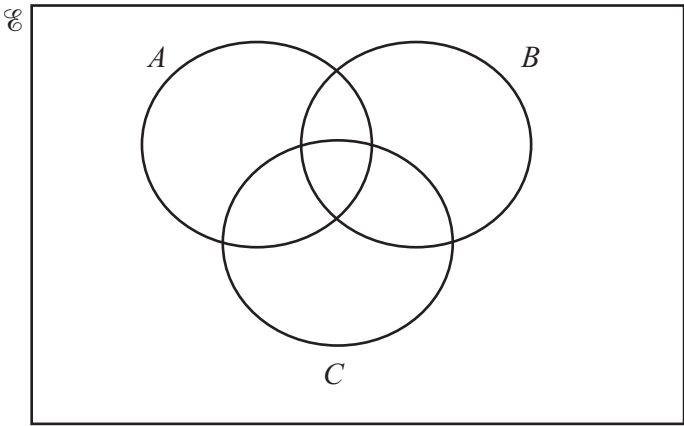
18 (a) $\mathcal{C} = \{8 \times 10^{-1}, \quad 0.\dot{8}, \quad 8\%, \quad \sqrt{0.08}\}$

$A = \{a: 0.08 < a \leq 0.8\}$
 $B = \{b: b \geq 0.8\}$



Complete the Venn diagram. [3]

(b) Shade the region $(A \cup C) \cap B'$ in the Venn diagram.



[1]

419. Question | 0580 Oct-Nov 2024 P2 V3 Q1

1

61	62	63	64	65	66	67	68	69
----	----	----	----	----	----	----	----	----

From the list of numbers, write down

(a) a cube number

..... [1]

(b) a prime number.

..... [1]

420. Question | 0580 Oct-Nov 2024 P2 V3 Q2

2 A train journey starts at 23 30 and finishes at 07 15 the next day.

Find the time taken for this journey.

..... h min [1]

421. Question | 0580 Oct-Nov 2024 P2 V3 Q10

10 Without using a calculator, work out $2\frac{1}{4} - 1\frac{11}{12}$.

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

..... [3]

422. Question | 0580 Oct-Nov 2024 P2 V3 Q24

- 24

A rectangle has an area of 150 m^2 , correct to the nearest square metre.

The length of the rectangle is 22 m , correct to the nearest metre.

Calculate the upper bound of the width of the rectangle.

..... m [3]

423. Question | 0580 Feb-March 2025 P2 V2 Q1

- 1

Oranges cost 220 rupees per kilogram.

Work out the cost of 9 kg of these oranges.

..... rupees [1]

424. Question | 0580 Feb-March 2025 P2 V2 Q2

- 2

Aryan goes on a journey.

He leaves home at $11\text{ }40$ and arrives at $14\text{ }18$.

Find how many hours and minutes the journey took.

..... h min [1]

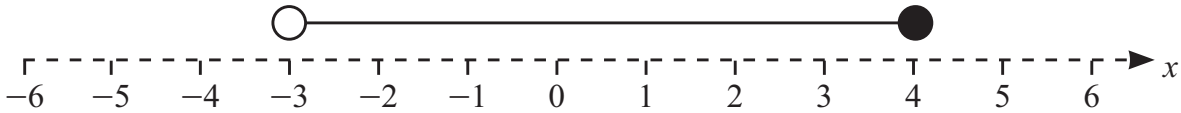
5 Write these lengths in order of size, starting with the smallest.

0.03 m 2.9 cm 32 mm 0.000 02 km

..... , ... , ... [2]
smallest

426. Question | 0580 Feb-March 2025 P2 V2 Q7

7



Write down the inequality for x represented on the number line.

..... [2]

427. Question | 0580 Feb-March 2025 P2 V2 Q9

9

$$D = \sqrt{\frac{1.95 \times 9.92^2}{8.07}}$$

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

$D =$ [3]

428. Question | 0580 Feb-March 2025 P2 V2 Q17

17 Work out.

$$\frac{5}{9} + 0.28$$

Give your answer as a fraction in its simplest form.

..... [4]

20 (a) Simplify.
 $\sqrt{300} + \sqrt{48}$

..... [2]

(b) Rationalise the denominator and simplify.

$$\frac{9}{2 + \sqrt{7}}$$

..... [3]

430. Question | 0580 May-June 2025 P2 V1 Q3

3 Sally invests \$1500 at 3% per year simple interest.

Work out the total value of her investment at the end of 6 years.

\$ [3]

431. Question | 0580 May-June 2025 P2 V1 Q4

4 Work out.

$\frac{5}{6} - \frac{2}{3} \times \frac{3}{8}$

..... [3]

432. Question part 1/2 | 0580 May-June 2025 P2 V1 Q7

7 Write the recurring decimal $0.2\dot{6}$ as a fraction.
Give your answer in its simplest form.

..... [3]

432. Question part 2/2 | 0580 May-June 2025 P2 V1 Q7



433. Question | 0580 May-June 2025 P2 V1 Q15

15 (a) Expand and simplify.

$(2 - \sqrt{5})(1 - 3\sqrt{5})$

..... [2]

(b) Rationalise the denominator.
Give your answer in its simplest form.

$\frac{6}{\sqrt{10}}$

..... [2]

434. Question | 0580 May-June 2025 P2 V1 Q19

19 Find the value of $27^{-\frac{2}{3}}$.

..... [2]

8 Find the highest common factor (HCF) of 36 and 54.

..... [2]

11 (a) Write 0.007 08 in standard form.

..... [1]

(b) Work out $(3.8 \times 10^{22}) + (3.8 \times 10^{23})$.
Give your answer in standard form.

..... [2]

437. Question | 0580 May-June 2025 P2 V2 Q14

14 Write $0.\dot{2}\dot{5}$ as a fraction.

..... [2]

438. Question | 0580 May-June 2025 P2 V2 Q17

17 Find the value of

(a) $125^{\frac{2}{3}}$

..... [2]

(b) $4^{-\frac{5}{2}}$.

..... [2]

439. Question | 0580 May-June 2025 P2 V2 Q18

18 (a) $\frac{9}{\sqrt{3}}$

Rationalise the denominator.
Give your answer in its simplest form.

..... [2]

(b) $(5 - \sqrt{2})(1 + 3\sqrt{2}) = c + k\sqrt{2}$

Find the value of c and the value of k .

$c =$

$k =$

[2]

440. Question | 0580 May-June 2025 P2 V3 Q7

7 Work out.

(a) $\frac{5}{6} - \frac{7}{12}$

Give your answer as a fraction in its simplest form.

..... [2]

(b) $1\frac{1}{3} \div \frac{8}{15}$

Give your answer as a mixed number in its simplest form.

..... [3]

441. Question | 0580 May-June 2025 P2 V3 Q8

8 (a) Write 42 as a product of its prime factors.

..... [2]

(b) Find the highest common factor (HCF) of 84 and 70.

..... [2]

442. Question | 0580 May-June 2025 P2 V3 Q14

14 Find the lowest common multiple (LCM) of $15xy^3$ and $18x^4y$.

..... [2]

443. Question | 0580 May-June 2025 P2 V3 Q15

15 (a) Simplify.
 $\sqrt{27} + \sqrt{12}$

..... [2]

(b) $\frac{40\sqrt{8}}{5\sqrt{2}} = k$, where k is an integer.
Find the value of k .

$k =$ [2]

(c) Rationalise the denominator.

$$\frac{1}{3 - \sqrt{5}}$$

..... [2]

444. Question | 0580 May-June 2025 P2 V3 Q16

16 Write $0.\dot{3}2\dot{8}$ as a fraction in its simplest form.

..... [3]

445. Question | 0580 Oct-Nov 2025 P2 V1 Q1

1 Divide \$90 in the ratio 2 : 3.

\$, \$ [2]

446. Question | 0580 Oct-Nov 2025 P2 V1 Q6

6 Find the value of

(a) $5^{-5} \times 5^5$

..... [1]

(b) $125^{\frac{2}{3}}$.

..... [2]

447. Question | 0580 Oct-Nov 2025 P2 V1 Q9

- 9
- Nina walks at an average speed of 5 km/h, correct to the nearest km/h.
She walks for exactly 2 hours.

Work out the lower bound for the distance Nina walks.

..... km [2]

448. Question | 0580 Oct-Nov 2025 P2 V1 Q10

- 10
- $\mathcal{C} = \{n: n \text{ is an integer and } 1 \leq n \leq 8\}$
 $A = \{\text{factors of } 12\}$
 $B = \{\text{odd numbers}\}$

Find

- (a)
- $A \cap B$

$A \cap B = \{.....\}$ [1]

- (b)
- $n(A' \cup B).$

..... [1]

449. Question | 0580 Oct-Nov 2025 P2 V1 Q11

11 Write $0.\dot{2}\dot{4}$ as a fraction in its simplest form.

..... [2]

450. Question | 0580 Oct-Nov 2025 P2 V1 Q15

15 (a) Write 66 000 in standard form.

..... [1]

(b) Work out $(3.7 \times 10^8) + (3.7 \times 10^7)$.

Give your answer in standard form.

..... [2]

451. Question | 0580 Oct-Nov 2025 P2 V1 Q21

21 (a) $(3 - \sqrt{5})(2 + 3\sqrt{5}) = a + b\sqrt{5}$

Find the value of a and the value of b .

$a =$

$b =$

[2]

- (b) Rationalise the denominator.
Write your answer in its simplest form.

$$\frac{6}{\sqrt{2}}$$

..... [2]

452. Question | 0580 Oct-Nov 2025 P2 V2 Q1

- 1 The temperature at 4 am is -12°C .
The temperature at 4 pm is 21°C .

Find the increase in temperature from 4 am to 4 pm.

..... $^{\circ}\text{C}$ [1]

453. Question | 0580 Oct-Nov 2025 P2 V2 Q2

2 Find **all** the common factors of 8 and 12.

..... [1]

454. Question | 0580 Oct-Nov 2025 P2 V2 Q4

4 A computer costs \$560.
In a sale, this cost is reduced by 20%.

Find the cost of the computer in the sale.

\$ [2]

455. Question | 0580 Oct-Nov 2025 P2 V2 Q9

9 Rajid has a full bottle of juice.
He drinks $\frac{1}{3}$ of the full bottle on Monday.
He drinks $\frac{3}{7}$ of the full bottle on Tuesday.
Find the fraction of the bottle of juice remaining.

..... [3]

13

$M = 2^7 \times 3^3 \times 5^2$

- (a) Write $14M$ as a product of its prime factors.
Give your answer in index form.

..... [2]

- (b) R is an integer.
 $\frac{M}{R}$ is a cube number.

Find the smallest possible value of R .

$R =$ [2]

457. Question | 0580 Oct-Nov 2025 P2 V2 Q14

14 Find the value of

(a) $3^2 \div 3^{-2}$

..... [2]

(b) $16^{-\frac{3}{2}}$.

..... [2]

458. Question | 0580 Oct-Nov 2025 P2 V2 Q18

.....

18 Rationalise the denominator and simplify.

$$\frac{20}{4 + \sqrt{6}}$$

..... [3]

459. Question | 0580 Oct-Nov 2025 P2 V3 Q2

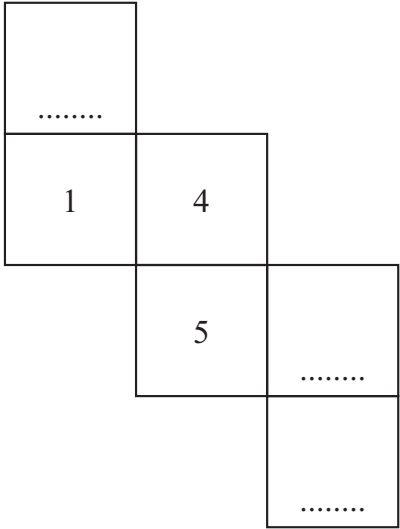
2 Find the largest **odd** number that is a common factor of 90 and 120.

..... [1]

460. Question | 0580 Oct-Nov 2025 P2 V3 Q3

3 The diagram shows a net for a dice.
The dice has six faces numbered 1 to 6.
The sum of each pair of opposite faces on the dice is 7.

Write the missing numbers on the net.



[1]

461. Question | 0580 Oct-Nov 2025 P2 V3 Q7

7 (a) The sum of all the prime numbers less than 10 is equal to 17.

Find the sum of all the prime numbers less than 16.

..... [2]

(b) x is an integer.
The sum of the prime numbers greater than 6 and less than x is equal to 18.

Find a possible value for x .

$x =$ [1]

12 (a) Write down the value of 73^0 .

..... [1]

(b) Find the value of $\frac{7}{3^{-2}}$.

..... [2]

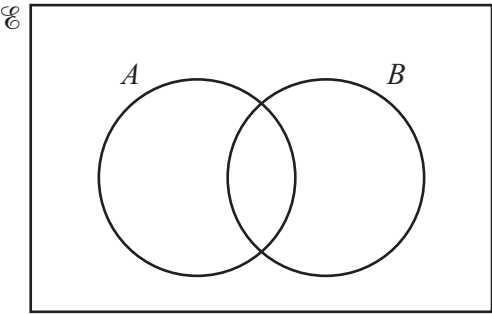
(c) Write 27×81^2 in the form 3^n .

..... [2]

463. Question | 0580 Oct-Nov 2025 P2 V3 Q18

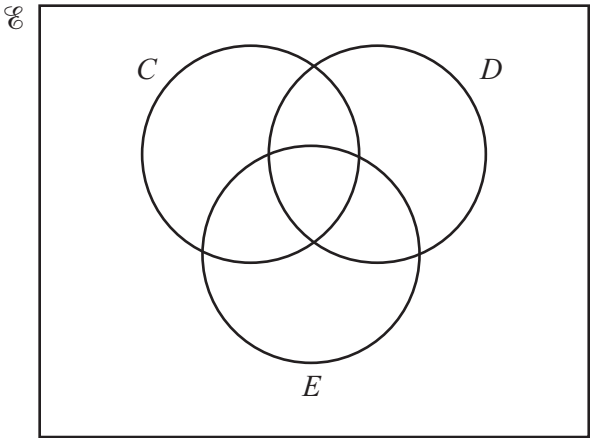
18 Shade the region in each Venn diagram.

(a) $(A \cap B)'$



[1]

(b) $(C \cup D) \cap E'$



[1]

464. Question | 0580 Oct-Nov 2025 P2 V3 Q20

20 Work out $0.\dot{1}\dot{4} + 0.2$.
Give your answer as a fraction.

..... [3]

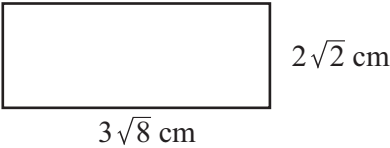
465. Question | 0580 Oct-Nov 2025 P2 V3 Q24

24 (a) Simplify.

$\sqrt{125} - \sqrt{20}$

..... [2]

(b)



NOT TO
SCALE

The area of this rectangle is $k \text{ cm}^2$.

Work out the value of k .

$k =$ [2]

(c) Rationalise the denominator.

$\frac{1}{\sqrt{7} + 2}$

..... [2]

466. Question | 0580 Specimen 2025 P2 Q1

1 Work out $(0.01)^2$.

..... [1]

467. Question | 0580 Specimen 2025 P2 Q2

2 Write 57.3997 correct to 4 significant figures.

..... [1]

468. Question | 0580 Specimen 2025 P2 Q3

3 Aimee changes 250 euros into dollars.
The exchange rate is 1 euro = \$1.10 .

Calculate the number of dollars Aimee receives.

\$ [1]

469. Question | 0580 Specimen 2025 P2 Q10

10 Work out $2\frac{2}{3} + 3\frac{1}{2}$.
Give your answer as a mixed number in its simplest form.

..... [3]

470. Question | 0580 Specimen 2025 P2 Q11

11 Find the value of $64^{\frac{2}{3}}$.

..... [2]

471. Question | 0580 Specimen 2025 P2 Q12

12 Work out, giving your answer in standard form,

(a) $(7.1 \times 10^{-15}) \times (2 \times 10^3)$

..... [2]

(b) $(5.2 \times 10^7) + (5.2 \times 10^6)$.

..... [2]

19 (a) Simplify.

$\sqrt{32} + \sqrt{98}$

..... [2]

(b) Rationalise the denominator.

$$\frac{1}{\sqrt{2} + 1}$$

..... [2]

473. Question | 0580 Specimen 2025 P2 Q20

20 $y \propto \frac{1}{\sqrt{x}}$

When $y = 8, x = 4$.

Find y when $x = 49$.

$y =$ [3]