

**[Turn over**

1 Sean is the manager of a museum.

- (a) He buys a Chinese pot costing 1200 yuan.  
The exchange rate is  $\$1 = 6.4$  yuan.

Work out the cost of this pot in dollars.

\$ ..... [1]

- (b) Sean records the maximum and minimum temperatures, in  $^{\circ}\text{C}$ , at the museum.  
Some of the results for one week are shown in the table.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Maximum temperature ( $^{\circ}\text{C}$ )	8	12	15	14	11	7	4
Minimum temperature ( $^{\circ}\text{C}$ )	-5	-2	-4	-1	3		

- (i) Find the difference between the maximum temperature and the minimum temperature on Wednesday.

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

- (ii) The minimum temperature on Saturday was  $2^{\circ}\text{C}$  higher than the minimum temperature on Monday.

Find the minimum temperature on Saturday.

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

- (iii) In this week the range of temperatures was  $23^{\circ}\text{C}$ .

Find the minimum temperature on Sunday.

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

- (c) These are the opening times for the museum.

Monday to Friday	09 00 to 17 00
Saturday and Sunday	10 00 to 16 00

During opening hours the museum has 4 security guards working.  
Each guard works a maximum of 30 hours each week.

Work out the smallest number of guards needed each week.

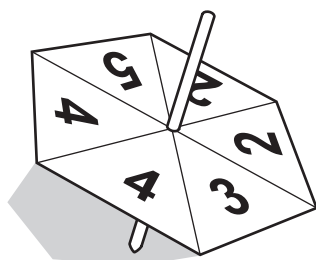
..... [4]

- (d) The entry price to the museum is \$18.  
This price is increased by 28%.

Find the increased entry price.

\$ ..... [2]

- 2 (a) Jian has a fair spinner in the shape of a regular hexagon. The spinner is numbered 2, 2, 3, 4, 4, 5.



Jian spins the spinner.

Find the probability that the spinner lands on

- (i) an even number,

..... [1]

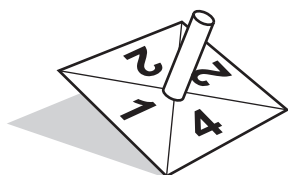
- (ii) a number less than 6,

..... [1]

- (iii) the number 1.

..... [1]

- (b) Mei has two fair square spinners, A and B. Spinner A is numbered 1, 2, 2, 4 and spinner B is numbered 3, 3, 4, 5.



Spinner A



Spinner B

She spins both spinners and adds the two numbers.

- (i) Complete the table to show all the possible outcomes.

A \ B	3	3	4	5
1	4	4		
2	5	5	6	7
2	5	5	6	7
4	7	7		

[2]

(ii) Use the table to write down the probability that the total is

(a) 5,

..... [1]

(b) more than 5.

..... [1]

(c) Ning has a spinner numbered 1 to 6.  
She spins it 50 times and her results are shown in the table.

Number on spinner	Frequency
1	15
2	12
3	9
4	5
5	2
6	7

(i) Write down the mode.

..... [1]

(ii) Find the median.

..... [1]

(iii) Work out the mean.

..... [3]

3 (a)

8 15 18 33 39 41 51 57 60 81

From this list, write down

(i) a factor of 54,

..... [1]

(ii) a multiple of 19,

..... [1]

(iii) a prime number.

..... [1]

(b) Write down the reciprocal of 64.

..... [1]

(c) (i) Write  $4.81 \times 10^{-3}$  as an ordinary number.

..... [1]

(ii) Write 75 000 in standard form.

..... [1]

(iii) Calculate  $\frac{6.3 \times 10^2}{7 \times 10^{-3}}$ .

Write your answer in standard form.

..... [2]

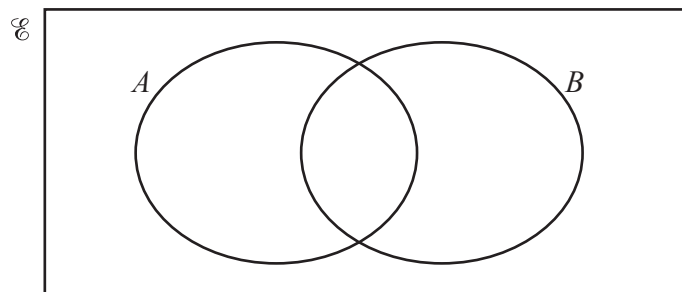
(d) (i)

$$\mathcal{C} = \{2, 4, 8, 16, 32, 64\}$$

$$A = \{\text{square numbers}\}$$

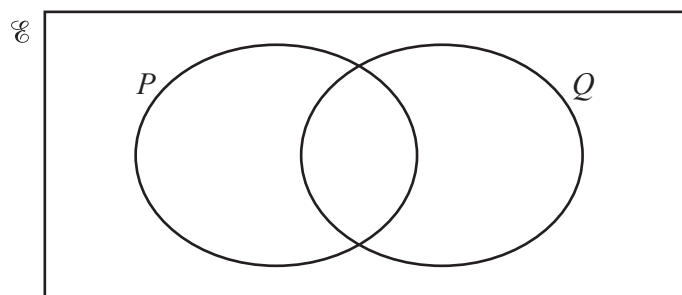
$$B = \{\text{cube numbers}\}$$

Use this information to complete the Venn diagram.



[2]

(ii) On this Venn diagram, shade the region  $P \cup Q$ .



[1]

- 4 (a) Simplify.

$$6a - 3b + 2a - 4b$$

..... [2]

- (b) Expand.

$$5(x - 3)$$

..... [1]

- (c) Solve these equations.

(i)  $\frac{x}{3} = 18$

$x =$  ..... [1]

(ii)  $5x + 18 = 8$

$x =$  ..... [2]

(iii)  $12x - 3 = 4x + 21$

$x =$  ..... [2]

(d)  $6^{10} \times 6^x = 6^2$

Find the value of  $x$ .

$x =$  ..... [1]



- (e) The Fraser family and the Singh family go to the cinema.  
The Fraser family buys 6 adult tickets and 2 child tickets for \$124.  
The Singh family buys 3 adult tickets and 5 child tickets for \$100.

Find the price of an adult ticket and the price of a child ticket.

Adult ticket \$ .....

Child ticket \$ ..... [5]

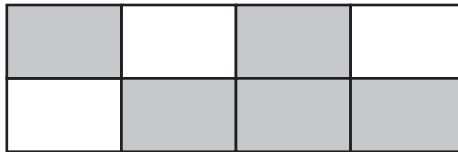
- 5 (a) Write one hundred and twenty thousand and twenty in figures.

..... [1]

- (b) Find the value of  $\sqrt{3481}$ .

..... [1]

- (c)



- (i) Write down the fraction of the rectangle that is shaded.

..... [1]

- (ii) Find the percentage of the rectangle that is **not** shaded.

..... % [1]

- (d) Write these numbers in order, starting with the smallest.

$$27\% \quad \frac{5}{17} \quad 0.268 \quad \frac{7}{29}$$

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

- (e) Write 0.3728 correct to 1 decimal place.

..... [1]

- (f) Write down the value of  $19^0$ .

..... [1]

- (g) The height,  $h$  metres, of a tower is 128 m, correct to the nearest metre.

Complete the statement about the value of  $h$ .

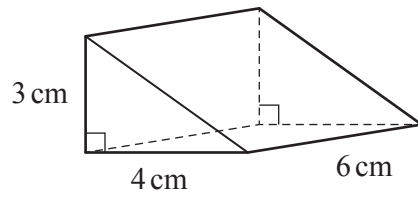
.....  $\leq h <$  ..... [2]

- (h) Find the highest common factor (HCF) of 126 and 180.

..... [2]

- (i) Write down an irrational number with a value between 6 and 7.

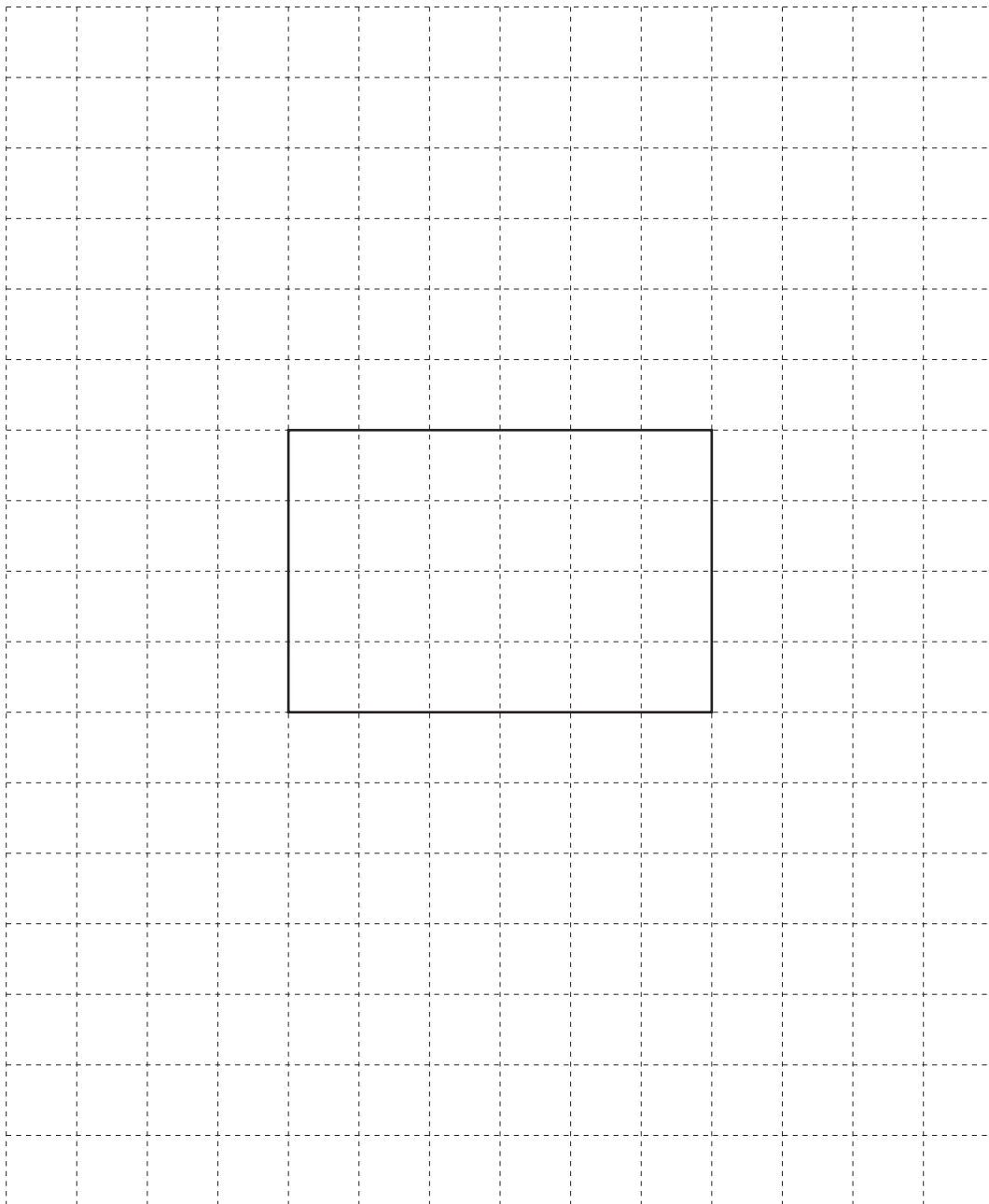
..... [1]



NOT TO  
SCALE

The diagram shows a right-angled triangular prism.

- (a) On the  $1 \text{ cm}^2$  grid, complete the net of the prism.  
One face has been drawn for you.



[3]

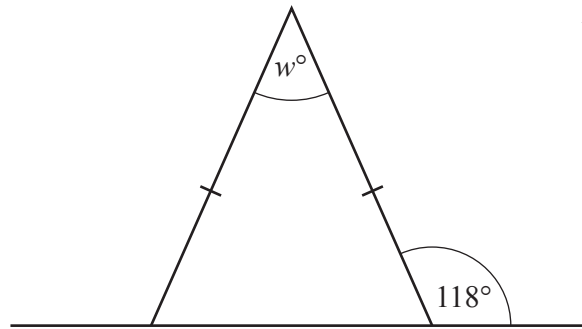
(b) Work out the surface area of the prism.

.....  $\text{cm}^2$  [3]

(c) Work out the volume of the prism.

.....  $\text{cm}^3$  [2]

7 (a)



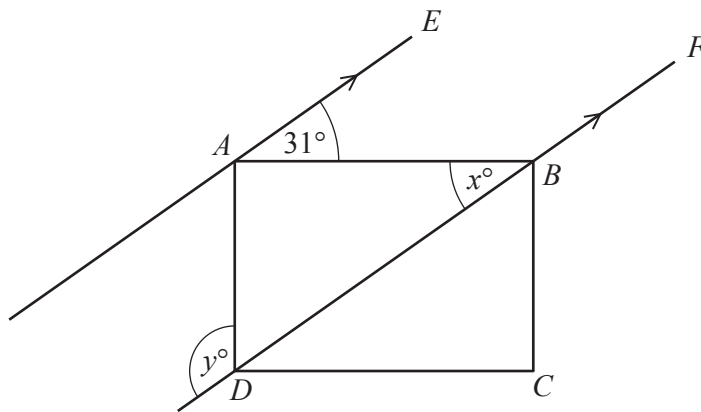
NOT TO  
SCALE

The diagram shows an isosceles triangle and a straight line.

Work out the value of  $w$ .

$w = \dots\dots\dots$  [2]

(b)



NOT TO  
SCALE

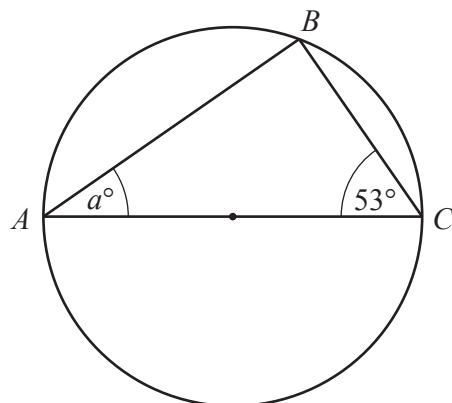
$ABCD$  is a rectangle.  
 $AE$  is parallel to  $DBF$ .

Find the value of  $x$  and the value of  $y$ .

$x = \dots\dots\dots$

$y = \dots\dots\dots$  [2]

(c)



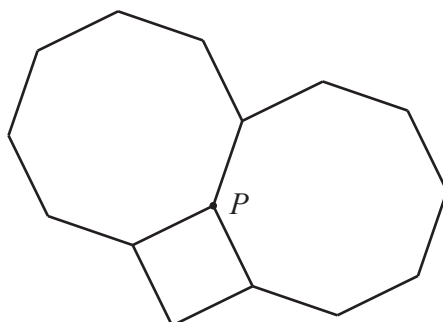
NOT TO  
SCALE

$A$ ,  $B$  and  $C$  are points on a circle.  
 $AC$  is a diameter of the circle.

Find the value of  $a$ .

$a = \dots\dots\dots$  [2]

(d)

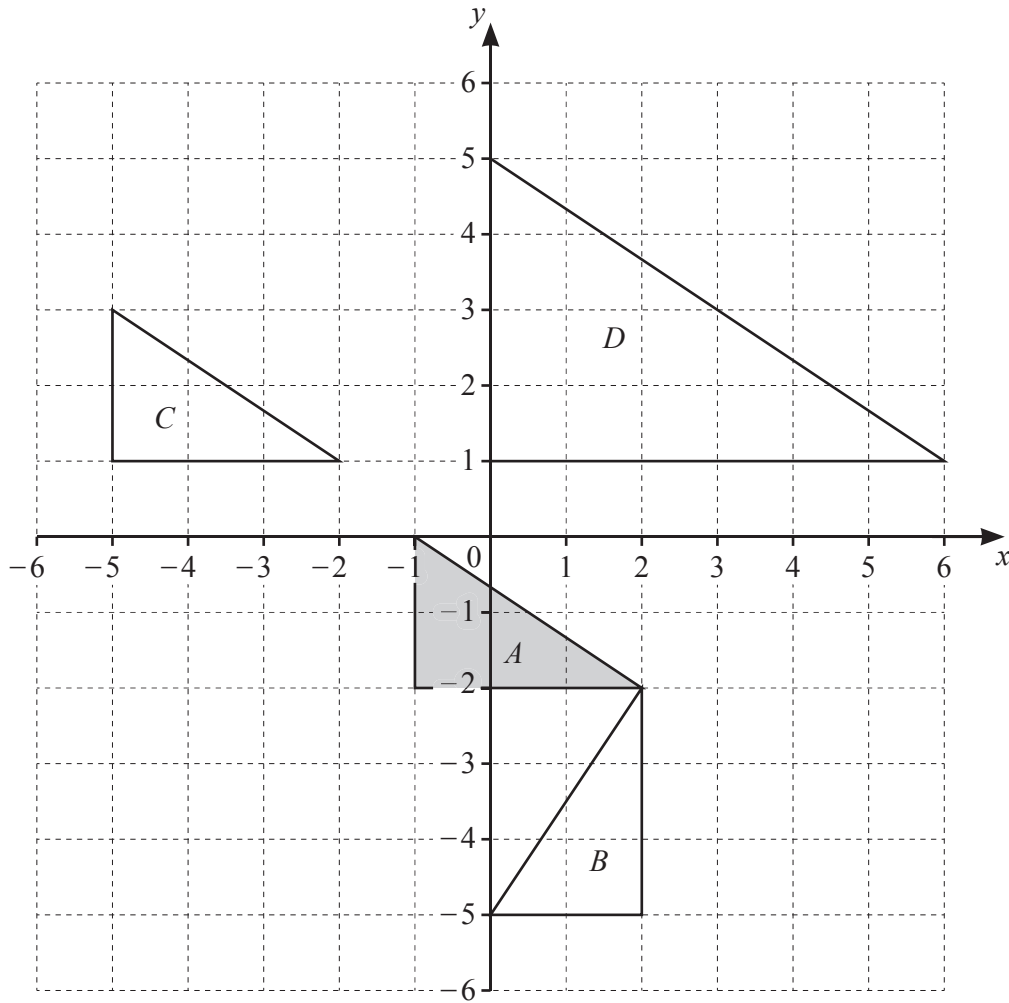


NOT TO  
SCALE

Two regular octagons and a square meet at point  $P$ .

Show, by calculation, that the three interior angles at  $P$  add up to  $360^\circ$ .

[3]



(a) Describe fully the **single** transformation that maps

(i) triangle *A* onto triangle *B*,

.....  
..... [3]

(ii) triangle *A* onto triangle *C*,

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

(iii) triangle *A* onto triangle *D*.

.....  
..... [3]

(b) On the grid, draw the image of triangle *A* after a reflection in the line  $x = -2$ . [2]

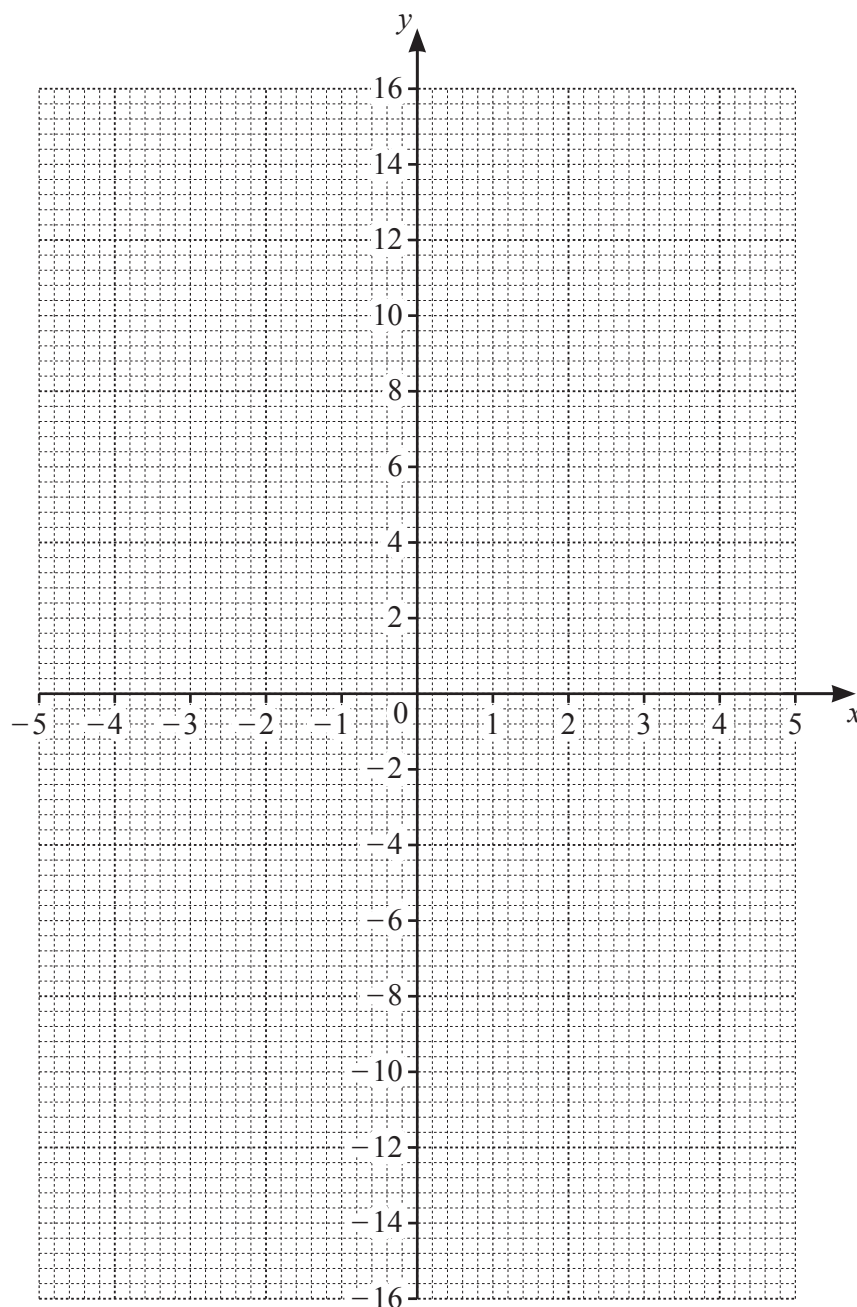


- 9 (a) Complete the table of values for  $y = \frac{15}{x}$ .

$x$	-5	-3	-2	-1		1	2	3	5
$y$				-15		15			

[3]

- (b) On the grid, draw the graph of  $y = \frac{15}{x}$  for  $-5 \leq x \leq -1$  and  $1 \leq x \leq 5$ .



[4]

- (c) On the grid, draw the line  $y = 6$ .

[1]

- (d) Use your graph to solve  $\frac{15}{x} = 6$ .

$x = \dots\dots\dots$  [1]

- 10 (a) These are the first four terms of a sequence.

8      15      22      29

- (i) Write down the next term.

..... [1]

- (ii) Write down the term to term rule for continuing this sequence.

..... [1]

- (iii) Find an expression for the  $n$ th term.

..... [2]

- (b) Find the next term in each of these sequences.

- (i) 18, 21, 26, 33, 42, ...

..... [1]

- (ii) 18, 20, 24, 32, 48, ...

..... [1]

- (c) Find the first three terms of the sequence with  $n$ th term  $n^2 + 5n$ .

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

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