cea
Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
January 2018

Mathematics

Unit T1
(With calculator)
Foundation Tier

[GMT11]   *GMT11*

MONDAY 8 JANUARY, 9.15am–10.45am

TIME

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided.
Do not write outside the boxed area on each page or on blank pages.
Complete in black ink only. **Do not write with a gel pen.**
Answer **all twenty-six** questions.
All working should be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions.
You **may** use a calculator for this paper.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Functional Elements will be assessed in this paper.
Quality of written communication will be assessed in Question **19**.
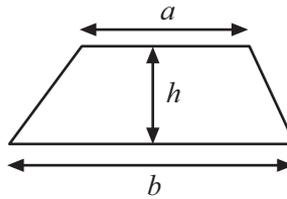You should have a calculator, ruler, compasses and a protractor.
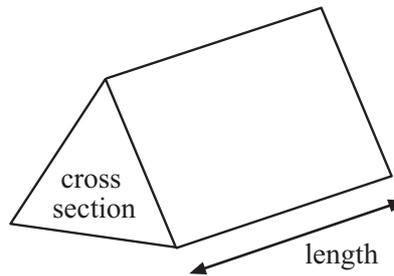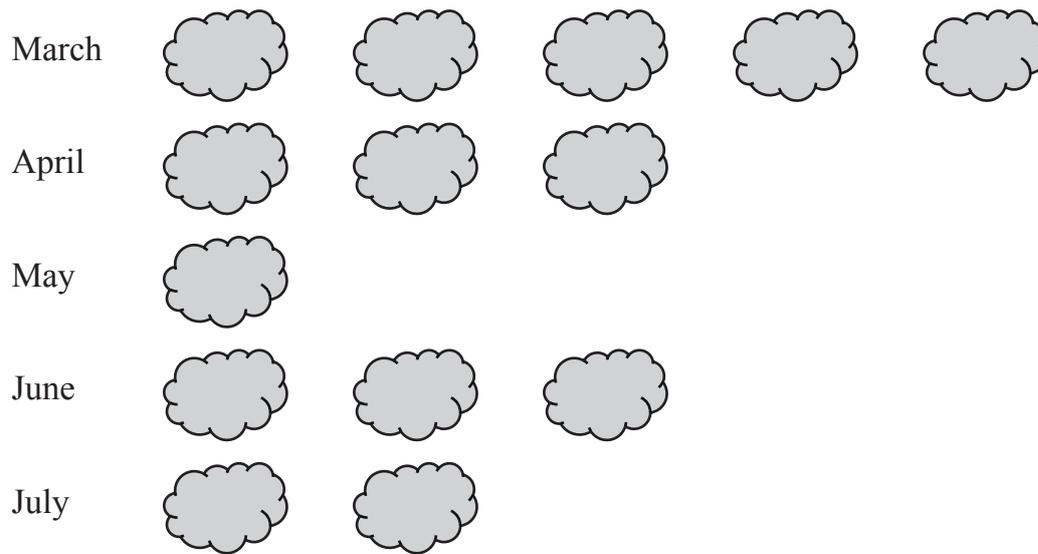The Formula Sheet is on page 2.

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28GMT1101

Formula Sheet

Area of trapezium $= \frac{1}{2}(a + b)h$

Volume of prism = area of cross section × length

28GMT1102

1 The pictogram shows the number of rainy days each month from March to July.

March ☁ ☁ ☁ ☁ ☁

April ☁ ☁ ☁

May ☁

June ☁ ☁ ☁

July ☁ ☁

(a) In July there were 8 rainy days. Complete the key below.

☁ represents _____ rainy days [1]

(b) How many more rainy days were there in June than in May?

Answer _____ [1]

(c) In which month was the modal number of rainy days?

Answer _____ [1]

(d) Calculate the mean number of rainy days per month from March to July.

Answer _____ [3]

(e) In August there were six rainy days. Complete the row for August below.

August [2]

[Turn over

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2

| 20 | 22 | 24 | 25 | 26 | 27 | 29 | 30 | 32 |

(a) From the above list of numbers, select

    (i) a multiple of 12,   Answer _____ [1]

    (ii) a factor of 210,   Answer _____ [1]

    (iii) a square number,   Answer _____ [1]

    (iv) a cube number,   Answer _____ [1]

    (v) a prime number.   Answer _____ [1]

(b) Write down the smallest prime number that is larger than all the numbers in the list.

Answer _____ [1]

3

| APPLES 30p each | PEARS 35p each |
| ORANGES 20p each |

(a) Jim bought 3 apples and 4 pears.

How much did he pay?

Answer £ _____ [1]

(b) Jane bought 4 oranges and some apples.

She paid £2.30

How many apples did she buy?

Answer _____ [2]

(c) John paid £1.10 for some fruit.

What might he have bought?

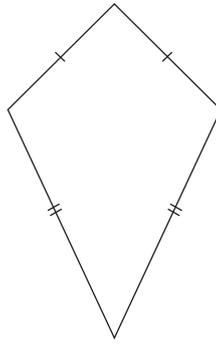Give two different possible answers.
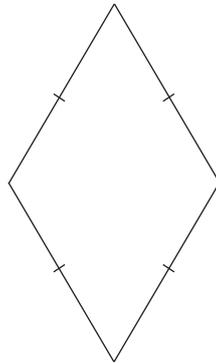
Answer **(i)** _____

(ii) _____ [2]

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4 **(a)** What is the name of the shape below?

Answer _____ [1]

(b) What is the name of the shape below?

Answer _____ [1]

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5 **(a)** Write the number two thousand, one hundred and seven in figures.

Answer _____ [1]

(b) Write 30 000 in words.

Answer _____ [1]

(c) Write 9493 to the nearest hundred.

Answer _____ [1]

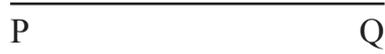**(d)** Write 0.008868 correct to two decimal places.

Answer _____ [1]

(e) Write 0.003443 correct to two significant figures.

Answer _____ [1]

[Turn over

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6

P   Q

(a) Draw a line QR so that the angle PQR is acute.   [1]

(b) Draw a line PS which is perpendicular to PQ.   [1]

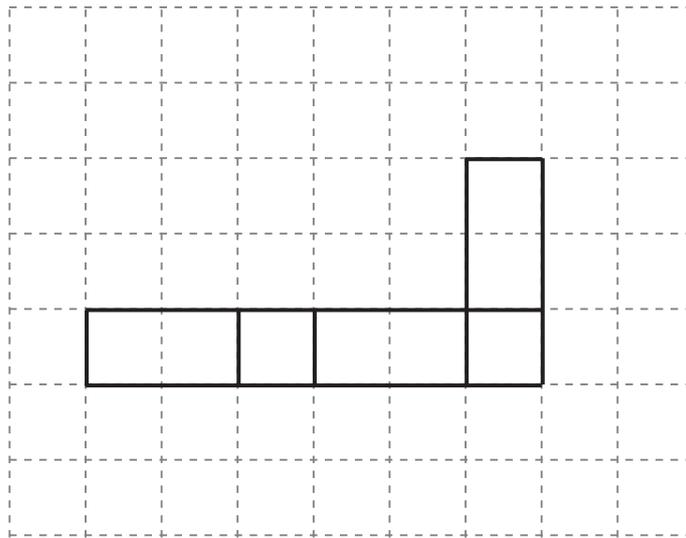**(c)** What type of angle is the larger angle PQR at Q?

Answer _____ [1]

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7 Look at the shape on the 1 cm grid below.

(a) Work out the perimeter of the shape above.

Answer _____ cm [1]

(b) Work out the area of the shape above.

Answer _____ [2]

(c) Draw an extra rectangle to make this shape the net of a 3D shape. [2]

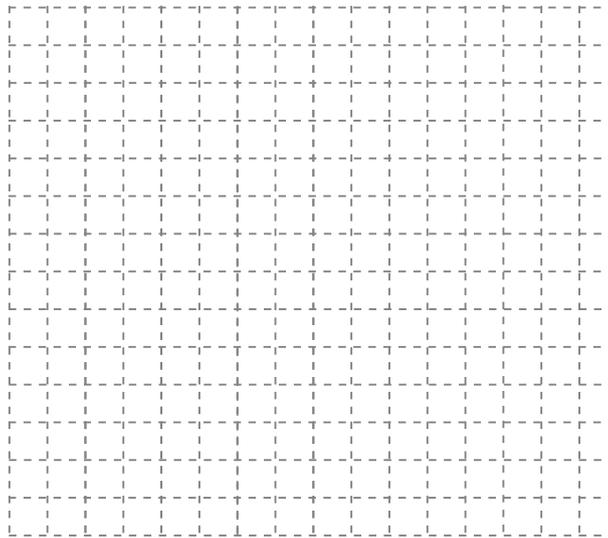**(d)** What is the name of this 3D shape?

Answer _____ [1]

[Turn over

8 The amount of oil delivered to different customers is shown.

Amount of oil	Number of customers ordering this amount
Small (300 litres)	10
Medium (500 litres)	25
Normal (900 litres)	60
Large (1200 litres)	5

(a) Draw a bar chart on the grid to show this information.

[3]

(b) How much more oil **in total** was delivered by the normal amount than by the large amount?

Answer _____ litres [3]

9 The hourly pay of some workers is

| £9 | £19 | £19 | £12 | £15 | £12 | £9 | £13 | £16 | £13 | £12 |

(a) Find the mode.

Answer £ _____ [1]

(b) Find the median.

Answer £ _____ [2]

(c) Find the range.

Answer £ _____ [1]

[Turn over

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10
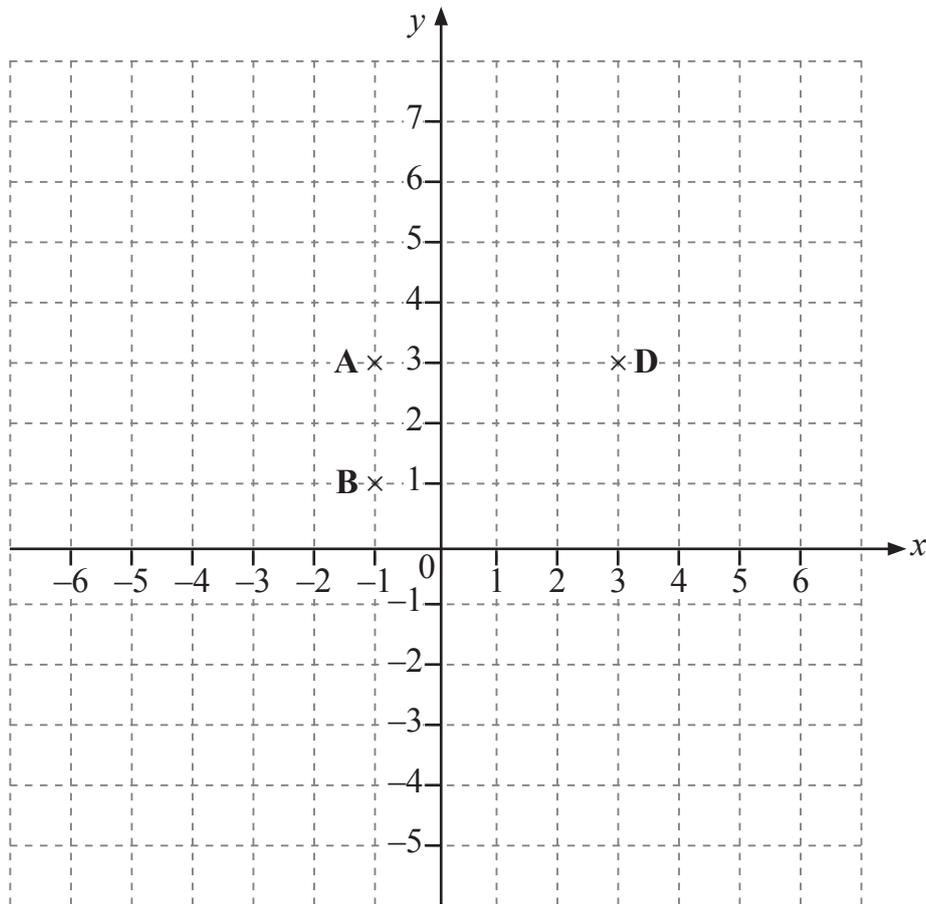
(a) ABCD is a rectangle. What are the coordinates of C?

Answer (_____, _____) [1]

(b) ABDE is a parallelogram. What are the coordinates of E?

Answer (_____, _____) [1]

(c) What type of triangle is AEC?

Answer _____ [1]

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11 (a)   4   9   14   19   24   ……

      (i) What is the next number in the sequence?

                                                          Answer _____ [1]

      (ii) What is the rule for finding the next number each time?

        Answer _____ [1]

(b)   3   6   12   24   ……

      (i) What is the next number in the sequence?

                                                          Answer _____ [1]

      (ii) What is the rule for finding the next number each time?

        Answer _____ [1]

[Turn over

28GMT1113

12 In Glasgow at 9 am on 1st December, the temperature was –4 °C.

(a) The temperature in Aberdeen at 9 am was 2°C lower than Glasgow.

What was the temperature in Aberdeen?

Answer _____ °C [1]

(b) The temperature in Glasgow rose by 3 °C by noon.

What was the new temperature?

Answer _____ °C [1]

(c) At 9 am on 1st December, the temperature in London was –2 °C and the temperature in Belfast was –8 °C.

What was the difference between these two temperatures?

Answer _____ °C [1]

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28GMT1114

13 There are 21 000 people living in a town.

18% of these people attend university.

How many attend university?

Answer _____ [2]

14 A van can carry 8 passengers.

A small bus can carry 12 passengers.

(a) What is the biggest number of passengers in total that 5 vans and 3 small buses can carry?

Answer _____ [2]

(b) What would be the smallest **total** number of vans and small buses needed to carry 56 passengers? Show how you work out your answer.

Answer _____ [2]

[Turn over

15 Louise buys 6 snack bars costing 45p each and 3 cartons of juice costing 65p each. She pays with a £5 note and receives three coins in change.

Work out what the three coins are.

Show your working.

Answer _____, _____, _____ [4]

16 Solve

(a) $22 + x = 31$

Answer $x =$ _____ [1]

(b) $5x = 35$

Answer $x =$ _____ [1]

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17 (a) Show how to work out 225×56 without using a calculator.

[3]

(b) Work out the value of the cube of 8

Answer _____ [1]

(c) Express $\frac{7}{8}$ as a percentage.

Answer _____% [2]

18 A train leaves Dublin at 1755
It arrives in Cork at 2048
How many minutes does the train journey take?

Answer _____ minutes [3]

[Turn over

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28GMT1117

Quality of written communication will be assessed in this question.

19 Erin says, "There are 30 boys in my sports club (to the nearest 10) and 20 girls (to the nearest 10), so there must be 50 pupils to the nearest 10"

Is she right or wrong?
You must show working to explain your answer.

[3]

20 The table below shows some rows of a number pattern.

Row 1	$3^2 - 1^2 = 4 \times 2$
Row 2	$4^2 - 2^2 = 4 \times 3$
Row 3	$5^2 - 3^2 = 4 \times 4$

Complete Row 10 of the number pattern.

Row 10	

[2]

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21 The diagrams below show the plan, the front elevation and the side elevation of a 3D shape.

Plan

Front
elevation

Side
elevation
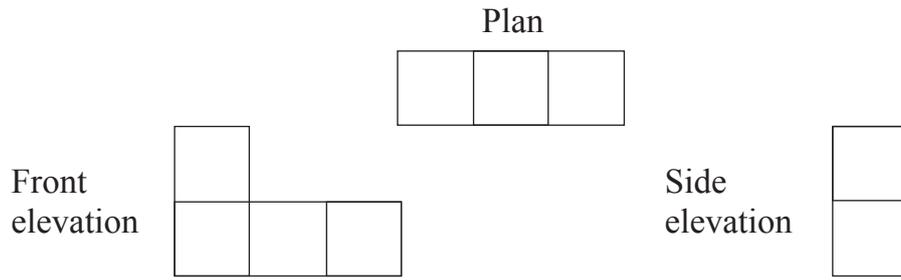
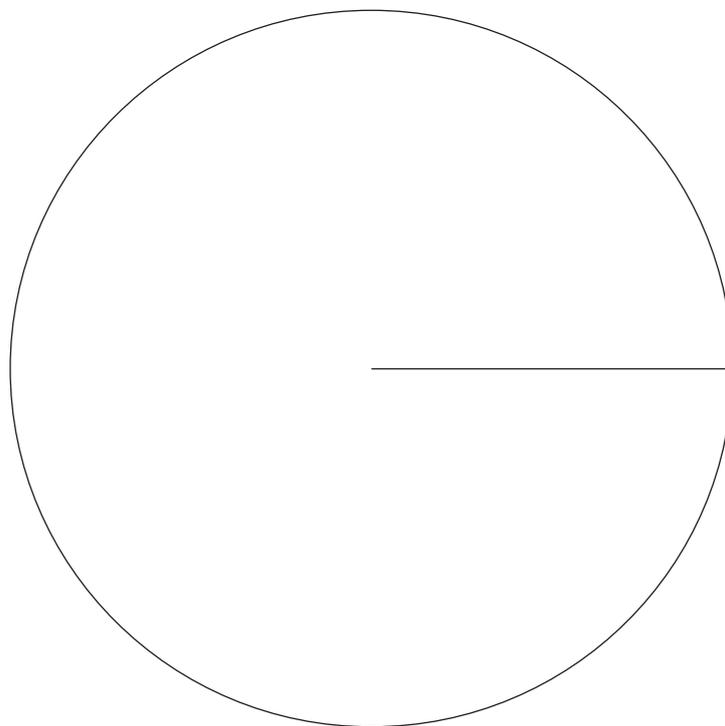Draw a sketch of the 3D shape below.

[2]

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22 A survey was carried out to find the ages at which children were taken on their first holiday abroad.
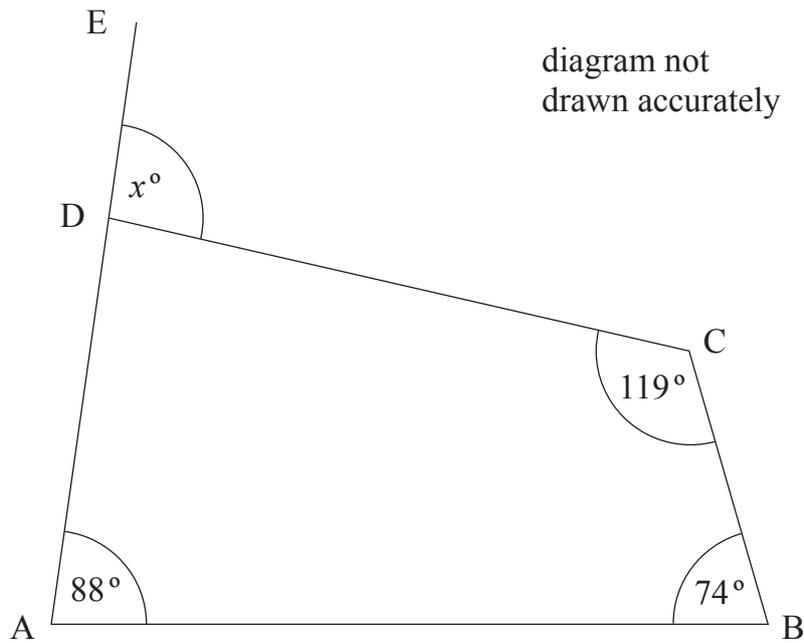
The bar chart shows the results.
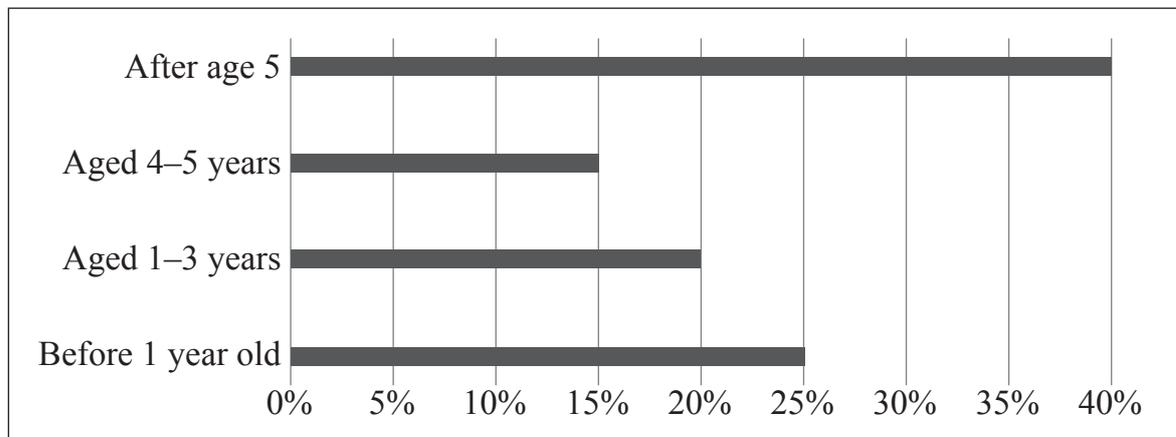
Draw a pie chart to show these results.

[4]

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28GMT1120

23

diagram not
drawn accurately

Work out the size of the angle marked *x*.

Answer _____ ° [3]

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24 (a) Simplify $3a - 5b + a + 2b$

Answer _____ [2]

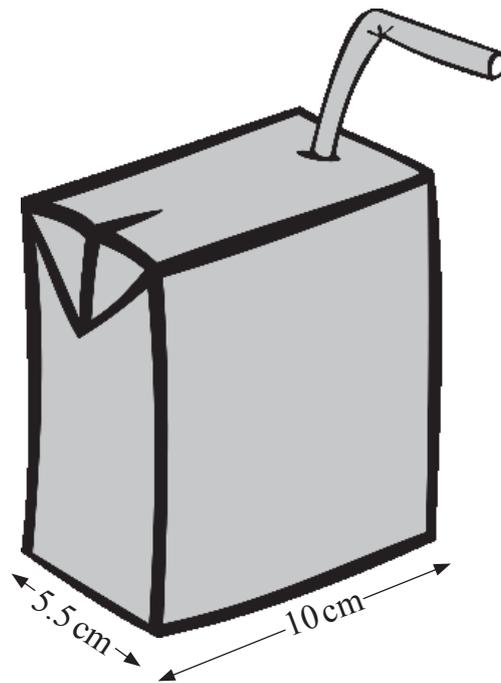**(b)** Solve the following equations

(i) $\frac{w}{3} = 15$

Answer $w =$ _____ [1]

(ii) $8y - 3 = 37$

Answer $y =$ _____ [2]

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28GMT1122

25

5.5 cm   10 cm

Lily has a carton of juice as shown above.
The carton is in the shape of a cuboid.
The volume of the carton is 990 cm^3
Work out the height of the carton.

Answer _____ cm [2]

28GMT1123

26 Sean hired a small digger. It cost £101.88 for the first day.

It cost £33.96 for each extra day.

Sean paid a total of £305.64

For how many days did he hire the small digger?

Answer _____ days [3]

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