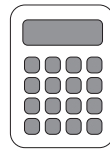


Time allowed: 1 hour 30 minutes

### You must have:

- Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.



### Instructions

- Use **black** ink or black ball-point pen.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

### Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Name: .....



**Answer ALL questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages of your working.**

- 1** Write down the value of the 7 in the number 0.3071

---

**(Total for Question 1 is 1 mark)**

---

- 2** Write down the smallest cube number greater than 100.

---

**(Total for Question 2 is 1 mark)**

---

- 3** Write down the value of  $\frac{3.6^4 - 102 \times 0.3}{\sqrt{5^2 + 12^2}}$  to 2 decimal places.

---

**(Total for Question 3 is 1 mark)**

---



4 Consider the following list of numbers.

12, 3, 10, 50, 5

(a) Find the median of this set of numbers.

.....  
(2)

(b) A number is now added to the list so that the median is 9.5

Find the number.

.....  
(1)

**(Total for Question 4 is 3 marks)**

---

5 Solve the equation  $5 - 2x = 13$

---

**(Total for Question 5 is 2 marks)**

---

6 Find the highest common factor (HCF) of 64 and 80.

---

**(Total for Question 6 is 2 marks)**

---

7 Minnie buys  $p$  packets of crisps at 65p each, and  $q$  packs of sandwiches at £3.00 each.

Write down an expression for the amount of money (in pence) she spends.

---

**(Total for Question 7 is 2 marks)**

---

8 Make  $r$  the subject of this formula.

$$a = \frac{5}{20 - r}$$

---

**(Total for Question 8 is 4 marks)**

---

9 The following table shows the heights of giraffes at a zoo.

height ( $x$ cm)	frequency
$500 \leq x < 510$	2
$510 \leq x < 520$	6
$520 \leq x < 530$	1
$530 \leq x < 540$	4
$540 \leq x < 550$	3

(a) State the modal class interval.

---

(1)

(b) Find an estimate for the mean height of the giraffes.

---

(2)

**(Total for Question 9 is 3 marks)**

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10 It is suggested that the sum of two prime numbers is always an even number.

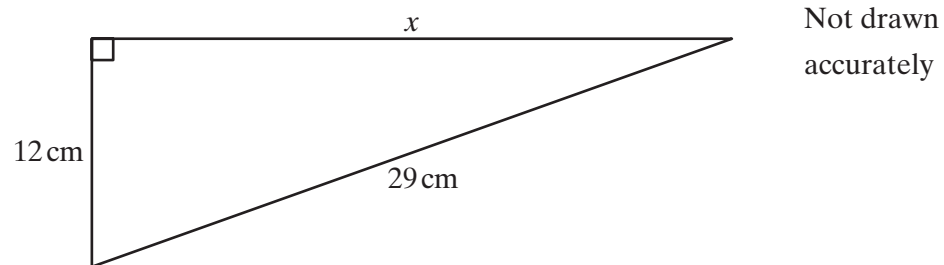
Give an example to show that this is wrong.

.....

(Total for Question 10 is 2 marks)

11 Find the value of  $x$  in the following triangle.

Give your answer to 2 decimal places.



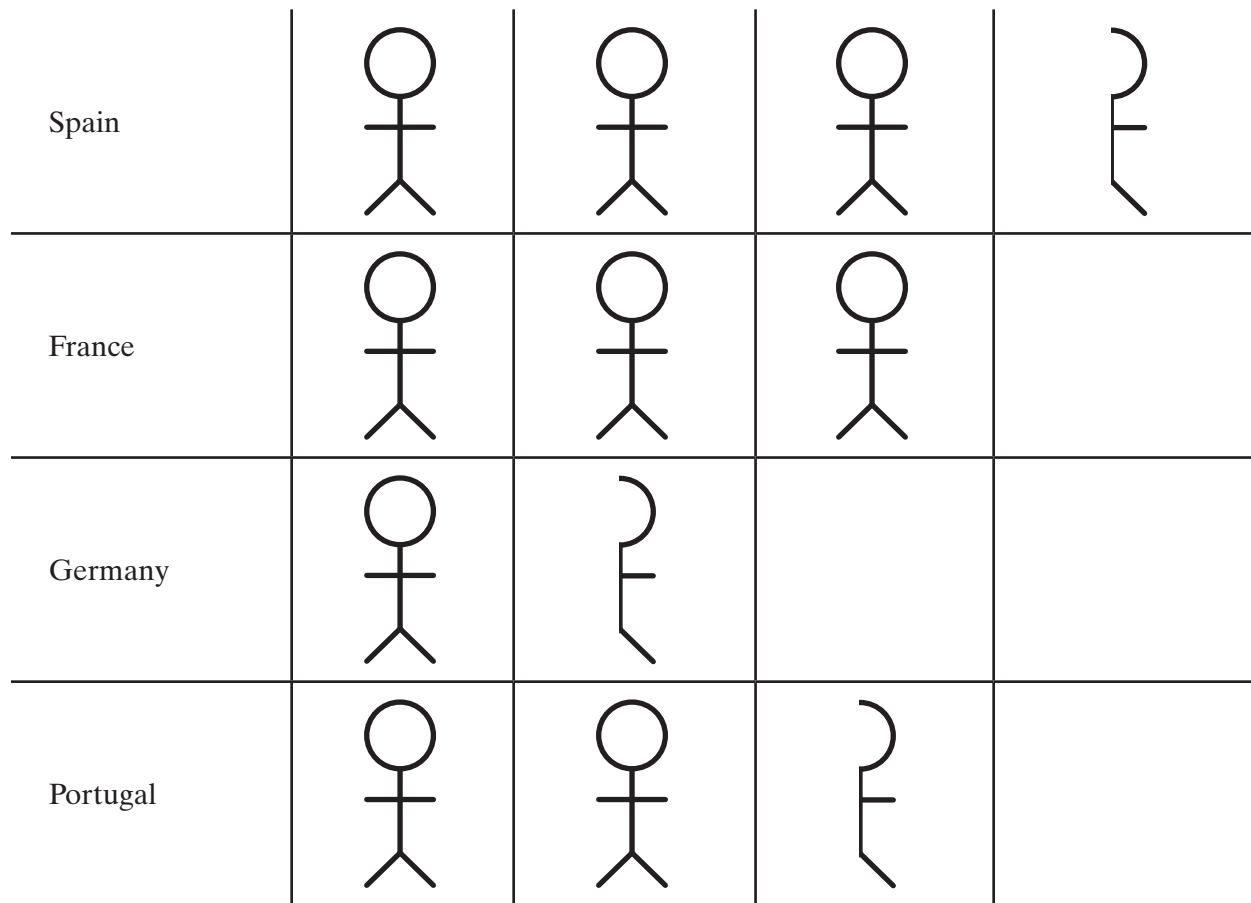
$x =$  ..... cm

(Total for Question 11 is 3 marks)

12 Given vector  $\mathbf{a} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$  and vector  $\mathbf{b} = \begin{pmatrix} -2 \\ -1 \end{pmatrix}$ , calculate the vector  $2\mathbf{a} - 3\mathbf{b}$ .

.....  
(Total for Question 12 is 2 marks)

13 The following pictogram shows the holiday destinations of 210 families.



(a) The key to the pictogram is missing.

Work out what the key should be.

.....  
(3)

(b) Calculate the number of families who travelled to Spain.

.....  
(1)

**(Total for Question 13 is 4 marks)**

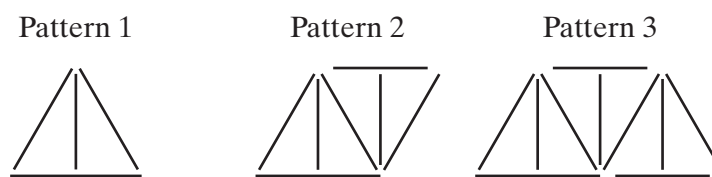
14 One weekend, Katie goes shopping and spends her money on perfume and clothes in the ratio 3 : 7

If she spends £36 on perfume, calculate the amount she spends on clothes.

.....  
**(Total for Question 14 is 2 marks)**

---

15 The following diagram shows a series of patterns of matches.



(a) Calculate the number of matches there will be in the 4<sup>th</sup> pattern.

.....  
**(1)**

(b) Calculate the number of matches there will be in the 5<sup>th</sup> pattern.

.....  
**(1)**

(c) Find a formula for the number of matches in the  $n^{\text{th}}$  pattern.

.....  
**(2)**

**(Total for Question 15 is 4 marks)**

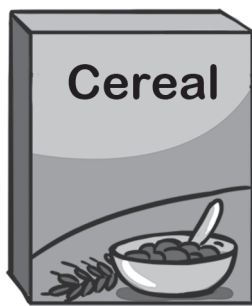
---



- 16 Solve the inequality  $\frac{2x+7}{4} < 5$ , illustrating your answer on a number line.

(Total for Question 16 is 3 marks)

- 17 Here are three boxes of cereal.



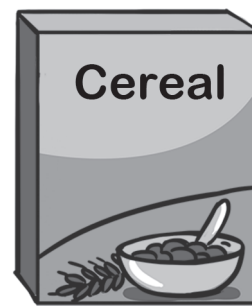
300g

£1.60



500g

£2.60



750g

£3.85

Work out which box of cereal provides the best value for money.

(Total for Question 17 is 3 marks)

**18** Sadiq invests £1000 in a savings account paying a compound interest rate of 1.25%

For the first year only, there is a bonus 0.75% interest.

Calculate the amount (to the nearest pound) he can expect to have in his account after 5 years.

---

**(Total for Question 18 is 3 marks)**

---

**19** Kyle surveys 20 students in his school year about their favourite hobby.

He finds that 12 of them enjoy online gaming the most.

Using this result, Kyle suggests that 60% of the total students in his school would have a favourite hobby of online gaming.

Suggest **two** reasons why Kyle may be incorrect.

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**(Total for Question 19 is 2 marks)**

---

20 Find the next two numbers in the following sequence.

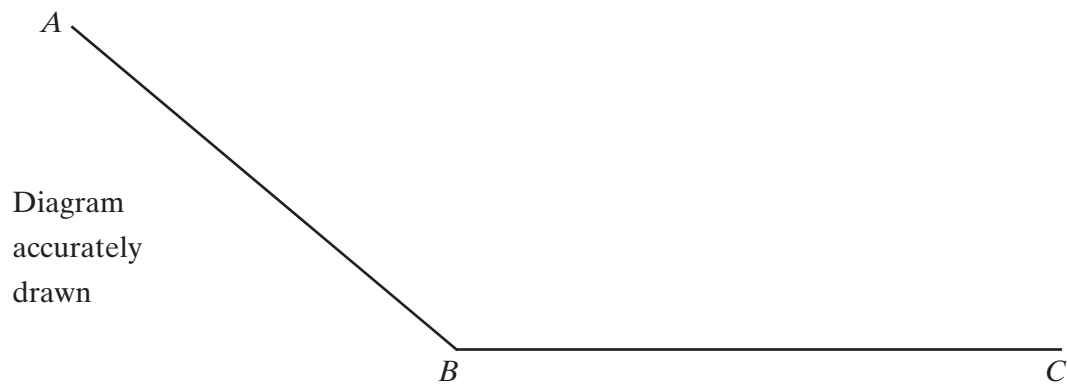
1      4      5      9      14      23      .....      .....

(Total for Question 20 is 2 marks)

---

21 In the diagram below, angle  $ABC = 140^\circ$

Using your ruler and compasses only, construct an angle of  $35^\circ$ , making your construction lines clear.

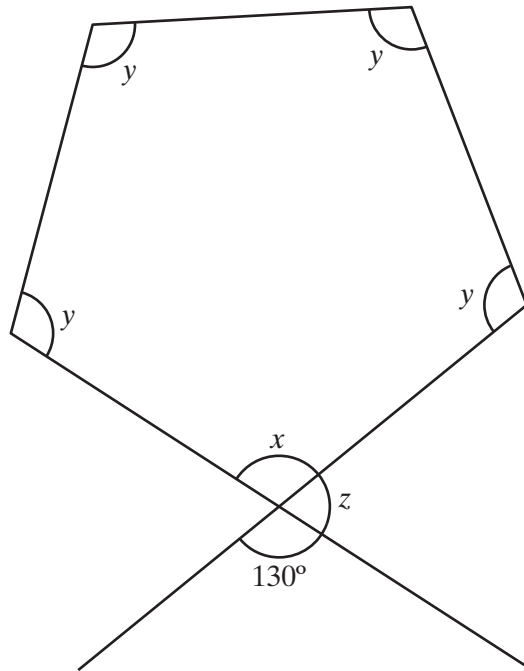


(Total for Question 21 is 2 marks)

---

- 22** In the following diagram, find the size of the angle marked  $x$ , the size of the angle(s) marked  $y$ , and the size of the angle marked  $z$ .

In each case, give your reason(s).



Not drawn accurately

**(a)**  $x =$  .....

Reason: .....

(2)

**(b)**  $y =$  .....

Reason: .....

(3)

**(c)**  $z =$  .....

Reason: .....

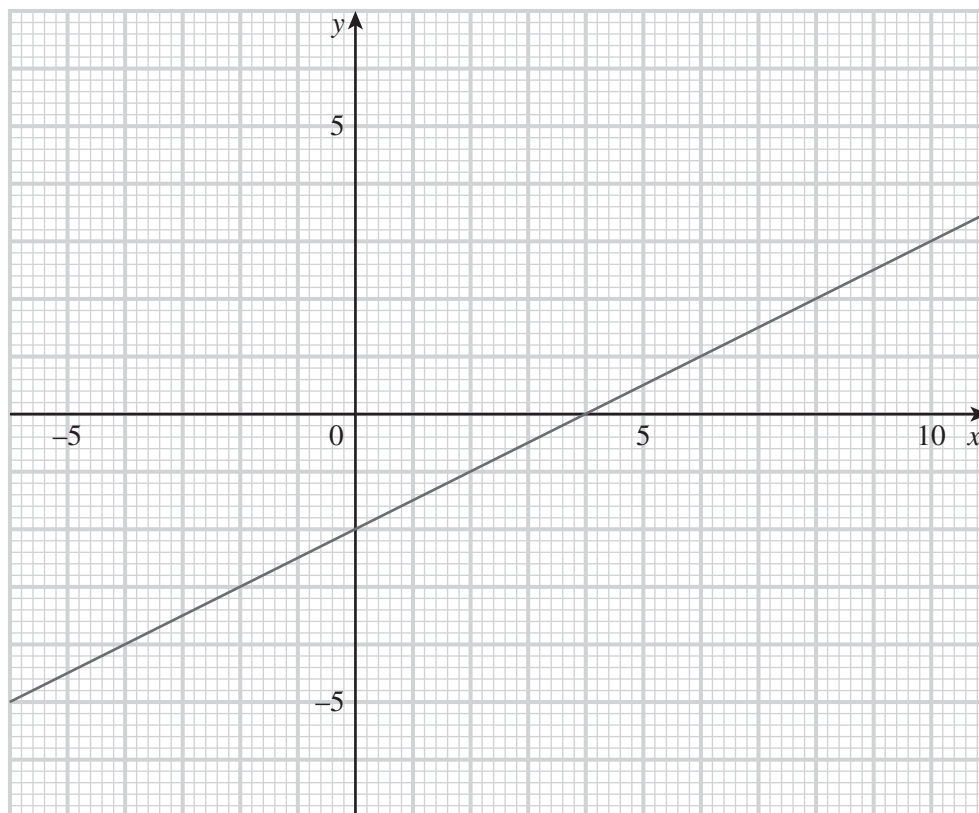
(2)

**(Total for Question 22 is 7 marks)**

- 23** Factorise  $x^2 - 3x - 28$

**(Total for Question 23 is 2 marks)**

24



(a) Find the equation of the above line  $L$ , expressing your answer in the form  $y = mx + c$

.....  
(3)

(b) Find the equation of the line parallel to  $L$  that intersects the point  $(0, 1)$ .

.....  
(3)

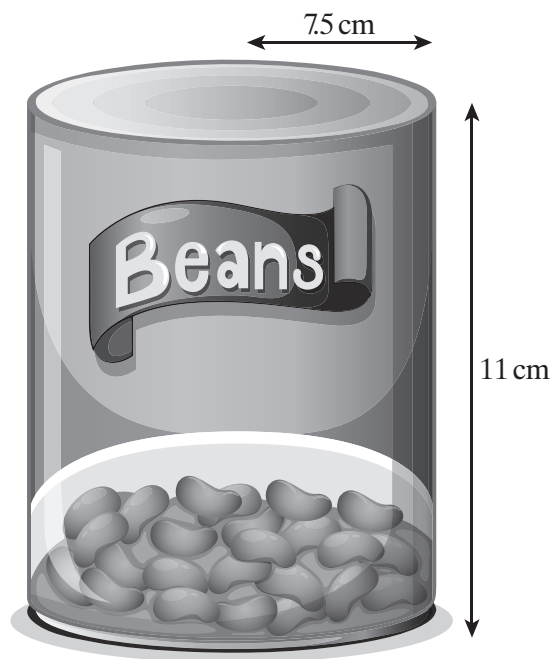
**(Total for Question 24 is 6 marks)**

---

25 Express the ratio 16 : 25 in the form 1 :  $n$ , where  $n$  is a decimal number.

(Total for Question 25 is 3 marks)

26 A can of beans has radius 7.5 cm and height 11 cm.



(a) The rectangular piece of paper wrapped around the tin has an 'overlap' of 2 cm. Calculate the area of the paper (to 3 significant figures).

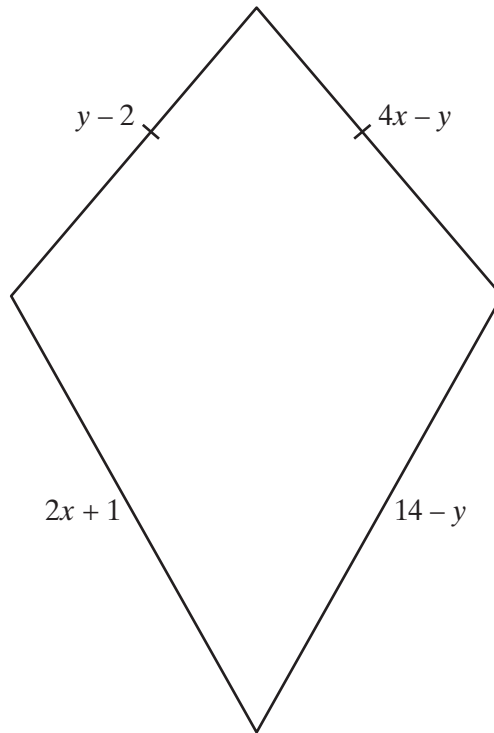
(4)

(b) Calculate the capacity of the can (to 3 significant figures).

(2)

(Total for Question 26 is 6 marks)

27 The following diagram shows a kite.



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

$x =$  .....

$y =$  .....

**(Total for Question 27 is 5 marks)**

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**TOTAL FOR PAPER IS 80 MARKS**